रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
CEN 02/2025 – Technician Grade I Signal and Technician Grade III

# RRB TECHNICIAN GRADE III 2025

Technician Grade III | CEN 02/2025

**ENGLISH ANSWER KEY**

## Official Answer Key with Solutions

All 9 Shifts · 06-03-2026 to 10-03-2026

| | |
|---|---|
| **Questions** | 100 |
| **Marking** | +1 correct / -1/3 wrong |
| **Duration** | 90 minutes |
| **Sections** | General Science 40 · Maths 25 · Reasoning 25 · GA 10 |

Every paper here is the official RRB response sheet with the correct answer marked.

### HOW TO USE THIS BOOK

1. Open the INDEX on the next page.
2. Click any row to jump straight to that date and shift.
3. Correct options are ticked in green, wrong ones crossed in red.
4. Use the bookmarks panel of your PDF reader to move between shifts.



**Blackbook**

Score & Rank Calculator · rank.qmaths.in

Compiled 12 September 2026

# INDEX · Click any row to open that paper

RRB Technician Grade III 2025 (English) · 9 shifts

# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

सत्यमेव जयते

| | |
|---|---|
| Test Centre Name | ION Digital Zone IDZ KIOT-Campus |
| Test Date | 06/03/2026 |
| Test Time | 9:00 AM - 10:30 AM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** **If 15 workers can build a wall in 10 days, how many workers are needed to build it in 6 days?**

**Ans**
- ✗ A. 26
- ✗ B. 22
- ✓ C. 25
- ✗ D. 20

**Q.2** **If a sum of ₹8000 becomes thrice of itself after 8 years on compound interest, then how much will it become after 24 years?**

**Ans**
- ✗ A. ₹206000
- ✓ B. ₹216000
- ✗ C. ₹236000
- ✗ D. ₹253000

**Q.3** **A, B, C, and D can do a piece of work in 12, 15, 20, and 30 days, respectively. All start together, but D leaves after 2 days, C leaves 3 days before the completion, and B leaves 2 days before the completion. Determine the total time required to complete the work.**

**Ans**
- ✗ A. 8 days 6 hours
- ✗ B. 5 days 20 hours
- ✗ C. 5 days 10 hours
- ✓ D. 6 days 2 hours

**Q.4** **For a given data, the mean is 48.5 and the median is 44. The mode of the data is:**

**Ans**
- ✗ A. 25
- ✗ B. 42
- ✓ C. 35
- ✗ D. 32

**Q.5** During a sale 50% of the goods are sold at 40% profit, 40% of the remaining goods are sold at 13% profit and the still remaining goods are sold at a loss of 32%. If there is an overall profit of x%, then what is the value of x?

**Ans**
- ✗ A. 12.5
- ✗ B. 14
- ✓ C. 13
- ✗ D. 13.5

**Q.6** Two trains of lengths 120 m and 180 m are running in opposite directions at speeds of 60 km/h and 75 km/h, respectively. In how many seconds will they completely cross each other?

**Ans**
- ✗ A. 9 seconds
- ✗ B. 11 seconds
- ✗ C. 10 seconds
- ✓ D. 8 seconds

**Q.7** If the surface area of a sphere is 314 $cm^2$, find its radius.
(Take $\pi = 3.14$)

**Ans**
- ✓ A. 5 cm
- ✗ B. 0.05 cm
- ✗ C. 50 cm
- ✗ D. 0.5 cm

**Q.8** The length of one of the two parallel sides of a trapezium is 8 cm, while the length of the other side of this pair of parallel sides is equal to the distance between this pair of parallel sides. If the area of the trapezium is 120 $cm^2$, then what is the distance (in cm) between the said pair of parallel sides?

**Ans**
- ✗ A. 10
- ✗ B. 20
- ✗ C. 15
- ✓ D. 12

**Q.9** A shopkeeper lists the price of a fan at 36% above its cost price and offers a 25% discount on its list price. If he earns a profit of ₹179, then what is the list price (in ₹) of the fan?

**Ans**
- ✗ A. 12,166
- ✗ B. 12,213
- ✗ C. 12,247
- ✓ D. 12,172

**Q.10** Find the value of $36 - [10 - 3\{14 \div 2 - (10 \div 2 \times 3 - 4 + 7)$

**Ans**
- ✓ A. -7
- ✗ B. -5
- ✗ C. 7
- ✗ D. 5

Q.11 If a number is added to each of the numbers 16, 20 and 30, then the resulting numbers are in the continued proportion. Find the mean proportional between the largest and smallest of the resulting numbers.

Ans
✗ A. $\frac{26}{9}$
✗ B. $\frac{50}{9}$
✗ C. $\frac{40}{3}$
✓ D. $\frac{20}{3}$

Q.12 A person borrows ₹10,000 for 3 years at 5% per annum simple interest. He immediately lends it to another person at $8\frac{1}{4}\%$ per annum simple interest for 3 years. What is his gain (in ₹) in the transaction per year?

Ans
✗ A. 450
✗ B. 400
✓ C. 325
✗ D. 375

Q.13 Simplify:
$8 \times 8 + 6 \times 6 + [6 \times \{4 \div 2 \times (3 \text{ of } 2)\} - \{36 \div (6 \times 3) + (8 \times 3)\}] \div$

Ans
✗ A. 93
✓ B. 123
✗ C. 153
✗ D. 73

Q.14 If x is the third proportional to 2 and y, and y is the third proportional to x and 18, then what is the value of y?

Ans
✗ A. $4\sqrt[3]{3}$
✗ B. $3\sqrt[3]{3}$
✗ C. $5\sqrt[3]{3}$
✓ D. $6\sqrt[3]{3}$

Q.15 If the lateral surface area of a cylinder is 140.1 $cm^2$ and its height is 3 cm, then find its volume. (Use π = 3.14 and round off to two decimal places.)

Ans
✗ A. 570.58 cm3
✓ B. 520.91 cm3
✗ C. 559.99 cm3
✗ D. 562.32 cm3

Q.16 Simplify $(5z-12y)^2 + (12z+5y)^2 - 144z^2$.

Ans
✗ A. $32z^2 + 170y^2$
✓ B. $25z^2 + 169y^2$
✗ C. $24z^2 + 171y^2$
✗ D. $31z^2 + 161y^2$

Q.17 The value of $4 + \tan^2\theta + \cot^2\theta - \sec^2\theta \operatorname{cosec}^2\theta$ is:

Ans
- ✗ A. 4
- ✗ B. -2
- ✓ C. 2
- ✗ D. 0

Q.18 **The value of a machine is first depreciated by 20%. It is then appreciated by 25% and finally depreciated by 10%. Find the overall percentage change in its value.**

Ans
- ✗ A. 12% decrease
- ✓ B. 10% decrease
- ✗ C. 5% decrease
- ✗ D. 8% decrease

Q.19 **Find the product of the common prime factors of the numbers 1950, 1560 and 2340.**

Ans
- ✗ A. 480
- ✓ B. 390
- ✗ C. 360
- ✗ D. 520

Q.20 **The average of three numbers is 20. If the two numbers are 11 and 22, respectively, then the third number is:**

Ans
- ✗ A. 28
- ✗ B. 29
- ✗ C. 26
- ✓ D. 27

Q.21 What is the decimal form of $\frac{7}{2} + 32.5 + 1.245 + \frac{3}{4}$?

Ans
- ✗ A. 35.005
- ✗ B. 32.125
- ✓ C. 37.995
- ✗ D. 39.778

Q.22 **When one-third of a number is increased by 87, the result is 107. Find the sum of the digits of the original number.**

Ans
- ✗ A. 3
- ✓ B. 6
- ✗ C. 5
- ✗ D. 8

Q.23 **A classroom has 46 boys and 36 girls. If the number of girls is increased successively by 25% followed by another 20%, by how many will the number of girls exceed the number of boys?**

Ans
- ✗ A. 10
- ✓ B. 8
- ✗ C. 6
- ✗ D. 12

**Q.24** A can finish a work in 5 days and B can do the same work in 50 days. B worked alone for 10 days and left the job. In how many days can A alone finish the remaining work?

**Ans**
- ✗ A. 3
- ✗ B. 3.5
- ✓ C. 4
- ✗ D. 4.5

**Q.25** The sum of the present ages of Sharad and Adarsh is 36 years. After 2 years from now, Sharad's age will be three times that of Adarsh. Sharad's present age (in years) is:

**Ans**
- ✗ A. 26
- ✓ B. 28
- ✗ C. 24
- ✗ D. 37

Section : **General Intelligence and Reasoning**

**Q.26** Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does not belong to that group? (Note: The odd man out is not based on the number of consonants/vowels or their position in the letter cluster.)

**Ans**
- ✓ A. FGO
- ✗ B. IJO
- ✗ C. BCH
- ✗ D. PQV

**Q.27** Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(8, 3, 7)
(9, 4, 9)

**Ans**
- ✗ A. (12, 17, 35)
- ✗ B. (13, 8, 15)
- ✗ C. (11, 5, 13)
- ✓ D. (7, 2, 5)

**Q.28** In a certain code language,
A + B means 'A is the mother of B'
A - B means 'A is the brother of B'
A x B means 'A is the sister of B'
A ÷ B means 'A is the daughter of B'

Based on the above, how is G related to K if 'G + H ÷ I - J x K'?

**Ans**
- ✗ A. Daughter
- ✗ B. Sister
- ✓ C. Brother's wife
- ✗ D. Brother's daughter

**Q.29** Each letter in the word EDITORIAL is arranged in alphabetical order. How many letters are there in the English alphabetical order between the letter which is fourth from the left and the one which is second from the right in the new letter cluster thus formed?

**Ans**
- ✔ A. 8
- ✘ B. 6
- ✘ C. 7
- ✘ D. 5

**Q.30** Piyush is the brother of Vidhi. Vidhi is the sister of Kunti. Kunti is the wife of Arjun. Arjun is the father of Abhimanyu. How is Piyush related to Abhimanyu?

**Ans**
- ✘ A. Mother's father
- ✘ B. Father's brother
- ✘ C. Father's father
- ✔ D. Mother's brother

**Q.31** Select the pair that follows the same pattern as the one followed by the two set of pairs given below. Both pairs follow the same pattern.

**IRQ : KPP**
**MEU : OCT**

**Ans**
- ✘ A. FJM : HGL
- ✘ B. GRP : IPN
- ✘ C. CMR : EKP
- ✔ D. RQN : TOM

**Q.32** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group? ***(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)***

**Ans**
- ✘ A. GO – MU
- ✘ B. HP – NV
- ✘ C. CK – IQ
- ✔ D. FN – KS

**Q.33** The position(s) of how many letters will remain unchanged if each letter in the word "FOXHUNTERS" is arranged in alphabetical order?

**Ans**
- ✘ A. Two
- ✔ B. None
- ✘ C. Three
- ✘ D. One

**Q.34** In a certain code language,
**A + B means 'A is the son of B',**
**A - B means 'A is the brother of B',**
**A x B means 'A is the wife of B', and**
**A ÷ B means 'A is the father of B'.**
**Based on the above, how is Z related to H if 'Z+U-NxC÷H'?**

**Ans**
- ✘ A. Brother's Son
- ✘ B. Father
- ✔ C. Mother's brother's Son
- ✘ D. Mother's brother

**Q.35** **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
- ✔ A. HK – DP
- ✘ B. KM – HR
- ✘ C. EW – BB
- ✘ D. QC – NH

**Q.36** **A, B, C, P, S, T and U are sitting in a straight line facing the north. Only two people are seated between T and U. Only C is seated to the right of S. Only one person is seated between U and S. A is seated at some place to the right of P, but at some place to the left of B. How many people are seated between B and P?**

**Ans**
- ✔ A. Two
- ✘ B. One
- ✘ C. Three
- ✘ D. Four

**Q.37** **Raju starts from Point A and drives 9 km towards north. He then takes a left turn, drives 8 km, turns left and drives 13 km. He then takes a left turn and drives 11 km. He takes a final left turn, drives 4 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again?**

**(All turns are 90° turns only unless specified.)**

**Ans**
- ✔ A. 3 km to the west
- ✘ B. 3 km to the east
- ✘ C. 2 km to the east
- ✘ D. 4 km to the east

**Q.38** **Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
- ✔ A. YTW
- ✘ B. EHF
- ✘ C. ILJ
- ✘ D. JMK

**Q.39** **What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?**

**5 ÷ 2 + 16 x 4 - 4 = ?**

**Ans**
- ✔ A. 10
- ✘ B. 14
- ✘ C. 8
- ✘ D. 12

**Q.40** What should come in place of '?' in the given series?

31 44 52 65 73 ?

**Ans**
- ✗ A. 84
- ✗ B. 82
- ✗ C. 80
- ✓ D. 86

**Q.41** A, E, I, O, F, G and H are sitting around a circular table facing the centre of the table. Only two people sit between E and O when counted from the right of E. Only two people sit between O and I. Only three people sit between E and H. A sits to the immediate left of G.
Who sits third to the left of F?

**Ans**
- ✓ A. G
- ✗ B. E
- ✗ C. I
- ✗ D. A

**Q.42** In a row of 29 people facing north, Karan is 9th from the right end. If Ramesh sits fifth to the left of Karan, what is Ramesh's position from the left end of the line?

**Ans**
- ✓ A. 16th
- ✗ B. 17th
- ✗ C. 15th
- ✗ D. 14th

**Q.43** In a certain code language, 'MIND' is coded as '7542' and 'DOPE' is coded as '1436'. What is the code for 'D' in that language?

**Ans**
- ✓ A. 4
- ✗ B. 2
- ✗ C. 3
- ✗ D. 1

**Q.44** Refer to the following series and answer the question (All numbers are single-digit numbers only. Counting is to be done from left to right.)

(Left) 6 8 2 1 4 8 7 1 3 7 2 4 8 9 5 4 3 5 2 7 (Right)

How many such digits are there each of which is immediately preceded by a perfect square and immediately followed by an odd digit? (NOTE: 1 is also a perfect square.)

**Ans**
- ✗ A. Three
- ✗ B. One
- ✓ C. Four
- ✗ D. Two

**Q.45** Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

NEX : RIB
VBS : ZFW

**Ans**
- ✓ A. TAJ : XEN
- ✗ B. YSD : CUF
- ✗ C. QKE : TNH
- ✗ D. GWR : IZU

**Q.46** In a certain code language, 'CRAB' is coded as '8642' and 'BENT' is coded as '1358'. What is the code for 'B' in that language?

**Ans**
- ✗ A. 1
- ✗ B. 3
- ✗ C. 2
- ✓ D. 8

**Q.47** If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', what will come in place of the question mark (?) in the following equation?

2 B 1 D 14 A 2 C 7 = ?

**Ans**
- ✗ A. 1
- ✓ B. 2
- ✗ C. 4
- ✗ D. 3

**Q.48** In a row of 45 people facing north, Pari is $14^{th}$ from the right end. If Bittu sits $20^{th}$ to the left of Pari, what is Bittu's position from the left end of the line?

**Ans**
- ✗ A. 11th
- ✓ B. 12th
- ✗ C. 10th
- ✗ D. 13th

**Q.49** WAVE is related to XBXG in a certain way based on the English alphabetical order. In the same way, KING is related to LJPI. To which of the given options is SONG related, following the same logic?

**Ans**
- ✓ A. TPPI
- ✗ B. RPOI
- ✗ C. TRPK
- ✗ D. RRPK

**Q.50** Refer to the following letter series and answer the question that follows. Counting to be done from left to right.
(Left) F Z I U K J Q D H M C X O E N L P G B E A (Right)
How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a vowel?

**Ans**
- ✗ A. One
- ✗ B. Two
- ✗ C. None
- ✓ D. Three

Section : **General Science**

**Q.51** When applying the equations of motion to an object moving under gravitational force and thrown vertically upwards, the acceleration (a) should be taken as _____.

**Ans**
- ✓ A. Negative, as it opposes the initial motion.
- ✗ B. Independent of the direction of motion.
- ✗ C. Positive, as it is in the direction of velocity.
- ✗ D. Positive, as gravity is constant.

**Q.52** **What will be the wavelength of a sound wave whose frequency is 220 Hz and speed is 440 m/s in a given medium?**

**Ans**
- ✗ A. 0.5 m
- ✓ B. 2 m
- ✗ C. 440 m
- ✗ D. 220 m

**Q.53** **Which of the following statement(s) is/are true regarding the magnetic field line pattern around a straight current carrying wire?**

**(i) The magnetic field lines around a current carrying wire are in the form of concentric circles.**
**(ii) The magnetic field lines around a current carrying wire intersect at various points.**
**(iii) The magnetic field lines move farther apart as one moves away from the wire.**

**Ans**
- ✓ A. Both (i) and (iii)
- ✗ B. Only (i)
- ✗ C. Both (ii) and (iii)
- ✗ D. Only (ii)

**Q.54** **Why is biological magnification a health risk even with limited pesticide use?**

**Ans**
- ✓ A. Non-biodegradable pesticides accumulate at successive trophic levels
- ✗ B. Non-biodegradable pesticides are immediately excreted and do not persist
- ✗ C. Pesticides affect only soil microorganisms, not higher organisms
- ✗ D. The toxicity of pesticides decreases as they move up the food chain

**Q.55** **Which of the following best describes the primary function of connective tissue?**

**Ans**
- ✗ A. Conducting electrical impulses for rapid communication.
- ✓ B. Supporting and providing structural framework to body parts.
- ✗ C. Absorbing digested nutrients across epithelial surfaces.
- ✗ D. Producing force through contraction and relaxation.

**Q.56** **What is the primary reason curved ceilings are used in concert halls?**

**Ans**
- ✗ A. To decorate the hall
- ✗ B. To block noise
- ✗ C. To absorb sound
- ✓ D. To reflect sound evenly

**Q.57** **Which statement correctly describes the universal law of gravitation?**

**Ans**
- ✗ A. The gravitational force increases as the distance between objects increases.
- ✗ B. The gravitational force decreases when the masses of the objects increase.
- ✓ C. The gravitational force increases with the product of the masses and decreases with the square of the distance between them.
- ✗ D. The gravitational force depends only on the distance between the objects, not their masses.

**Q.58** **Which of the following is a complex permanent tissue responsible for the transport of water in plants?**

**Ans**
- ✗ A. Phloem
- ✗ B. Parenchyma
- ✗ C. Collenchyma
- ✓ D. Xylem

**Q.59** **Which of the following statements about Thomson's model of an atom is/are correct?**

**Statement 1. An atom consists of a positively charged sphere with electrons embedded in it.**

**Statement 2. The mass of the atom is due to neutrons located in the nucleus.**

**Statement 3. The model is often compared to a watermelon with seeds representing electrons.**

**Ans**
- ✗ A. Only 1, 2, and 3
- ✓ B. Only 1 and 3
- ✗ C. Only 2 and 3
- ✗ D. Only 1

**Q.60** **What does the given circuit symbol represent?**

**Ans**
- ✗ A. Switch in the closed position
- ✗ B. A battery
- ✗ C. A wire
- ✓ D. Variable resistance or rheostat

**Q.61** **If the force of gravitation between the Earth and the Moon is 'F' N, then how much will be the force between the Earth and the Moon if the distance between them is doubled? (Keep all the other parameters the same.)**

**Ans**
- ✗ A. 2F
- ✓ B. F/4
- ✗ C. 4F
- ✗ D. F/2

**Q.62** **The resistivity of an alloy is generally higher than its constituent metals, and this property makes alloys suitable for _____.**

**Ans**
- ✗ A. Circuit fuses (e.g., lead/tin alloy)
- ✗ B. Connecting wires (e.g., copper transmission lines)
- ✓ C. Heating elements (e.g., nichrome)
- ✗ D. Filaments of electric bulbs (e.g., tungsten)

**Q.63** **Which of the following is an example of a double displacement reaction?**

**Ans**
- ✗ A. $H_2 + Cl_2 \rightarrow 2HCl$
- ✗ B. $2Mg + O_2 \rightarrow 2MgO$
- ✗ C. Na2O + H2O→ 2 NaOH
- ✓ D. $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$

**Q.64** **Select the correct option regarding the given statements.**

**Statement 1: Suspensions scatter light.**
**Statement 2: When particles settle down, they no longer scatter light.**

**Ans**
- ✗ A. Statement 1 is true and Statement 2 is false.
- ✓ B. Both statements are true, but Statement 2 does not explain Statement 1.
- ✗ C. Both statements are false.
- ✗ D. Both statements are true, and Statement 2 explains Statement 1.

**Q.65** **Which calculation correctly determines the formula unit mass of $CaCl_2$?**

**Ans**
- ✗ A. Atomic mass of Ca + atomic mass of Cl = 40 + 35.5 = 75.5 u
- ✗ B. Atomic mass of Ca + (atomic mass of Cl ÷ 2) = 40 + 17.75 = 57.75 u
- ✓ C. Atomic mass of Ca + (2 × atomic mass of Cl) = 40 + 71 = 111 u
- ✗ D. Atomic mass of Ca × atomic mass of Cl = 40 × 35.5 = 1420 u

**Q.66** **Plants get macro-nutrients mainly from the _____, and micro-nutrients in small quantities from the _____.**

**Ans**
- ✗ A. sunlight ; minerals
- ✓ B. soil ; soil
- ✗ C. air ; water
- ✗ D. water ; sand

**Q.67** **Dhritiman tries to extract magnesium from magnesium oxide using carbon. The attempt fails. What is the reason?**

**Ans**
- ✗ A. Magnesium forms a volatile compound with carbon.
- ✗ B. Carbon reacts violently with oxygen.
- ✗ C. The reaction produces carbon monoxide only.
- ✓ D. Carbon is less reactive than magnesium.

**Q.68** **The urine formed in the kidneys passes through the _____ into the ____ where it is stored until excreted.**

**Ans**
- ✗ A. nephrons; urethra
- ✗ B. urinary bladder; urethra
- ✗ C. urethra; ureters
- ✓ D. ureters; urinary bladder

**Q.69** **When potassium reacts with water, we observe:**

**Ans**
- ✗ A. Formation of a greenish compound
- ✗ B. No visible change
- ✗ C. Gentle bubbling and slow reaction
- ✓ D. Bright flame and rapid reaction

**Q.70** **Which of the following correctly explains the adaptation of desert plants in photosynthesis?**

**Ans**
- ✗ A. Photosynthesis is restricted to night-time only to minimise water loss.
- ✗ B. Light energy is captured at night and converted into starch for daytime use.
- ✗ C. Oxygen is absorbed at night while carbon dioxide is released during the day.
- ✓ D. Carbon dioxide uptake occurs at night and carbohydrates are synthesized during the day.

**Q.71** **Which connective tissue forms the framework of the external ear, tip of the nose, and the ends of long bones?**

**Ans**
- ✗ A. Areolar tissue
- ✓ B. Cartilage
- ✗ C. Adipose tissue
- ✗ D. Bone

**Q.72** **The symbol 'B' represents which element?**

**Ans**
- ✗ A. Bromine
- ✗ B. Beryllium
- ✓ C. Boron
- ✗ D. Barium

**Q.73** **Read the following statements carefully and choose the correct option.**

**Statement 1: Members of a homologous series differ by a $-CH_2-$ group.**
**Statement 2: Each successive member of a homologous series differs from the previous one by 12 u in molecular mass.**

**Ans**
- ✗ A. Both statements are true and Statement 2 is the correct explanation of Statement 1.
- ✓ B. Statement 1 is true but Statement 2 is false.
- ✗ C. Both statements are true but Statement 2 is not the correct explanation of Statement 1.
- ✗ D. Both statements are false.

**Q.74** **If 9 g of water contains 1 g of hydrogen and 8 g of oxygen, then 36 g of water will contain:**

**Ans**
- ✗ A. 3 g of hydrogen and 24 g of oxygen
- ✗ B. 4 g of hydrogen and 24 g of oxygen
- ✓ C. 4 g of hydrogen and 32 g of oxygen
- ✗ D. 3 g of hydrogen and 32 g of oxygen

**Q.75** **A convex mirror used as a rear-view mirror in a car has a radius of curvature of 4.00 m. A bus is located 6.00 m in front of the mirror. What will be the position and nature of the image formed?**

**Ans**
- ✗ A. The image is formed at 3.0 m behind the mirror
- ✗ B. Image is formed at 3.0 m in front of the mirror
- ✓ C. Image is formed at 1.5 m behind the mirror
- ✗ D. Image is formed at 1.2 m behind the mirror

**Q.76** **Which type of epithelial tissue is primarily specialized for absorption in the human intestine?**

**Ans**
- ✗ A. Stratified squamous epithelium
- ✗ B. Simple cuboidal epithelium
- ✓ C. Simple columnar epithelium
- ✗ D. Simple squamous epithelium

**Q.77** **What is the primary function of the cell wall in plant cells?**

**Ans**
- ✗ A. Transport nutrients
- ✗ B. Control cellular respiration
- ✓ C. Provide rigidity and protection
- ✗ D. Control cell division

**Q.78** **Even though people eat different types of food, they may still absorb harmful chemical residues. This is because _____.**

**Ans**
- ✗ A. All plants produce natural pesticides
- ✗ B. Food grains absorb only useful chemicals from soil
- ✓ C. Chemicals persist and accumulate via biomagnification
- ✗ D. Pesticides are completely destroyed during cooking

**Q.79** **A clean strip of calcium metal is added to cold water and the reaction is observed. Compared to sodium and magnesium, which of the following statements correctly describes calcium's reactivity and the nature of products formed?**

**Ans**
- ✗ A. Calcium does not react with cold water but only with steam, forming calcium oxide and hydrogen gas.
- ✓ B. Calcium reacts less vigorously than sodium but more than magnesium, forming calcium hydroxide and hydrogen gas.
- ✗ C. Calcium reacts explosively like sodium, forming calcium hydroxide and hydrogen gas.
- ✗ D. Calcium reacts slowly with cold water, producing calcium oxide and oxygen gas.

**Q.80** **Which of the following situations shows zero acceleration?**

**Ans**
- ✗ A. A train speeding up
- ✗ B. A ball thrown upward
- ✓ C. A car moving with constant speed on a straight road
- ✗ D. An aeroplane taking off

**Q.81** **Which of the following factor helps in increasing crop yield?**

**Ans**
- ✓ A. Using quality seeds, irrigation, fertilisers, crop protection
- ✗ B. Using only rainwater for irrigation
- ✗ C. Using poor seeds without irrigation
- ✗ D. Ignoring crop protection

**Q.82** **Choose a term to pair the analogy.**

**Nucleus : Eukaryotic Cell :: Nucleoid : _____**

**Ans**
- ✗ A. Multicellular Organism
- ✗ B. Plant Cell
- ✓ C. Prokaryotic Cell
- ✗ D. Animal Cell

**Q.83** **What is the work done on an object if its displacement is zero, even when a force is applied?**

**Ans**
- ✓ A. Zero
- ✗ B. Positive
- ✗ C. Negative
- ✗ D. Infinite

**Q.84** **If both solute and solvent masses are doubled, the concentration (mass %) of the solution will:**

**Ans**
- ✓ A. Remain the same
- ✗ B. Double
- ✗ C. Increase by 25%
- ✗ D. Become half

**Q.85** **If a lens forms a real and inverted image, the height of the image h' is generally taken as _____.**

**Ans**
- ✗ A. Negative, only if the object is virtual
- ✗ B. Positive, as it is above the axis
- ✗ C. Positive, but less than the object height
- ✓ D. Negative, as it is below the axis

**Q.86** **For an object moving with uniform velocity, the height of its velocity-time graph remains constant with time. This results in a graph that is a _____.**

**Ans**
- ✗ A. Vertical line
- ✗ B. Straight line passing through the origin
- ✗ C. Curve
- ✓ D. Straight line parallel to the x-axis

**Q.87** **The process wherein the body of the living organism splits into two exactly identical halves is termed as _____.**

**Ans**
- ✗ A. fragmentation
- ✗ B. multiple fission
- ✓ C. binary fission
- ✗ D. budding

**Q.88** **Which of the following correctly explains why toothpaste is basic in nature?**

**Ans**
- ✓ A. To neutralise the acid formed in the mouth after eating food
- ✗ B. To lower the pH of saliva and prevent cavities
- ✗ C. To provide an acidic medium for enzyme action in saliva
- ✗ D. To react with water and release hydrogen ions

**Q.89** **Which quantity decreases when a solid object is immersed in water?**

**Ans**
- ✗ A. Density
- ✗ B. Buoyant force
- ✗ C. Mass
- ✓ D. Apparent weight

**Q.90** **Which of the following is an example of a double displacement reaction?**

**Ans**
- ✗ A. $2H_2 + O_2 \rightarrow 2H_2O$
- ✗ B. $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
- ✗ C. $CaCO_3 \rightarrow CaO + CO_2$
- ✓ D. $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$

Section : **General Awareness**

**Q.91** **Which of the following dancers is acclaimed for their mastery and teaching of Odissi?**

**Ans**
- ✗ A. Kalamandalam Leelamma
- ✗ B. Vempati Chinna Satyam
- ✗ C. Sitara Devi
- ✓ D. Kelucharan Mohapatra

**Q.92** **The recent $131 million deal for cutting-edge surveillance technology from HawkEye 360 involves which two countries ?**

**Ans**
- ✗ A. India and Russia
- ✓ B. India and United States
- ✗ C. India and Ukraine
- ✗ D. India and Japan

**Q.93** **Which Article of the Constitution of India provides for the establishment of the National Commission for Scheduled Castes (NCSC) to safeguard the rights of the Scheduled Castes?**

**Ans**
- ✓ A. Article 338
- ✗ B. Article 350
- ✗ C. Article 330
- ✗ D. Article 340

**Q.94** **Which distinctive drainage characteristic best describes the river Luni of north-western India?**

**Ans**
- ✓ A. It terminates in an inland salt marsh in the Rann region without reaching the sea.
- ✗ B. It is the only glacier-fed perennial Himalayan river.
- ✗ C. It forms a large, well-developed delta at its mouth.
- ✗ D. It flows directly into the Arabian Sea.

**Q.95** **Who was chosen as the first president of the Indian National Congress (INC) during its first session?**

**Ans**
- ✗ A. Pherozeshah Mehta
- ✓ B. Womesh Chandra Bonnerjee
- ✗ C. Surendranath Banerjee
- ✗ D. Bipin Chandra Pal

**Q.96** **Which of the following British Indian government legislations provided for the establishment of a Supreme Court at Calcutta, comprising one chief justice and three other judges?**

**Ans**
- ✗ A. Amending Act of 1781
- ✗ B. Pitt's India Act of 1784
- ✓ C. Regulating Act of 1773
- ✗ D. Charter Act of 1793

**Q.97** **Which of the following bodies approved the appointment of S Krishnan as Chairman of J&K Bank?**

**Ans**
- ✗ A. Insurance Regulatory and Development Authority of India(IRDAI)
- ✗ B. Ministry of Finance
- ✓ C. Reserve Bank of India
- ✗ D. NITI Aayog

**Q.98** **In June 2025, Indian author Banu Mushtaq, in her acclaimed book Heart Lamp, explores which central theme through her vivid portrayal of everyday characters?**

**Ans**
- ✗ A. Economic reforms
- ✗ B. Political leadership
- ✓ C. Caste and religious oppression
- ✗ D. Environmental activism

**Q.99** **The Government has proposed to include which Union Territory under the ambit of Article 240 of the Constitution?**

**Ans**

✗ A. New Delhi

✓ B. Chandigarh

✗ C. Puduchery

✗ D. Lakshadweep

**Q.100** **Which of the following initiatives was introduced in India during Union budget 2020-21 to support farmers by enabling efficient air transportation of agricultural produce across domestic and international routes?**

**Ans**

✗ A. National Farm Logistics Mission

✓ B. Krishi Udan Scheme

✗ C. Rural Export Enhancement Initiative

✗ D. Krishi Air Connect Programme

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | iON Digital Zone iDZ Azad Puram |
| Test Date | 06/03/2026 |
| Test Time | 12:45 PM - 2:15 PM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** Simplify: $[(36+4\times(3+2\times(5-2)))\div(6+3)]+[(40-(6+3\times2))$

**Ans**
- ✗ A. 42
- ✗ B. 52
- ✗ C. 38
- ✓ D. 46

**Q.2** **If a book costs ₹300 and its price is increased by 5%, by how much the new price of the book after the increase is more than the original price?**

**Ans**
- ✓ A. ₹15
- ✗ B. ₹20
- ✗ C. ₹10
- ✗ D. ₹25

**Q.3** **Two numbers are in the ratio of 4 : 5, and their HCF is 16. Find the LCM of the two numbers.**

**Ans**
- ✗ A. 340
- ✗ B. 380
- ✓ C. 320
- ✗ D. 360

**Q.4** **A shopkeeper sold a book at a loss of 6%. If the selling price had been increased by ₹960, there would have been a gain of 19%. What was the cost price (in ₹) of the book?**

**Ans**
- ✗ A. 3850
- ✗ B. 3845
- ✓ C. 3840
- ✗ D. 3835

**Q.5** A person X invests ₹12,000 for 12 months and person Y invests ₹18,000 but withdraws his investment after 6 months. If the total profit earned on their investment is ₹25,200, what is X's share in the profit?

**Ans**
- ✗ A. ₹16,800
- ✗ B. ₹15,700
- ✗ C. ₹13,900
- ✓ D. ₹14,400

**Q.6** When one-third of a number is increased by 37, the result is 51. Find the sum of the digits of the original number.

**Ans**
- ✗ A. 8
- ✗ B. 3
- ✓ C. 6
- ✗ D. 9

**Q.7** A student scored 84% of the maximum marks in an exam and passed by 62 marks. But when he scored 45% of the marks in the same exam, he failed by 35.5 marks. Find the maximum marks of the exam.

**Ans**
- ✗ A. 225
- ✓ B. 250
- ✗ C. 265
- ✗ D. 240

**Q.8** What sum of money (in ₹) will yield ₹720 as simple interest in 2 years at 5% per annum?

**Ans**
- ✓ A. 7200
- ✗ B. 7600
- ✗ C. 6700
- ✗ D. 7400

**Q.9** Three workers A, B, C can finish a job in 10, 15, and 20 hours respectively. A and B start; after 2 hours, C joins and they finish the remaining work in t more hours. What is the value of t? (Rounded off to the nearest integer.)

**Ans**
- ✗ A. 4
- ✗ B. 5
- ✓ C. 3
- ✗ D. 6

**Q.10** A cylindrical printing drum of length 2.1 m makes 350 complete revolutions and prints 4158 $m^2$ of fabric. What is the radius of the drum? (Take $\pi = 22/7$)

**Ans**
- ✓ A. 90 cm
- ✗ B. 70 cm
- ✗ C. 80 cm
- ✗ D. 60 cm

**Q.11** If $10\cos^2\theta + 7\sin^2\theta = 7$, where $0^\circ \le \theta \le 90^\circ$, then the value of $(\sin\theta +$

**Ans**
- ✓ A. 1
- ✗ B. 2
- ✗ C. 0
- ✗ D. -1

Q.12 A dealer buys two articles X and Y for ₹1,300 each. He marks each of them at the same price. He sells X by giving two successive discounts of 84% and 25% and still earns ₹734 as profit. If he sells Y at a single discount of 87%, then what is the profit percentage on Y?

Ans
- ✗ A. 68%
- ✓ B. 69.5%
- ✗ C. 69%
- ✗ D. 68.5%

Q.13 What is the mode of the following data?
51, 48, 50, 55, 44, 52, 45, 52, 44, 49, 55, 54, 44, 54, 43, 45, 55, 47

Ans
- ✗ A. 45
- ✓ B. 55
- ✗ C. 54
- ✗ D. 44

Q.14 If $x^2 + \frac{1}{x^2} = 16$ and $x \neq 0$, then what is the value of $x^4 + \frac{1}{x^4}$ ?

Ans
- ✗ A. 252
- ✓ B. 254
- ✗ C. 258
- ✗ D. 260

Q.15 The average age of a husband and wife at the time of their marriage was 28 years. Their daughter was born two years after their marriage. If the present average age of all three family members is 24 years, how many years ago from now, did the couple get married?

Ans
- ✓ A. 6
- ✗ B. 4
- ✗ C. 8
- ✗ D. 7

Q.16 Fourteen years from now, the sum of A's and B's ages will be twice the sum of their current ages. If A is currently 8 years older than B, what is A's present age?

Ans
- ✗ A. 10
- ✗ B. 12
- ✓ C. 18
- ✗ D. 16

Q.17 Which of the following is not a property of triangles?

(i) The sum of three angles of a triangle is always $180^\circ$.

(ii) Area of a triangle is defined as $\frac{1}{3} \times \text{base} \times \text{length of altitude}$.

(iii) The perimeter of a triangle is the sum of lengths of all three sides.

(iv) The exterior angle of a triangle is equal to the sum of its interior o

Ans
- ✓ A. (ii)
- ✗ B. (iii)
- ✗ C. (iv)
- ✗ D. (i)

**Q.18** One pipe can fill the tank in 20 min, while another pipe can empty the completely filled tank in 45 min. If both the pipes are operated together on empty tank, how long (in min) will it take to fill one-fourth of the tank?

**Ans**
- ✗ A. 36
- ✓ B. 9
- ✗ C. 18
- ✗ D. 27

**Q.19** The area of a square is 9 $cm^2$. Its perimeter is equal to the perimeter of a regular hexagon. What is the area (in $cm^2$) of the hexagon?

**Ans**
- ✓ A. $6\sqrt{3}$
- ✗ B. 40
- ✗ C. $42\sqrt{3}$
- ✗ D. 32

**Q.20** The lengths of two trains starting from stations P and Q are in the ratio 3 : 2. When they run in opposite directions at speeds of 54 km/h and 72 km/h, respectively, they cross each other in 30 seconds. The train starting from P crosses a bridge in 90 seconds. Find the length of the bridge.

**Ans**
- ✗ A. 780 meters
- ✗ B. 620 meters
- ✗ C. 740 meters
- ✓ D. 720 meters

**Q.21** If $x = \frac{\sqrt{5}+2}{\sqrt{5}-2}$ and $y = \frac{\sqrt{5}-2}{\sqrt{5}+2}$, then find the value of $x^2 + y$

**Ans**
- ✗ A. 302
- ✗ B. 311
- ✓ C. 322
- ✗ D. 312

**Q.22** Anisha borrowed ₹28,260 from her friend at 9% per annum, simple interest. She returned the amount after 9 months. How much interest did she pay?

**Ans**
- ✗ A. ₹ 1970.75
- ✓ B. ₹ 1907.55
- ✗ C. ₹ 1948.20
- ✗ D. ₹ 1933.25

**Q.23** Anusha starts a business with ₹55,000 and after 7 months, Minal joins Anusha as her partner. After a year, the profit is divided in the ratio 8 : 3. What is Minal's contribution in the capital?

**Ans**
- ✗ A. ₹50,755
- ✗ B. ₹49,410
- ✗ C. ₹48,745
- ✓ D. ₹49,500

Q.24 Simplify: $\left(\frac{5}{6}+\frac{1}{3}\right)\div\left(\frac{2}{5}+0.3\right)\times 0.5+\frac{5}{6}$

Ans
- ✔ A. $\frac{5}{3}$
- ✘ B. $\frac{1}{6}$
- ✘ C. $\frac{5}{6}$
- ✘ D. $\frac{1}{3}$

Q.25 Which of the following numbers DOES NOT have exactly four distinct positive divisors?

Ans
- ✘ A. $q^3$ for prime q
- ✔ B. $p^2$ for prime p
- ✘ C. $p \cdot q$ for distinct primes p and q
- ✘ D. $p^3$ for prime p

Section : **General Intelligence and Reasoning**

Q.26 The position(s) of how many letters will remain unchanged if each letter in the word COMBINED is arranged in the English alphabetical order?

Ans
- ✘ A. Two
- ✘ B. None
- ✔ C. One
- ✘ D. Three

Q.27 Mr. Kell ranked 84th from the top and 123rd from the bottom in his class. How many students are there in his class?

Ans
- ✘ A. 453
- ✔ B. 206
- ✘ C. 244
- ✘ D. 432

Q.28 What should come in place of ? in the given series based on the English alphabetical order?

LPF KOE JND IMC ?

Ans
- ✘ A. HKA
- ✘ B. HKB
- ✔ C. HLB
- ✘ D. HLA

Q.29 WIND is related to VHOE in a certain way based on the English alphabetical order. In the same way, FIRE is related to EHSF. To which of the given options is GOLD related, following the same logic?

Ans
- ✔ A. FNME
- ✘ B. EMNF
- ✘ C. FLNE
- ✘ D. FMNF

**Q.30** What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?

6 ÷ 2 + 24 x 6 - 4 = ?

**Ans**
- ✗ A. 10
- ✗ B. 16
- ✗ C. 14
- ✓ D. 12

**Q.31** What should come in place of '?' in the given series?

44 52 61 71 82 ?

**Ans**
- ✗ A. 92
- ✗ B. 98
- ✓ C. 94
- ✗ D. 96

**Q.32** In a certain code language,
A @ B means 'A is the brother of B',
A x B means 'A is the daughter of B',
A o B means 'A is the father of B', and
A ≥ B means 'A is the wife of B'.
Based on the above, how is Z related to N if 'Z x C ≥ L o M @ N'?

**Ans**
- ✗ A. Wife
- ✗ B. Sister
- ✗ C. Daughter
- ✓ D. Mother

**Q.33** Six friends B, C, L, M, N and O are sitting around a circular table facing the center of the table. L sits fourth to the right of O. Only one person sits between M and N when counted from the left of M. L sits third to the left of C. B is an immediate neighbor of C and N. How many people sit between L and B when counted from the left of B?

**Ans**
- ✓ A. Three
- ✗ B. Two
- ✗ C. One
- ✗ D. Four

**Q.34** In a certain code language, 'door closed now' is coded as 'vt xg uk' and 'school is closed' is coded as 'cw uk ne'. How is 'closed' coded in the given language? (All the codes are two letter codes only.)

**Ans**
- ✗ A. xg
- ✓ B. uk
- ✗ C. ne
- ✗ D. vt

**Q.35** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✗ A. AE - FB
- ✗ B. QK - VH
- ✗ C. GQ - LN
- ✓ D. WH - BD

**Q.36** Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

KSD : HPA
FXM : CUJ

**Ans**
- ✗ A. NBJ : JZH
- ✗ B. HRC : EOY
- ✗ C. ATU : XRS
- ✓ D. LIQ : IFN

**Q.37** Refer to the following letter series and answer the question that follows. Counting to be done from left to right.
(Left) D U A L J X E I H R S B W P K T C V M F Y (Right)
How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a vowel?

**Ans**
- ✗ A. Three
- ✗ B. One
- ✓ C. Two
- ✗ D. None

**Q.38** Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✗ A. MRX
- ✗ B. TYE
- ✗ C. PUA
- ✓ D. GKP

**Q.39** What should come in place of ? in the given series based on the English alphabetical order?

NPM LQJ JRG HSD ?

**Ans**
- ✗ A. HGT
- ✗ B. MNJ
- ✓ C. FTA
- ✗ D. NHY

**Q.40** Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(5, 12, 28)
(4, 11, 26)

**Ans**
- ✗ A. (8, 19, 42)
- ✗ B. (3, 10, 16)
- ✗ C. (7, 16, 36)
- ✓ D. (6, 13, 30)

**Q.41** In a certain code language, 'conflict of interest' is coded as 'gu ky bz' and 'end this conflict' is coded as 'ky tg cn'. How is 'conflict' coded in the given language? (All the codes are two-letter codes only.)

**Ans**
- ✗ A. tg
- ✗ B. bz
- ✓ C. ky
- ✗ D. cn

**Q.42** KL 36 is related to MN 41 in a certain way. In the same way, QR 91 is related to ST 96. To which of the following is EF 64 related, following the same logic?

**Ans**
- ✗ A. IJ 79
- ✗ B. GI 69
- ✗ C. HI 68
- ✓ D. GH 69

**Q.43** In a certain code language,
A + B means 'A is the son of B'
A – B means 'A is the brother of B'
A @ B means 'A is the daughter of B'
A # B means 'A is the father of B'
Based on the above, how is F related to O if 'F # L – R @ O'?

**Ans**
- ✓ A. Husband
- ✗ B. Son
- ✗ C. Father
- ✗ D. Brother

**Q.44** In a row of 50 people facing north, Cara is $19^{th}$ from the right end. If Gita sits $19^{th}$ to the left of Cara, what is Gita's position from the left end of the line?

**Ans**
- ✗ A. 15th
- ✗ B. 14th
- ✗ C. 16th
- ✓ D. 13th

**Q.45** Ritik is the brother of Kajal. Kajal is the wife of Abhishek. Abhishek is the father of Megha. Megha is the sister of Priti. How is Ritik related to Priti?

**Ans**
- ✗ A. Mother's father
- ✓ B. Mother's brother
- ✗ C. Father's father
- ✗ D. Father's brother

**Q.46** Refer to the following series and answer the question (All numbers are single-digit numbers only. Counting is to be done from left to right.)

(Left) 7 9 8 5 1 8 4 3 5 6 9 7 4 5 2 4 1 3 4 8 7 6 4 (Right)

How many such odd digits are there each of which is immediately preceded by an even digit and also immediately followed by an odd digit?

**Ans**
- ✗ A. Two
- ✗ B. Three
- ✗ C. One
- ✓ D. More than three

**Q.47** If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', what will come in place of the question mark (?) in the following equation?

1 B 3 D 10 A 5 C 2 = ?

**Ans**
- ✗ A. 2
- ✗ B. 4
- ✗ C. 1
- ✓ D. 3

**Q.48** Ankur starts from Point A and drives 11 km towards east. He then takes a right turn, drives 7 km, turns right and drives 14 km. He then takes a right turn and drives 12 km. He takes a final right turn, drives 3 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again?

(All turns are 90° turns only unless specified.)

**Ans**
- ✓ A. 5 km to the south
- ✗ B. 4 km to the north
- ✗ C. 4 km to the south
- ✗ D. 5 km to the north

**Q.49** A, B, C, P, S, T and U are sitting in a straight line facing the north. Only three people are seated to the left of S. Only A is seated to the right of B. Only three people are seated between B and C. P is seated at some place to the left of T, but at some place to the right of U. How many people are seated between U and T?

**Ans**
- ✗ A. One
- ✓ B. Three
- ✗ C. Four
- ✗ D. Two

**Q.50** Each letter in the word DANGEROUS is arranged in alphabetical order. How many letters are there in the English alphabetical order between the letter which is fourth from the left and the one which is fourth from the right in the new letter cluster thus formed?

**Ans**
- ✗ A. 9
- ✗ B. 8
- ✗ C. 6
- ✓ D. 7

## Section : General Science

**Q.51** The principal function of the plasma membrane is to:

**Ans**
- ✗ A. Serve as the site of ATP synthesis.
- ✗ B. Provide rigid support and prevent cell swelling.
- ✓ C. Regulate movement of substances across the cell.
- ✗ D. Store the cell's genetic material.

**Q.52** The extent of bending of light rays achieved by a lens is expressed in terms of its _____.

**Ans**
- ✗ A. Aperture
- ✗ B. Image Distance
- ✓ C. Power
- ✗ D. Magnification

**Q.53** When chemicals such as pesticides enter food chains and get more concentrated at higher levels, the process is known as ___.

**Ans**
- ✗ A. Eutrophication
- ✗ B. Biodegradation
- ✗ C. Photosynthesis
- ✓ D. Biological magnification

**Q.54** An electric oven has a power of 1200 W when it is operated at 100 V. How much will be the current flowing through the oven?

**Ans**
- ✓ A. 12 A
- ✗ B. 8 A
- ✗ C. 0.08 A
- ✗ D. 1.2 A

**Q.55** A sound source has a frequency of 50 Hz. How many vibrations does it complete in one minute?

**Ans**
- ✗ A. 50
- ✗ B. 5000
- ✗ C. 600
- ✓ D. 3000

**Q.56** Which of the following is NOT an application of the Archimede's Principle?

**Ans**
- ✗ A. Hydrometers
- ✗ B. Lactometers
- ✗ C. Designing of submarines
- ✓ D. Speedometers

**Q.57** Which of the following non-metals is a good conductor of electricity in the solid state due to the presence of delocalized electrons within its crystal lattice?

**Ans**
- ✗ A. Sulphur
- ✗ B. Iodine
- ✓ C. Graphite
- ✗ D. Phosphorus

**Q.58** What unique feature allows mitochondria to produce some of their own proteins?

**Ans**
- ✓ A. They contain their own DNA and ribosomes.
- ✗ B. They produce ATP.
- ✗ C. They have two membranes.
- ✗ D. Their outer membrane is porous.

**Q.59** The primary purpose of check-dams in irrigation is to _____.

**Ans**
- ✗ A. To lower the quality of the soil
- ✗ B. To channel river water for factory operations
- ✓ C. To increase groundwater by storing rainwater
- ✗ D. To worsen erosion of top soil

**Q.60** In chemical industries, bleaching powder acts mainly as:

**Ans**
- ✗ A. A neutralising agent
- ✗ B. A reducing agent
- ✓ C. An oxidising agent
- ✗ D. A catalyst

**Q.61** **1. A precipitation reaction occurs when two aqueous solutions react to form an insoluble solid.**
**2. The solid formed is called a precipitate.**
**3. All precipitation reactions involve acids and bases only.**

**Which of the above statements are correct?**

**Ans**
- ✗ A. 1, 2, and 3
- ✗ B. 1 and 3 only
- ✗ C. 2 and 3 only
- ✓ D. 1 and 2 only

**Q.62** **A cyclist riding at constant speed on a circular track is an example of which type of motion?**

**Ans**
- ✗ A. Linear motion
- ✗ B. Non-uniform motion
- ✗ C. Oscillatory motion
- ✓ D. Uniform circular motion

**Q.63** **Which of the following is/are NOT true about the distance-time graph for a body moving in uniform motion?**

**(i) The slope of the distance-time graph gives the acceleration of the body.**
**(ii) The lesser the slope of the graph the slower the body is moving.**
**(iii) The area under this graph gives the speed of the body.**

**Ans**
- ✗ A. Both (i) and (ii)
- ✓ B. Both (i) and (iii)
- ✗ C. Only (ii)
- ✗ D. Only (iii)

**Q.64** **Choose a term to complete analogy.**

**Axon : Single long process :: Dendrite : _____**

**Ans**
- ✓ A. Many short, branched parts
- ✗ B. Cell body with nucleus
- ✗ C. Protective connective tissue
- ✗ D. Rapid stimulus transmission

**Q.65** **SONAR technology uses ultrasound to _____.**

**Ans**
- ✓ A. Locate underwater objects
- ✗ B. Measure atmospheric pressure
- ✗ C. Produce high temperatures
- ✗ D. Measure electric current

**Q.66** **What distinguishes broilers from layers in poultry farming?**

**Ans**
- ✗ A. Layers are raised for meat; broilers for eggs
- ✗ B. Both are raised equally for meat and eggs
- ✓ C. Broilers are raised for meat; layers for eggs
- ✗ D. Only broilers lay eggs

**Q.67** **Which of the following is NOT a reason for carbon's versatility?**

**Ans**
- ✗ A. Tetravalency
- ✗ B. Ability to form single, double and triple bonds
- ✓ C. Formation of ionic bonds
- ✗ D. Catenation

**Q.68** A gardener buried five different substances in a garden: banana peels, newspaper, cotton cloth, plastic bottle and metal spoon. How many of the substances he buried were biodegradable?

**Ans**
- ✗ A. Four
- ✓ B. Three
- ✗ C. Two
- ✗ D. One

**Q.69** Newton's first law of motion explains the concept of _____.

**Ans**
- ✗ A. Change in momentum
- ✗ B. Continuous acceleration
- ✗ C. Net force being non-zero
- ✓ D. Balanced forces

**Q.70** Select a term to complete the given analogy.

Binary Fission : Bacteria :: Fragmentation : _____

**Ans**
- ✓ A. Algae
- ✗ B. Birds
- ✗ C. Mammals
- ✗ D. Insects

**Q.71** In the substitution reaction of methane ($CH_4$) with chlorine ($Cl_2$) under UV light, what is the first product formed?

**Ans**
- ✗ A. Carbon tetrachloride (CCl4)
- ✗ B. Dichloromethane (CH2Cl2)
- ✓ C. Methyl chloride (CH3Cl)
- ✗ D. Chloromethane (CH3Cl)

**Q.72** If mass is doubled and g remains constant, weight becomes _____.

**Ans**
- ✗ A. Four times
- ✗ B. Same
- ✗ C. Half
- ✓ D. Double

**Q.73** A car of mass 1000 kg moving with a velocity of 20 m/s comes to rest in 10 s after applying the brakes. What is the value of the force applied by the brakes?

**Ans**
- ✗ A. - 5000 N
- ✗ B. - 200 N
- ✓ C. - 2000 N
- ✗ D. - 500 N

**Q.74** A block of mass 20 kg is dropped from the top of a building of height 200 m. What will be the velocity with which the block will hit the ground? (Take the value of g = 10 $m/s^2$)

**Ans**
- ✓ A. 20√10 m/s
- ✗ B. 20√5 m/s
- ✗ C. 40 m/s
- ✗ D. 20 m/s

**Q.75** **Which of the following salts, when dissolved in water, will produce a neutral solution?**

**Ans**
✔ A. Sodium chloride (NaCl)
✘ B. Ammonium chloride ($NH_4Cl$)
✘ C. Sodium acetate ($CH_3COONa$)
✘ D. Potassium hydroxide (KOH)

**Q.76** **All of the following functions are performed by different components of a Xylem tissue, EXCEPT:**

**Ans**
✔ A. Transporting food from leaves
✘ B. Storing food
✘ C. Providing mechanical support
✘ D. Transporting water and minerals vertically

**Q.77** **When white light is incident obliquely on a glass prism, which of the following statement(s) is/are NOT true?**

**(i) Red colour undergoes minimum deviation.**
**(ii) The speed of violet colour is the least while travelling through the prism.**
**(iii) Refractive index of green colour is more than the violet colour.**
**(iv) Refractive index of red colour is more than blue colour.**

**Ans**
✘ A. Both (i) and (iv)
✘ B. Both (i) and (ii)
✔ C. Both (iii) and (iv)
✘ D. Both (ii) and (iii)

**Q.78** **Consider the following statements regarding the size of an atom.**

**Statement 1: The size of an atom is approximately in the range of 0.1 nm to 0.5 nm.**

**Statement 2: Atomic size increases as we move from left to right in a period of the periodic table.**

**Statement 3: The radius of a hydrogen atom is about $10^{-10}$ meters.**

**Which of the above statements is/are correct?**

**Ans**
✔ A. Only 1 and 3
✘ B. Only 1 and 2
✘ C. Only 1, 2 and 3
✘ D. Only 2 and 3

**Q.79** **Which of the following is represented by a circle with the letter 'V' in a circuit diagram?**

**Ans**
✔ A. Voltmeter
✘ B. Variable resistance
✘ C. Voltage regulator
✘ D. Vacuum diode

**Q.80** **Which of the following is true about Fleming's left-hand rule?**

**Ans**
✘ A. If the thumb points in the direction of current and the middle finger in the direction of magnetic field, the forefinger shows the direction of force.
✘ B. It is used only in electric circuits and not in devices like motors or loudspeakers.
✔ C. If the forefinger points in the direction of magnetic field and the middle finger in the direction of current, the thumb shows the direction of motion or force on the conductor.
✘ D. If the thumb points in the direction of force and the forefinger in the direction of current, the middle finger shows the direction of magnetic field.

**Q.81** **Which of the following statements correctly explains the working principle of dialysis in an artificial kidney?**

**Ans**
- ✔ A. Dialysis removes wastes from blood by diffusion across a semi-permeable membrane.
- ✘ B. Dialysis reabsorbs essential nutrients and salts like a normal kidney.
- ✘ C. Dialysis uses high pressure to force wastes out of the blood into the dialysing fluid.
- ✘ D. Dialysis removes nitrogenous wastes from blood through active transport.

**Q.82** **Which statement is true about mass number?**

**Ans**
- ✘ A. It is always twice the atomic number
- ✘ B. It is the total number of protons and electrons in an atom
- ✔ C. It is the sum of protons and neutrons in an atom
- ✘ D. It is equal to the number of electrons in an atom

**Q.83** **Which description correctly characterises parenchyma cells in the pith of a mature stem?**

**Ans**
- ✘ A. Thick-walled lignified cells for mechanical strength.
- ✘ B. Sclerenchyma fibers forming a protective cylinder.
- ✘ C. Tightly packed dead cells that aid in support and conduction.
- ✔ D. Large, loosely arranged living cells for storage.

**Q.84** **If the molecular mass of an alkane is 44, then its molecular formula is:**

**Ans**
- ✘ A. $C_4H_{10}$
- ✔ B. $C_3H_8$
- ✘ C. $C_2H_6$
- ✘ D. $CH_4$

**Q.85** **A student mixes sand, salt and water in a beaker and stirs well. After some time, what will be observed?**

**Ans**
- ✘ A. All components dissolve completely, forming a clear solution.
- ✔ B. Sand settles at the bottom, while salt dissolves in water.
- ✘ C. Sand and salt both remain undissolved, forming two distinct layers.
- ✘ D. Sand remains permanently suspended in water, making the mixture cloudy.

**Q.86** **Which of the following is NOT known to reproduce through fission?**

**Ans**
- ✘ A. Paramecium
- ✘ B. Leishmania
- ✔ C. Hydra
- ✘ D. Amoeba

**Q.87** **Four test tubes contain solutions of $CuSO_4$, $MgSO_4$, $ZnSO_4$, and $AgNO_3$. A student adds zinc metal to each test tube. In which test tube(s) will a reaction occur?**

**Ans**
- ✔ A. $CuSO_4$ and $AgNO_3$ only
- ✘ B. $CuSO_4$ only
- ✘ C. With all solutions
- ✘ D. $ZnSO_4$ only

**Q.88** **Which statement best describes the arrangement of electrons in Thomson's atomic model?**

**Ans**
- ✘ A. Electrons are located at the center of the atom
- ✔ B. Electrons are embedded in a positively charged sphere
- ✘ C. Electrons are found only on the surface of the atom
- ✘ D. Electrons revolve around the nucleus

**Q.89** **In a homogeneous mixture, the size of particles of solute is typically:**

**Ans**
- ✗ A. Between 1 nm and 1000 nm
- ✗ B. Visible to the naked eye
- ✗ C. Larger than 1 μm
- ✓ D. Less than 1 nm

**Q.90** **Where in the body would you expect to find a single layer of extremely thin, flat epithelial cells designed for the transport of substances (gases) across a delicate lining?**

**Ans**
- ✓ A. Lining of lung alveoli, for gas exchange
- ✗ B. Skin, to prevent wear and tear
- ✗ C. Inner lining of the intestine, for absorption
- ✗ D. Lining of kidney tubules, for mechanical support

Section : **General Awareness**

**Q.91** **Which of the following dimensions is NOT directly included in the Human Development Index (HDI)?**

**Ans**
- ✓ A. Human security
- ✗ B. A long and healthy life
- ✗ C. A decent standard of living
- ✗ D. Being knowledgeable

**Q.92** **Which country has requested WTO dispute consultations with India regarding certain Indian measures in the automotive and renewable energy sectors?**

**Ans**
- ✗ A. Brazil
- ✗ B. America
- ✓ C. China
- ✗ D. England

**Q.93** **Words 'Integrity', 'Socialist' and 'Secular' were added to the Preamble of the Constitution of India by which of the following amendments?**

**Ans**
- ✗ A. 52nd Amendment, 1985
- ✓ B. 42nd Amendment, 1976
- ✗ C. 24th Amendment, 1971
- ✗ D. 44th Amendment, 1978

**Q.94** **What is the primary objective of the 'Aapki Punji Aapka Adhikar' campaign, launched in 2025?**

**Ans**
- ✓ A. Facilitating speedy settlement and rightful return of unclaimed financial assets to legitimate claimants
- ✗ B. Digitizing all personal banking accounts under the Jan Dhan and UPI framework for transparency
- ✗ C. Expanding micro-credit access for small businesses and self-help groups across rural districts
- ✗ D. Encouraging citizens to invest in long-term pension and insurance instruments for wealth creation

**Q.95** **Which among the following slogans was popularised by Bal Gangadhar Tilak?**

**Ans**
- ✗ A. Liberty is our dream and we must attain it
- ✗ B. Freedom is our goal and we shall achieve it
- ✓ C. Swaraj is my birthright and I shall have it
- ✗ D. Give me blood and I will give you freedom

**Q.96** Reserve Bank of India (RBI) has raised India's GDP growth forecast for FY26 to .

**Ans**
- ✗ A. 6.7%
- ✗ B. 6.8%
- ✗ C. 6.9%
- ✓ D. 7.3%

**Q.97** Vice-President CP Radhakrishnan inaugurated the 30th CII Partnership Summit in which city?

**Ans**
- ✓ A. Visakhapatnam
- ✗ B. New Delhi
- ✗ C. Patna
- ✗ D. Ahmedabad

**Q.98** Which of the following British Indian government legislation separated for the first time 'provincial budgets' from the 'central budget' and authorised the provincial legislatures to enact their budgets?

**Ans**
- ✓ A. Government of India Act of 1919
- ✗ B. Indian Councils Act of 1909
- ✗ C. Indian Councils Act of 1892
- ✗ D. Government of India Act of 1935

**Q.99** Which instrument is described as a hand drum used by tribal communities in the hilly areas of Tripura and Meghalaya?

**Ans**
- ✗ A. Dhak
- ✗ B. Davandi
- ✓ C. Dama
- ✗ D. Chyabrung

**Q.100** The Chota Nagpur Plateau of eastern India is especially known for the abundance of which of the following mineral resources that support the country's industry?

**Ans**
- ✓ A. Coal and iron ore deposits
- ✗ B. Diamond-bearing kimberlite rocks
- ✗ C. Petroleum and natural gas reserves
- ✗ D. Limestone used primarily for cement manufacture

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | iON Digital Zone iDZ Phulwarisharif |
| Test Date | 06/03/2026 |
| Test Time | 4:30 PM - 6:00 PM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** **The number of tourists visiting a fort rose by 30% in summer and then dropped by 35% in monsoon. What is the overall percentage change?**

**Ans**
✗ A. 15.5% increase
✗ B. 12.5% increase
✓ C. 15.5% decrease
✗ D. 12.5% decrease

**Q.2** **The average of three numbers is 20. If two numbers are 11 and 21, respectively, then the third number is:**

**Ans**
✗ A. 29
✗ B. 30
✗ C. 27
✓ D. 28

**Q.3** **Find the number of pairs of coprime numbers between 11 and 19 (both inclusive).**

**Ans**
✗ A. 30
✗ B. 26
✗ C. 29
✓ D. 28

**Q.4** **Five years ago from now, the sum of the ages of John and his sister Jane was 25 years. If John is now twice as old as he was ten years ago, find the difference between their present ages (in years).**

**Ans**
✗ A. 8
✗ B. 6
✓ C. 5
✗ D. 7

**Q.5** The prices of articles of type P, Q and R are ₹280, ₹180 and ₹105, respectively. Govind buys articles of the three types in the ratio 3 : 4 : 7 for a total of ₹6,885. How many articles of type Q did he purchase?

Ans
- ✗ A. 20
- ✗ B. 9
- ✓ C. 12
- ✗ D. 18

**Q.6** Smita borrowed ₹14,750 from her friend at a simple interest rate of 8% per annum. She repaid the amount after 6 months. How much did she pay in total?

Ans
- ✓ A. ₹ 15340
- ✗ B. ₹ 15375
- ✗ C. ₹ 15355
- ✗ D. ₹ 15390

**Q.7** Varun buys mangoes at the rate of 3 kg for ₹15 and sells them at 5 kg for ₹50. To earn ₹125 as profit, what quantity of mangoes (in kg) must he sell?

Ans
- ✓ A. 25
- ✗ B. 28
- ✗ C. 26
- ✗ D. 27

**Q.8** A dealer buys two articles X and Y for ₹2,000 each. He marks each of them at the same price. He sells X by giving two successive discounts of 28% and 90% and still earns ₹322 as profit. If he sells Y at a single discount of 88%, then what is the profit percentage on Y?

Ans
- ✗ A. 92.5%
- ✗ B. 93%
- ✓ C. 93.5%
- ✗ D. 92%

**Q.9** If the mean of a distribution is 78 and the median is 61, then the value of mode is:

Ans
- ✗ A. 45
- ✗ B. 50
- ✗ C. 31.5
- ✓ D. 27

**Q.10** If a regular polygon has an interior angle of 156°, then find the sum of its 7 exterior angles.

Ans
- ✗ A. 172°
- ✓ B. 168°
- ✗ C. 165°
- ✗ D. 156°

**Q.11** What sum of money (in ₹) will yield ₹700 as simple interest in 2 years at 10% per annum?

Ans
- ✗ A. 3000
- ✗ B. 3900
- ✓ C. 3500
- ✗ D. 3700

Q.12 If $\frac{(\sin^2\theta - 3\sin\theta + 2)}{\cos^2\theta} = 1$, where $0° < \theta < 90°$, then the value of $\left(\cot$

Ans
- ✔ A. 2
- ✘ B. 1
- ✘ C. 0
- ✘ D. -1

Q.13 A can do a certain work at the same time in which B and C together can do it. If A and B together could do it in 6 days and C alone in 42 days, then B alone could do it in _____ days.

Ans
- ✔ A. 14
- ✘ B. 56
- ✘ C. 42
- ✘ D. 28

Q.14 Simplify:

$[\{(96 \div (4 \times 4)) + (36 \div (9 \times 3))\} + \{(14 \times 2 \div 4) + (18 \div (3 \times 3))\}]$

Ans
- ✘ A. $\frac{39}{3}$
- ✘ B. $\frac{59}{3}$
- ✘ C. $\frac{69}{3}$
- ✔ D. $\frac{49}{3}$

Q.15 If a : b = c : x, then find x when a = 12, b = 18, and c = 27.

Ans
- ✘ A. 42.5
- ✘ B. 43.5
- ✔ C. 40.5
- ✘ D. 45.5

Q.16 In an election with four candidates, 60% of all registered voters voted. Candidate X got 40% of the cast votes. The rest were split equally among the other three candidates. If Candidate X received 480 more votes than each of the others, how many registered voters were there?

Ans
- ✘ A. 5600
- ✘ B. 6200
- ✘ C. 4800
- ✔ D. 4000

Q.17 Simplify: $\frac{2^{n+3} - 2 \times 2^n}{2 \times 2^{n+2}}$

Ans
- ✘ A. $\frac{2}{3}$
- ✔ B. $\frac{3}{4}$
- ✘ C. $\frac{3}{8}$
- ✘ D. $\frac{3}{2}$

**Q.18** The volume of a cylinder having diameter 20 cm and height 42 cm is:
$\left(\text{Take } \pi = \frac{22}{7}\right)$

**Ans**
- ✗ A. 13196 cm3
- ✗ B. 13202 cm3
- ✗ C. 13210 cm3
- ✓ D. 13200 cm3

**Q.19** When one-third of a number is increased by 55, the result is 77. Find the sum of the digits of the original number.

**Ans**
- ✗ A. 13
- ✓ B. 12
- ✗ C. 15
- ✗ D. 10

**Q.20** A can complete the work in 16 days and B can complete it in 24 days. They work together for 5 days, then A leaves. How many more days will B take to complete the remaining work?

**Ans**
- ✗ A. 12.5 days
- ✗ B. 10.5 days
- ✓ C. 11.5 days
- ✗ D. 13.5 days

**Q.21** A garden walkway is to be paved with 2,500 rhombus-shaped stone slabs, each having diagonals of 50 cm and 35 cm. What is the total cost of polishing the walkway if the rate is ₹5 per square meter. Also, if an additional 6.25 $m^2$ of area is added so that the walkway becomes a square-shaped courtyard, what will be the side of this square courtyard?

**Ans**
- ✗ A. ₹1319.45, 19 meters
- ✗ B. ₹1222.15, 17 meters
- ✓ C. ₹1093.75, 15 meters
- ✗ D. ₹1109.25, 16 meters

**Q.22** A train 240 meters long crosses a bridge 420 meters long in 22 seconds. What is the speed of the train in km/h?

**Ans**
- ✓ A. 108 km/h
- ✗ B. 112 km/h
- ✗ C. 116 km/h
- ✗ D. 104 km/h

**Q.23** Simplify $(2pq + 11q)^2 - (2pq - 11q)^2$.

**Ans**
- ✓ A. 88pq2
- ✗ B. 88p2q
- ✗ C. 44p2q2
- ✗ D. 44pq2

**Q.24** Find the highest common factor (HCF) of the two numbers 64 and 148.

**Ans**
- ✓ A. 4
- ✗ B. 2
- ✗ C. 6
- ✗ D. 3

Q.25 Simplify:

$$\frac{1}{2}\text{of}\left(\frac{1}{2}\div\frac{1}{2}\text{ of }\frac{1}{2}+\frac{1}{2}\right)-\frac{1}{2}$$

Ans
- ✗ A. 0.25
- ✓ B. 0.75
- ✗ C. 1
- ✗ D. 0.5

Section : **General Intelligence and Reasoning**

Q.26 **In a certain code language,**
**A @ B means 'A is the brother of B',**
**A x B means 'A is the daughter of B',**
**A o B means 'A is the father of B', and**
**A ≥ B means 'A is the wife of B'.**
**Based on the above, how is Z related to N if 'Z o C ≥ L @ M x N'?**

Ans
- ✗ A. Mother's father
- ✓ B. Son's wife's father
- ✗ C. Wife's brother
- ✗ D. Father's mother

Q.27 **The position(s) of how many letters will remain unchanged if each letter in the word ALTERING is arranged in the English alphabetical order?**

Ans
- ✗ A. None
- ✗ B. Three
- ✗ C. Two
- ✓ D. One

Q.28 **Refer to the following letter series and answer the question that follows. Counting to be done from left to right.**

**(Left) B E X Q K P X I O R G J M Y H M S M O T T (Right)**

**How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a consonant?**

Ans
- ✗ A. Three
- ✓ B. Two
- ✗ C. None
- ✗ D. One

Q.29 **Aw, Bt, Ck, Dv, Er, Fn and Gy are sitting around a circular table facing the centre. Bt sits second to the right of Aw. Ck sits third to the left of Aw. Er sits to the immediate right of Gy. Dv sits second to the right of Er. What is the position of Fe with respect to Er?**

Ans
- ✓ A. Third to the left
- ✗ B. Immediate right
- ✗ C. Second to the left
- ✗ D. Third to the right

**Q.30** Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

WRT : VPQ
GUA : FSX

**Ans**
- ✗ A. FOY : EMW
- ✗ B. SBL : RZM
- ✓ C. NXR : MVO
- ✗ D. OVQ : LTO

**Q.31** Each vowel in the word WAMBLES is changed to the letter immediately following it in the English alphabetical order and each consonant is changed to the letter immediately preceding it in the English alphabetical order. How many letters will appear exactly twice in the new group of letters thus formed?

**Ans**
- ✗ A. One
- ✗ B. Three
- ✗ C. Two
- ✓ D. Zero

**Q.32** What should come in place of ? in the given series based on the English alphabetical order?

ZJF OYU DNJ SCY ?

**Ans**
- ✗ A. HUY
- ✓ B. HRN
- ✗ C. HTY
- ✗ D. HRT

**Q.33** In a certain code language, 'lamp of wisdom' is coded as 'nh rz vk' and 'light the lamp' is coded as 'rz bw mt'. How is 'lamp' coded in the given language? (All the codes are two-letter codes only.)

**Ans**
- ✗ A. bw
- ✓ B. rz
- ✗ C. mt
- ✗ D. nh

**Q.34** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group? **(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
- ✗ A. SJ – WN
- ✓ B. VL – YO
- ✗ C. PG – TK
- ✗ D. MD – QH

**Q.35** **In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the set in which the numbers are related in the same way as are the numbers of the following sets.**

**(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)**

**29, 59**
**35, 71**

**Ans**
✗ A. 53, 105
✓ B. 41, 83
✗ C. 56, 112
✗ D. 46, 91

**Q.36** **In a certain code language, 'take my share' is coded as 'tn dp bk' and 'share or perish' is coded as 'ps tn hv'. How is 'share' coded in the given language? (All the codes are two-letter codes only.)**

**Ans**
✗ A. hv
✗ B. bk
✓ C. tn
✗ D. dp

**Q.37** **Suraj is the brother of Ganesh. Ganesh is the father of Harshita. Harshita is the sister of Vidhi. Vidhi is the wife of Bheem. How is Suraj related to Bheem?**

**Ans**
✗ A. Wife's father's father
✗ B. Wife's mother's brother
✗ C. Wife's mother's father
✓ D. Wife's father's brother

**Q.38** **What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?**

**7 ÷ 2 + 64 x 8 - 8 = ?**

**Ans**
✗ A. 18
✗ B. 16
✗ C. 12
✓ D. 14

**Q.39** **Select the set in which the numbers are related in the same way as are the numbers of the following sets.**

**(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)**

**(5, 16, 3)**
**(6, 18, 3)**

**Ans**
✗ A. (7, 28, 4)
✓ B. (8, 40, 12)
✗ C. (6, 19, 4)
✗ D. (4, 13, 2)

**Q.40** **In a certain code language,**

**A ~ B means 'A is the father of B',**
**A ¥ B means 'A is the daughter of B',**
**A £ B means 'A is the son of B', and**
**A ≤ B means 'A is the sister of B'.**

**Based on the above, how is W related to T if 'W ¥ X ~ Y ≤ Z £ T'?**

**Ans**
- ✔ A. Daughter
- ✘ B. Sister
- ✘ C. Wife
- ✘ D. Mother

**Q.41** **Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.**

**BYR : ZWP**
**HEZ : FCX**

**Ans**
- ✘ A. ZBG : XYD
- ✔ B. SIV : QGT
- ✘ C. GWK : DVH
- ✘ D. MAU : LZU

**Q.42** **Mr. O starts from Point L and drives 7 km towards the south. He then takes a left turn, drives 2 km, turns right and drives 4 km. He then takes a left turn and drives 6 km. He then takes a left turn and drives 13 km. He takes a final left turn, drives 8 km and stops at Point M. How far (shortest distance) and towards which direction should he drive in order to reach Point L again? (All turns are 90 degrees turns only unless specified.)**

**Ans**
- ✔ A. 2 km towards South
- ✘ B. 4 km towards South
- ✘ C. 7 km towards East
- ✘ D. 7 km towards West

**Q.43** **CK 34 is related to BL 68 in a certain way. In the same way, HP 42 is related to GQ 84. To which of the following is NV 23 related, following the same logic?**

**Ans**
- ✘ A. OW 46
- ✘ B. OU 44
- ✘ C. MW 48
- ✔ D. MW 46

**Q.44** **Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. Exactly five boxes are kept between E and B. D is kept fifth from the bottom. F is kept immediately below A but above E. C is not kept below A. G is kept below B but above D. How many boxes are kept between C and G?**

**Ans**
- ✔ A. One
- ✘ B. Four
- ✘ C. Three
- ✘ D. Two

**Q.45** Six friends B, C, L, M, N and O are sitting around a circular table facing the center of the table. Only three people sit between B and M when counted from the right of B. B sits second to the left of O. L sits second to the left of C. N is an immediate neighbor of both M and O. How many people sit between B and N when counted from the right of B?

**Ans**
- ✔ A. Two
- ✘ B. Three
- ✘ C. One
- ✘ D. Four

**Q.46** Mr. Kell ranked 155th from the bottom and 37th from the top in his class. How many students are there in his class?

**Ans**
- ✘ A. 197
- ✔ B. 191
- ✘ C. 198
- ✘ D. 199

**Q.47** Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✘ A. QVT
- ✘ B. PUS
- ✔ C. UHG
- ✘ D. EJH

**Q.48** What should come in place of ? in the given series based on the English alphabetical order?

MFY UNG CVO KDW ?

**Ans**
- ✘ A. SEL
- ✘ B. SLP
- ✘ C. SLO
- ✔ D. SLE

**Q.49** Refer to the following letter series and answer the question that follows.
(Left) L F Q T G P S C I O E R Y B M J X D K N H (Right)
How many letters are there in the English alphabetical series between the letter that is fifth from the left end and third from the right end of the series?

**Ans**
- ✘ A. Two
- ✔ B. Three
- ✘ C. Four
- ✘ D. One

**Q.50** If 'P' stands for '×', 'Q' stands for '÷', 'R' stands for '–' and 'S' stands for '+', then what will come in place of the question mark (?) in the following equation?

71 S 45 P 5 R 15 Q 5 P 6 S 13 R 74 S 69 = ?

**Ans**
- ✘ A. 311
- ✔ B. 286
- ✘ C. 292
- ✘ D. 246

Section : **General Science**

**Q.51** **Which muscular tissue in animals is responsible for voluntary movements and is attached to bones?**

**Ans**
- ✗ A. Tendon
- ✗ B. Cardiac muscle
- ✓ C. Striated (skeletal) muscle
- ✗ D. Unstriated (smooth) muscle

**Q.52** **An unbalanced force of 100 N acts on a body at rest such that it acquires a velocity of 5 m/s in 10 s. How much is the mass of the body?**

**Ans**
- ✗ A. 2 kg
- ✗ B. 50 kg
- ✗ C. 5 kg
- ✓ D. 200 kg

**Q.53** **The gravitational potential energy of an object at a height is the work done to lift it from the ground to that height _____.**

**Ans**
- ✗ A. Along a curved path
- ✓ B. Against gravity
- ✗ C. With constant velocity
- ✗ D. In the direction of gravity

**Q.54** **Along with phosphorus and potassium, fertilisers mainly supply which of the following to crops?**

**Ans**
- ✗ A. Calcium only
- ✗ B. Magnesium only
- ✓ C. Nitrogen
- ✗ D. Zinc only

**Q.55** **Multiple reflection of sound can be used to _____.**

**Ans**
- ✗ A. Increase the frequency of sound
- ✓ B. Hear sounds clearly over long distances
- ✗ C. Reduce loudness
- ✗ D. Change the pitch of sound

**Q.56** **Which of the following best explains why humans have the highest concentration of harmful chemicals in their bodies?**

**Ans**
- ✗ A. They eat large quantities of contaminated animal products
- ✗ B. They consume more pesticides directly than other organisms
- ✗ C. They are exposed to chemicals through air and water
- ✓ D. They occupy the top trophic level in food chains

**Q.57** **An object is launched straight upward and reaches a maximum height of 1000 cm. What was the initial velocity of the object? (Take g = 9.8 $m/s^2$)**

**Ans**
- ✗ A. 6 m/s
- ✗ B. 2 m/s
- ✗ C. 10 m/s
- ✓ D. 14 m/s

**Q.58** **Select the correct option regarding the given statements.**

**Statement 1: Metals and non-metals react by sharing electrons.**
**Statement 2: The bond formed between them is covalent.**

**Ans**
✗ A. Statement 1 is false; Statement 2 is true.
✓ B. Both statements are false.
✗ C. Both statements are true.
✗ D. Statement 1 is true; Statement 2 is false.

**Q.59** **The effect of thrust on a surface depends on the area on which it acts. Force acting on a smaller area exerts a _____ compared to a larger area.**

**Ans**
✗ A. Zero pressure
✗ B. Smaller pressure
✗ C. Smaller thrust
✓ D. Larger pressure

**Q.60** **A charged particle moves perpendicular to the axis of a circular current loop. The force on the particle is _____.**

**Ans**
✗ A. Always zero
✓ B. Depends on position and velocity
✗ C. Maximum at center
✗ D. Constant everywhere

**Q.61** **Which function is mainly performed by complex permanent tissues in plants?**

**Ans**
✓ A. Transport of water and food
✗ B. Storage of food
✗ C. Photosynthesis
✗ D. Protection of plant body

**Q.62** **Which statement is INCORRECT about isobars?**

**Ans**
✗ A. They have different chemical properties.
✓ B. They have the same number of protons.
✗ C. Their number of neutrons is different.
✗ D. They have the same mass number.

**Q.63** **Which of the following is NOT a correct use or property of sodium hydrogen carbonate, $NaHCO_3$?**

**Ans**
✗ A. It is used in fire extinguishers.
✗ B. It is used in antacids.
✗ C. It is used in baking as a leavening agent.
✓ D. It is used as a strong acid.

**Q.64** **If an object is placed between $F_1$ and $2F_1$ of a convex lens, the image produced is _____. ($F_1$ is the position of the principal focus.)**

**Ans**
✓ A. Enlarged, real, inverted
✗ B. Diminished, real, inverted
✗ C. Enlarged, virtual, erect
✗ D. Same size, real, inverted

**Q.65** **Which of the following statements is FALSE about mass number?**

**Ans**
- ✔ A. It is equal to twice the atomic number for all elements.
- ✘ B. It is always a whole number.
- ✘ C. It represents total nucleons in the atom.
- ✘ D. It may differ for isotopes of the same element.

**Q.66** **Which organelle is known as the 'powerhouse of the cell' because it performs aerobic respiration?**

**Ans**
- ✘ A. Ribosome
- ✘ B. Nucleus
- ✔ C. Mitochondria
- ✘ D. Lysosome

**Q.67** **Read the given statements carefully and select the correct option.**

**Statement I:** The phenomenon of change of liquid into vapours at any temperature below its boiling point is called evaporation.
**Statement II:** The rate of evaporation increases with an increase of surface area.

**Ans**
- ✘ A. Statement I is false but statement II is true.
- ✔ B. Both statements I and II are true.
- ✘ C. Statement I is true but statement II is false.
- ✘ D. Both statements I and II are false.

**Q.68** **When observing onion peel and cheek cells under a microscope, which part appears lightly stained and contains many organelles?**

**Ans**
- ✘ A. Nucleus
- ✔ B. Cytoplasm
- ✘ C. Cell wall only
- ✘ D. Cell membrane only

**Q.69** **An object is placed at infinity in front of a concave lens. The image formed will be _____ .**

**Ans**
- ✔ A. Virtual, erect, and highly diminished at the focus
- ✘ B. Real, inverted, and at infinity
- ✘ C. Virtual, erect, and enlarged
- ✘ D. Real, erect, and at the principal focus

**Q.70** **When we observe a star near the horizon, it appears to be slightly higher in the sky than it really is. What is the reason for this?**

**Ans**
- ✘ A. The star becomes brighter, making it seem higher.
- ✘ B. The star moves rapidly and changes its position.
- ✘ C. The Earth's rotation shifts the star upward.
- ✔ D. The atmosphere bends the starlight due to gradual changes in refractive index.

**Q.71** **Which method involves coating iron with a layer of zinc to protect it from rusting?**

**Ans**
- ✘ A. Electroplating
- ✘ B. Painting
- ✘ C. Tinning
- ✔ D. Galvanisation

**Q.72** **Unbalanced forces acting on an object always cause _____.**

**Ans**
- ✗ A. Object to remain at rest
- ✓ B. Change in motion
- ✗ C. Increase in mass
- ✗ D. No change in motion

**Q.73** **Select the correct option regarding the given statements.**

**Statement 1: The compound $CH_3–CH_2–CHO$ is propanone.**
**Statement 2: Aldehydes are named using the suffix '–al'.**

**Ans**
- ✗ A. Statement 1 is true but Statement 2 is false.
- ✓ B. Statement 1 is false but Statement 2 is true.
- ✗ C. Both statements are true and Statement 2 is the correct explanation of Statement 1.
- ✗ D. Both statements are true but Statement 2 is not the correct explanation of Statement 1.

**Q.74** **Why is weed management important in crop production?**

**Ans**
- ✗ A. Weeds supply nutrients to crops.
- ✗ B. Weeds increase crop yield.
- ✓ C. Weeds compete with crops for resources.
- ✗ D. Weeds have no impact on crops.

**Q.75** **Which characteristic defines non-uniform motion?**

**Ans**
- ✗ A. Zero acceleration
- ✓ B. Covering unequal distances in equal intervals of time
- ✗ C. Equal displacement in equal time intervals
- ✗ D. Constant speed

**Q.76** **During the formation of coal from plant material, a sequence of chemical and physical changes occurs under high pressure and temperature over millions of years. Which of the following correctly represents the progressive increase in carbon content during the formation of coal?**

**Ans**
- ✗ A. Lignite → Peat → Anthracite → Bituminous
- ✗ B. Peat → Bituminous → Lignite → Anthracite
- ✗ C. Peat → Anthracite → Bituminous → Lignite
- ✓ D. Peat → Lignite → Bituminous → Anthracite

**Q.77** **Which of the following is NOT a combination reaction?**

**Ans**
- ✗ A. $2Cu + O_2 \xrightarrow{\text{Heat}} 2CuO$
- ✓ B. $CuO + H_2 \xrightarrow{\text{Heat}} Cu + H_2O$
- ✗ C. $NH_3 + HCl \rightarrow NH_4Cl$
- ✗ D. $CaO + H_2O \rightarrow Ca(OH)_2$

**Q.78** **Choose a term to complete the analogy.**

**Skeletal Muscle : Voluntary :: Cardiac Muscle : _____**

**Ans**
- ✗ A. Multinucleate
- ✓ B. Involuntary
- ✗ C. Striated
- ✗ D. Unbranched

**Q.79** **The atomic number of oxygen is 8. What does this mean?**

**Ans**
- ✗ A. Oxygen has 8 atoms in each molecule
- ✗ B. Oxygen has 8 protons in its orbit
- ✗ C. Oxygen has 8 neutrons in its nucleus
- ✓ D. Oxygen has 8 protons and 8 electrons

**Q.80** **What is the formula unit mass of sodium carbonate ($Na_2CO_3$)? (Atomic masses: Na = 23 u, C = 12 u, O = 16 u)**

**Ans**
- ✓ A. 106 u
- ✗ B. 62 u
- ✗ C. 84 u
- ✗ D. 98 u

**Q.81** **Which of the following explains why most food chains do not exceed four trophic levels?**

**Ans**
- ✗ A. Producers are rare in ecosystems
- ✗ B. Predators eat only herbivores
- ✓ C. Only 10% of energy passes to the next level
- ✗ D. Decomposers consume all organisms at higher levels

**Q.82** **Choose a term to complete the analogy.**

**Xylem Parenchyma : Food Storage :: Xylem Fibres : _____**

**Ans**
- ✗ A. Transporting minerals
- ✗ B. Transporting water vertically
- ✗ C. Being tubular structures
- ✓ D. Supportive function

**Q.83** **Which of the following correctly represents the changes that occur in the floral parts after fertilisation?**

**Ans**
- ✓ A. The ovary develops into a fruit while the ovule becomes a seed
- ✗ B. All floral parts persist and develop into fruits
- ✗ C. The ovule develops into a fruit and the ovary becomes a seed
- ✗ D. The stigma and ovary both develop into fruits

**Q.84** **Why do cells in a multicellular organism exhibit a wide range of shapes and sizes?**

**Ans**
- ✗ A. Cell shape is random and unrelated to function.
- ✗ B. Each cell type contains a different genome in the same organism.
- ✓ C. Their structure is adapted to perform specific functions.
- ✗ D. Variation in cell shape and size occurs without any functional significance.

**Q.85** **Why is tungsten used almost exclusively for making filaments of electric bulbs?**

**Ans**
- ✗ A. It does not allow heat to pass.
- ✓ B. It has a very high melting point.
- ✗ C. It has low electrical resistance.
- ✗ D. It readily oxidizes at high temperatures.

**Q.86** **Which of the following components is absent in lymph but present in blood?**

**Ans**
- ✗ A. Plasma
- ✗ B. White blood cells (WBCs)
- ✓ C. Platelets
- ✗ D. Water

**Q.87** **Two lens of power (+ 4 D) and (- 6 D) are placed in contact with each other. What will be their combined focal length in cm?**

**Ans**
✗ A. + 0.1 cm
✗ B. - 10 cm
✗ C. + 0.5 cm
✓ D. - 50 cm

**Q.88** **At high altitudes such as hill stations, water boils at a temperature lower than 100°C, whereas in a pressure cooker it boils above 100°C. Which of the following statements correctly explains this phenomenon?**

**Ans**
✗ A. Boiling point of a liquid is independent of external pressure and depends only on temperature.
✗ B. Water molecules at high altitude have lower kinetic energy than at sea level, so they boil at a lower temperature.
✓ C. Boiling point of a liquid increases with an increase in atmospheric pressure and decreases with a decrease in atmospheric pressure.
✗ D. Boiling point of a liquid decreases with an increase in atmospheric pressure and increases with a decrease in atmospheric pressure.

**Q.89** **The kinetic energy of an object of mass m moving with a velocity of 5 m/s is 25 J. If its velocity is doubled to 10 m/s, what will be its kinetic energy?**

**Ans**
✗ A. 125 J
✓ B. 100 J
✗ C. 50 J
✗ D. 200 J

**Q.90** **When a small piece of sodium metal is added to chlorine gas under controlled conditions, a vigorous reaction occurs producing sodium chloride. Which of the following statements best explains the reason for the stability of the product formed?**

**Ans**
✗ A. Sodium and chlorine share one electron each, forming a stable covalent bond.
✗ B. Both sodium and chlorine attain stability by forming a metallic lattice with delocalized electrons.
✗ C. Sodium gains one electron from chlorine, forming a neutral molecule through mutual sharing.
✓ D. Sodium donates one electron to chlorine, forming oppositely charged ions held by strong electrostatic forces.

Section : **General Awareness**

**Q.91** **The Rural Infrastructure Development Fund (RIDF) was established in India in which of the following years?**

**Ans**
✓ A. 1995–96
✗ B. 1993–94
✗ C. 2002–03
✗ D. 2000–01

**Q.92** **Who among the following is NOT part of the Trinity of Carnatic Music?**

**Ans**
✗ A. Muthuswami Dikshitar
✗ B. Shyama Shastri
✗ C. Tyagaraja
✓ D. Swathi Thirunal

**Q.93** **Which of the following is the highest peak of the Western Ghats mountain range?**

**Ans**
✗ A. Doddabetta, Nilgiri Hills
✗ B. Mullayanagiri, Baba Budan Hills
✗ C. Mahabaleshwar, Sahyadri plateau region
✓ D. Anaimudi, Anamalai Hills

**Q.94** **In which of the following years was the 'Indus Water Treaty' signed between India and Pakistan?**

**Ans**
- ✗ A. 1963
- ✗ B. 1955
- ✗ C. 1947
- ✓ D. 1960

**Q.95** **Which of the following companies has secured a significant contract to indigenously produce the BvS10 Sindhu, an advanced all-terrain armoured vehicle, for the Indian Army?**

**Ans**
- ✓ A. Larsen & Toubro (L&T)
- ✗ B. Bharat Electronics Ltd. (BEL)
- ✗ C. Mahindra Defence Systems
- ✗ D. Hindustan Aeronautics Ltd. (HAL)

**Q.96** **Indigenous GSAT-7R weighs 4400 kg, making it the heaviest communication satellite launched from which country?**

**Ans**
- ✗ A. Japan
- ✓ B. India
- ✗ C. France
- ✗ D. United State of America

**Q.97** **Which of the following amendments to the Indian Constitution is regarded as a major milestone in the country's taxation system for introducing the Goods and Services Tax (GST)?**

**Ans**
- ✗ A. 100th Amendment, 2015
- ✓ B. 101st Amendment, 2016
- ✗ C. 97th Amendment, 2011
- ✗ D. 86th Amendment, 2002

**Q.98** **India celebrated Engineers Day on 15 Sep 2025 with the theme "Deep Tech & Engineering Excellence" in memory of whom?**

**Ans**
- ✗ A. Jagadish Chandra Bose
- ✗ B. A.P.J. Abdul Kalam
- ✗ C. Srinivasa Ramanujan
- ✓ D. Sir M. Visvesvaraya

**Q.99** **Which Indian won a bronze medal in the women's individual compound event at the Archery World Cup Final 2025 in Nanjing?**

**Ans**
- ✗ A. Ankita Bhakat
- ✗ B. Bhajan Kaur
- ✗ C. Deepika Kumari
- ✓ D. Jyothi Surekha Vennam

**Q.100** **In India, which of the following is NOT considered as a constitutional body?**

**Ans**
- ✗ A. Union Public Service Commission
- ✗ B. Finance Commission of India
- ✓ C. National Human Rights Commission
- ✗ D. Election Commission of India

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | iON Digital Zone iDZ 2 Duhai |
| Test Date | 09/03/2026 |
| Test Time | 9:00 AM - 10:30 AM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** **The capacity of a cylindrical tank is 55440 $cm^3$. If its base radius is 14 cm, then find the total surface area of the tank. $\left(\text{Use } \pi = \frac{22}{7}\right)$**

**Ans**
- ✔ A. 9152 cm2
- ✘ B. 9352 cm2
- ✘ C. 9052 cm2
- ✘ D. 9252 cm2

**Q.2** **What is the mode of the following data?**
**52, 44, 47, 50, 45, 40, 43, 53, 53, 45, 52, 50, 52, 52, 44, 47, 54, 50**

**Ans**
- ✘ A. 47
- ✘ B. 44
- ✔ C. 52
- ✘ D. 50

**Q.3** **What sum of money (in ₹) will yield ₹720 as simple interest in 2 years at 10% per annum?**

**Ans**
- ✘ A. 3800
- ✔ B. 3600
- ✘ C. 3100
- ✘ D. 4000

**Q.4** **In a test, B got 50 marks while A got 80 marks out of 120 maximum marks. What percentage of A's marks were B's marks?**

**Ans**
- ✘ A. 66.67%
- ✘ B. 160%
- ✔ C. 62.5%
- ✘ D. 120%

Q.5 The area of a square is 225 $cm^2$ . Its perimeter is equal to the perimeter of a regular hexagon. What is the area (in $cm^2$) of the hexagon?

Ans
- ✗ A. $136\sqrt{3}$
- ✓ B. $150\sqrt{3}$
- ✗ C. 128
- ✗ D. 184

Q.6 If the number 62A4 is divisible by 4, then the least possible value of A can be:

Ans
- ✗ A. 4
- ✗ B. 6
- ✗ C. 2
- ✓ D. 0

Q.7 In triangle PQR, the angle bisector of $\angle P$ cuts QR at A. Find the length of PR, if the lengths of PQ, QA and AR are 12 cm, 4.2 cm and 3.8 cm, respectively. (Round off to one decimal place).

Ans
- ✗ A. 7.8 cm
- ✗ B. 8.2 cm
- ✗ C. 11.4 cm
- ✓ D. 10.9 cm

Q.8 Simplify: $2\frac{1}{2}+1\frac{3}{4}-1\frac{1}{4}$

Ans
- ✗ A. $3\frac{1}{4}$
- ✓ B. $3$
- ✗ C. $2\frac{3}{4}$
- ✗ D. $2\frac{1}{2}$

Q.9 A customer purchases a laptop that has a marked price of ₹50,000. The store offers a 10% discount on the laptop. In addition, there is a festival offer that provides an extra 12% discount on the already discounted price. If the customer pays with a credit card and gets an additional 5% cashback on the final price, then how much does the customer effectively pay?

Ans
- ✗ A. ₹37,490
- ✓ B. ₹37,620
- ✗ C. ₹37,430
- ✗ D. ₹37,560

Q.10 If $3^{2a-b}=3^{a+b}=\sqrt{27}$, find the value of b .

Ans
- ✓ A. $\frac{1}{2}$
- ✗ B. $\frac{3}{4}$
- ✗ C. $\frac{3}{2}$
- ✗ D. $\frac{1}{4}$

**Q.11** If 8 : 12 = 20 : x, find the value of x.

**Ans**
- ✗ A. 28
- ✗ B. 32
- ✓ C. 30
- ✗ D. 34

**Q.12** Two numbers have HCF 7 and LCM 84. If one number is 21, find the other.

**Ans**
- ✗ A. 24
- ✓ B. 28
- ✗ C. 42
- ✗ D. 35

**Q.13** Simplify:

$$[(18 \div 9 \times 3) \text{ of } \{((18 \div (6 \times 2)) \div 3) + (16 \div (5 + 3 - 6))\}]$$

**Ans**
- ✗ A. 34
- ✗ B. 17
- ✓ C. 51
- ✗ D. 68

**Q.14** During a sale, 40% of the goods are sold at a 17% profit; 25% of the remaining goods are sold at a 22% profit; and the rest are sold at a 10% loss. Assuming all goods have the same cost price, what is the overall profit percentage?

**Ans**
- ✓ A. 5.6%
- ✗ B. 6.2%
- ✗ C. 6.8%
- ✗ D. 5.8%

**Q.15** The mean of a data is 19 and its median is 51. The mode (using empirical relation) of the data is:

**Ans**
- ✗ A. 173
- ✗ B. 130
- ✗ C. 30
- ✓ D. 115

**Q.16** A train moving at 72 km/h overtakes another train, 180 m long, running in the same direction at 36 km/h in 27 seconds. Find the length of the faster train.

**Ans**
- ✗ A. 100 m
- ✗ B. 80 m
- ✗ C. 110 m
- ✓ D. 90 m

**Q.17** The difference between the present ages of Lata and Smita is 84 years. Five years ago from now, the sum of their ages was 92 years. If Lata is older than Smita, find Smita's present age (in years).

**Ans**
- ✗ A. 12
- ✗ B. 19
- ✗ C. 2
- ✓ D. 9

**Q.18** A and B can complete a work in 12 days and 6 days, respectively. They started doing the work together but after 2 days, B had to leave, and A completed the remaining work alone. The remaining work was completed in _____ days.

**Ans**
- ✗ A. 9
- ✗ B. 10
- ✗ C. 8
- ✓ D. 6

**Q.19** The difference between the present ages of Ayushi and Nidhi is 14 years. Five years ago from now, the sum of their ages was 60 years. If Ayushi is older than Nidhi, find Nidhi's present age (in years).

**Ans**
- ✓ A. 28
- ✗ B. 27
- ✗ C. 23
- ✗ D. 31

**Q.20** Kirti starts a business with ₹35,000 and after 3 months, Vaishnavi joins Kirti as her partner. After a year, the profit is divided in the ratio 7 : 6. What is Vaishnavi's contribution in the capital?

**Ans**
- ✗ A. ₹41,020
- ✗ B. ₹39,255
- ✗ C. ₹38,240
- ✓ D. ₹40,000

**Q.21** Ramesh deposits ₹24,000 in his account, which pays an annual interest rate of 12% compounded quarterly. Calculate the total amount in his account after six months

**Ans**
- ✗ A. ₹25,937
- ✗ B. ₹25,678.60
- ✗ C. ₹25,431
- ✓ D. ₹25,461.60

**Q.22** In the expansion of (x + 9)(x − 6)(x + 5), what is the coefficient of x?

**Ans**
- ✗ A. 30
- ✓ B. −39
- ✗ C. 33
- ✗ D. −35

**Q.23** What is the value of $\sec^2(60^\circ) - 1$?

**Ans**
- ✗ A. 1
- ✓ B. 3
- ✗ C. 0
- ✗ D. 2

**Q.24** Pipe A can fill a tank in 10 hours; pipe B can fill it in 12 hours, and pipe C can empty it in 15 hours. All three pipes are opened together, but after 4 hours pipe C is closed. Find the total time taken to fill the empty tank.

**Ans**
- ✗ A. $6\frac{5}{11}$ hours
- ✗ B. $5\frac{10}{11}$ hours
- ✗ C. $5\frac{5}{11}$ hours
- ✓ D. $6\frac{10}{11}$ hours

**Q.25** A student scored 91% of the maximum marks in an exam and passed by 187 marks. But when he scored 36% of the marks in the same exam, he failed by 60.5 marks. Find the maximum marks of the exam.

**Ans**
- ✗ A. 465
- ✗ B. 400
- ✓ C. 450
- ✗ D. 425

Section : **General Intelligence and Reasoning**

**Q.26** Each letter in the word KLATSCH is changed to the letter immediately following it in the English alphabetical order and then all the letters thus formed are arranged in alphabetical order. Which of the following letters will be fourth from the right in the new group of letters thus formed?

**Ans**
- ✓ A. L
- ✗ B. I
- ✗ C. D
- ✗ D. M

**Q.27** Seven boxes, G, H, I, J, O, K, and L, are kept one over the other, but not necessarily in the same order. Only I is kept above O. Only G is kept between O and K. Only J is kept below L. How many boxes are kept between H and J?

**Ans**
- ✗ A. Three
- ✓ B. One
- ✗ C. Two
- ✗ D. Four

**Q.28** In a certain code language, 'FISH' is coded as '2815' and 'SHIP' is coded as '1352'. What is the code for 'P' in that language?

**Ans**
- ✗ A. 8
- ✗ B. 5
- ✓ C. 3
- ✗ D. 1

**Q.29** Seven people, C, D, E, F, J, K and L, are sitting in a row, facing north. Only two people sit to the right of D. Only two people sit between D and E. Only two people sit between J and L. L sits to the immediate left of D. F sits to the immediate right of K. Who sits at the third position from the left end of the row?

**Ans**
- ✗ A. E
- ✗ B. J
- ✗ C. L
- ✓ D. C

**Q.30** FGJL is related to JKNP in a certain way based on the English alphabetical order. In the same way, PQTV is related to TUXZ. To which of the following is NORT related, following the same logic?

**Ans**
- ✗ A. RSVP
- ✗ B. RSWY
- ✓ C. RSVX
- ✗ D. STWY

**Q.31** What will come in place of the question mark (?) in the following equation, if '+' and '÷' are interchanged and '–' and '×' are interchanged?

536 + 67 × 9 – 22 ÷ 283 = ?

**Ans**
- ✔ A. 93
- ✘ B. 102
- ✘ C. 106
- ✘ D. 97

**Q.32** In a certain code language,

'A + B' means 'A is the son of B',
'A @ B' means 'A is the sister of B',
'A # B' means 'A is the wife of B' and
'A ÷ B' means 'A is the father of B'.

How is Q related to H if 'Q @ W + R # G ÷ H'?

**Ans**
- ✔ A. Sister
- ✘ B. Mother
- ✘ C. Wife
- ✘ D. Daughter

**Q.33** What should come in place of ? in the given series based on the English alphabetical order?

PIO VOU BUA HAG ?

**Ans**
- ✘ A. GNM
- ✔ B. NGM
- ✘ C. HMN
- ✘ D. NMG

**Q.34** Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. Only five boxes are kept above E. Only two boxes are kept between F and E. C is kept immediately above A. G is kept below D but above F. How many boxes are kept between B and A?

**Ans**
- ✘ A. Three
- ✘ B. Two
- ✘ C. Four
- ✔ D. One

**Q.35** In a certain code language,
A # B means 'A is the mother of B',
A + B means 'A is the daughter of B',
A ÷ B means 'A is the wife of B',
and A @ B means 'A is the father of B'.

How is A related to T if 'A + B # H @ K ÷ T'?

**Ans**
- ✔ A. Wife's father's sister
- ✘ B. Wife's father's mother
- ✘ C. Wife's sister
- ✘ D. Wife's mother

**Q.36** KV 14 is related to MT 34 in a certain way. In the same way, GR 27 is related to IP 47. To which of the following is CN 35 related, following the same logic?

**Ans**
- ✔ A. EL 55
- ✘ B. DM 55
- ✘ C. EM 45
- ✘ D. DL 65

**Q.37** Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(5, 14, 6)
(9, 22, 14)

**Ans**
- ✘ A. (10, 16, 8)
- ✘ B. (6, 8, 16)
- ✘ C. (8, 23, 15)
- ✔ D. (7, 18, 10)

**Q.38** Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(2, 10, 38)
(4, 12, 46)

**Ans**
- ✔ A. (7, 15 , 58)
- ✘ B. (6, 18, 70)
- ✘ C. (5, 13, 54)
- ✘ D. (3, 15, 58)

**Q.39** In a certain code language, 'PART' is coded as '7642' and 'TWIN' is coded as '1356'. What is the code for 'T' in that language?

**Ans**
- ✔ A. 6
- ✘ B. 2
- ✘ C. 1
- ✘ D. 3

**Q.40** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✔ A. IK - FH
- ✘ B. PS - NQ
- ✘ C. TW - RU
- ✘ D. JM - HK

**Q.41** **In a certain code language,**
**A + B means 'A is the sister of B'**
**A – B means 'A is the brother of B'**
**A x B means 'A is the wife of B'**
**A ÷ B means 'A is the father of B'**
**Based on the above, how is M related to R if 'M + K ÷ L – P x R'?**

**Ans**
✗ A. Sister
✓ B. Wife's father's sister
✗ C. Wife's father's mother
✗ D. Mother

**Q.42** **Raman starts from point Y and drives 15 km towards South. He then turns left and drives 21 km, takes a left and drives 69 km. He then takes a left turn and drives 42 km. He takes a left turn, drives 54 km, turns right and drives 26 km to stop at point Z. How far (shortest distance) and towards which direction should he drive in order to reach point Y again? (All turns are 90-degree turns only unless specified.)**

**Ans**
✗ A. 49 km towards east
✓ B. 47 km towards east
✗ C. 45 km towards west
✗ D. 51 km towards west

**Q.43** **LN 17 is related to HJ 23 in a certain way. In the same way, SU 5 is related to OQ 11. To which of the following is NP 9 related, following the same logic?**

**Ans**
✗ A. JL 13
✗ B. KL 15
✗ C. KM 13
✓ D. JL 15

**Q.44** **If 'I' stands for '+', 'J' stands for '×', 'K' stands for '÷' and 'L' stands for '–', then what will come in place of the question mark (?) in the following equation?**

**45 L 21 K 7 J 6 I 33 J 9 L 15 I 69 K 3 L 29 = ?**

**Ans**
✗ A. 392
✗ B. 343
✗ C. 369
✓ D. 303

**Q.45** **Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
✓ A. NHY
✗ B. GID
✗ C. OQL
✗ D. LNI

**Q.46** **Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
✗ A. LPN
✗ B. IMK
✓ C. FHG
✗ D. RVT

**Q.47** Each letter in the word LEMONY is changed to the letter immediately following it in the English alphabetical order and then all the letters thus formed are arranged in the English alphabetical order. Which of the following letters will be third from the right in the new group of letters thus formed?

**Ans**
- ✗ A. N
- ✓ B. O
- ✗ C. P
- ✗ D. M

**Q.48** Refer to the following letter series and answer the question that follows. Counting to be done from left to right.

(Left) T J R M G K S M O X Z W Z D T B L N Z O L (Right)

How many such vowels are there, each of which is immediately preceded by a vowel and also immediately followed by a consonant?

**Ans**
- ✓ A. None
- ✗ B. One
- ✗ C. Two
- ✗ D. Three

**Q.49** B, C, D, E, G, H and I are sitting around a circular table, facing the centre of the table. Only two people sit between C and D, when counted from the left of D. G sits third to the left of I. B sits to the immediate right of I. B sits second to the left of C. H is not an immediate neighbor of G.
Who sits third to the right of E?

**Ans**
- ✗ A. H
- ✗ B. G
- ✗ C. D
- ✓ D. B

**Q.50** Refer to the following letter series and answer the question that follows. Counting to be done from left to right.

(Left) R Y V O B I E A U K E H G B V T G R C S T (Right)

How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a vowel?

**Ans**
- ✓ A. One
- ✗ B. None
- ✗ C. Two
- ✗ D. Three

Section : **General Science**

**Q.51** Which of the following is a characteristic feature of all organic compounds?

**Ans**
- ✗ A. They always contain nitrogen
- ✗ B. They always form ionic bonds
- ✗ C. They always contain oxygen
- ✓ D. They always contain carbon

**Q.52** **Read the following three statements and choose the correct option:**

**Statement I: Formula unit mass is applicable only to ionic compounds, not covalent ones.**
**Statement II: Formula unit mass is the sum of the atomic masses of all atoms in the empirical formula of an ionic compound.**
**Statement III: The formula unit mass of sodium chloride (NaCl) is 58.5 u.**

**Ans**
✗ A. Only I and II are correct.
✗ B. Only I and III are correct.
✓ C. All I, II and III are correct.
✗ D. Only II and III are correct.

**Q.53** **The gravitational force between two masses increases when _____.**

**Ans**
✗ A. They are kept in water
✗ B. The distance between them increases
✓ C. The product of their masses increases
✗ D. Their masses decrease

**Q.54** **Which of the following is a characteristic feature of skeletal muscle?**

**Ans**
✓ A. Striated appearance
✗ B. Involuntary control
✗ C. Non-striated appearance
✗ D. Single, central nucleus

**Q.55** **Which of the following are produced when a metal oxide reacts with an acid?**

**Ans**
✗ A. Salt and carbon dioxide
✓ B. Salt and water
✗ C. Salt and oxygen gas
✗ D. Salt and hydrogen gas

**Q.56** **The weight of a body on the moon is 3 N. What will be the weight of the body on Earth?**

**Ans**
✗ A. 2 N
✗ B. 3 N
✓ C. 18 N
✗ D. 0.5 N

**Q.57** **What is the audible frequency range for human beings?**

**Ans**
✗ A. 200 Hz to 200,000 Hz
✗ B. 20 kHz to 200 kHz
✓ C. 20 Hz to 20,000 Hz
✗ D. 2 Hz to 200 Hz

**Q.58** **Which of the following distinguishes the Rough Endoplasmic Reticulum from the Smooth Endoplasmic Reticulum?**

**Ans**
✓ A. RER has ribosomes.
✗ B. SER is rich in ribosomes.
✗ C. SER synthesizes proteins only.
✗ D. RER stores lipids.

**Q.59** **A student notices that Hydra creates new organisms by developing small protrusions on its body, which eventually detach. What kind of reproduction is this?**

**Ans**
- ✗ A. Sexual reproduction
- ✗ B. Regeneration
- ✗ C. Parthenogenesis
- ✓ D. Budding

**Q.60** **In the chemical equation $xPb(NO_3)_2(s) \rightarrow yPbO(s) + zNO_2(g) + wO_2(g)$, what are the values of x, y, z and w?**

**Ans**
- ✓ A. x = 2 ; y = 2 ; z = 4 ; w = 1
- ✗ B. x = 1 ; y = 2 ; z = 3 ; w = 2
- ✗ C. x = 2 ; y = 4 ; z = 2 ; w = 1
- ✗ D. x = 2 ; y = 1 ; z = 4 ; w = 2

**Q.61** **Which of the following best defines reduction in a redox reaction?**

**Ans**
- ✓ A. Gain of hydrogen or loss of oxygen
- ✗ B. Gain of oxygen or loss of hydrogen
- ✗ C. Loss of electrons only
- ✗ D. Gain of both oxygen and electrons

**Q.62** **Sexual maturation in humans results in:**

**Ans**
- ✗ A. Loss of reproductive capacity and growth
- ✓ B. Development of reproductive organs and secondary sexual characteristics
- ✗ C. Decrease in hormone levels and loss of reproductive organs
- ✗ D. Only physical growth

**Q.63** **Which of the following statement about a solution is correct?**

**Ans**
- ✗ A. The solute in a solution settles down on standing.
- ✓ B. A solution is a homogeneous mixture in which the solute particles are not visible to the naked eye.
- ✗ C. The solute in a solution is always present in a greater amount than the solvent.
- ✗ D. A solution is a heterogeneous mixture of two or more substances.

**Q.64** **An element X has two isotopes: $_6X^{12}$ and $_6X^{14}$. Both are electrically neutral and chemically identical, but one of them is unstable and radioactive. Which of the following statements best explains why $_6X^{14}$ is radioactive, even though both isotopes have the same number of protons and electrons?**

**Ans**
- ✓ A. Because $_6X^{14}$ has excess neutrons, causing imbalance in nuclear forces
- ✗ B. Because $_6X^{14}$ has more electrons than protons, leading to instability in electron distribution
- ✗ C. Because $_6X^{14}$ has equal numbers of protons and neutrons, making it energetically unstable
- ✗ D. Because $_6X^{14}$ has a smaller nucleus that cannot hold neutrons tightly, resulting in spontaneous decay

**Q.65** **A 90 W electric bulb does how much work in 10 seconds?**

**Ans**
- ✗ A. 9000 J
- ✗ B. 90 J
- ✗ C. 9 J
- ✓ D. 900 J

**Q.66** **Which of the following compounds obeys the Law of Constant Proportions?**

**Ans**
- ✗ A. Air
- ✗ B. Brass
- ✗ C. Soil
- ✓ D. Water

**Q.67** **The quality and taste of honey mainly depends on which of the following factors?**

**Ans**
- ✔ A. Type and availability of flowers
- ✘ B. Type of beehive
- ✘ C. Age of the bees
- ✘ D. Number of worker bees in the colony

**Q.68** **A concave mirror produces a virtual, erect and magnified image when the object is positioned _____.**

**Ans**
- ✘ A. Between the centre of curvature and the focus
- ✔ B. Between the focus and the pole
- ✘ C. Beyond the centre of curvature
- ✘ D. At the principal focus

**Q.69** **A body moves 6 km towards the east in 1 hour and then 8 km towards the west in the next 1 hour. The average velocity of the body for the whole journey is _____ .**

**Ans**
- ✘ A. 1 km/h east
- ✘ B. 7 km/h east
- ✘ C. 0
- ✔ D. 1 km/h west

**Q.70** **Which of the following can happen when non-biodegradable waste is dumped into water bodies?**

**Ans**
- ✘ A. It quickly dissolves in water.
- ✔ B. It pollutes the water and harms aquatic life.
- ✘ C. It cleans the water.
- ✘ D. It helps aquatic plants grow.

**Q.71** **A device has a resistance of 75 Ω and carries a current of 4 A. The power dissipated is _____.**

**Ans**
- ✘ A. 1400 W
- ✘ B. 18.75 W
- ✔ C. 1200 W
- ✘ D. 300 W

**Q.72** **Which structural characteristic allows epithelial tissue to function as a protective layer?**

**Ans**
- ✘ A. Cells are connected exclusively by desmosomes.
- ✔ B. Cells are tightly packed with minimal intercellular space.
- ✘ C. Cells are loosely arranged with abundant extracellular matrix.
- ✘ D. Cells are long and multinucleated.

**Q.73** **A body covers a straight-line distance of 10 m from point A to B in 5 s and then covers back the distance from point B to point A along the same straight path in 5 s. How much will be the average speed of the body?**

**Ans**
- ✘ A. 200 m/s
- ✘ B. 5 m/s
- ✔ C. 2 m/s
- ✘ D. 0.5 m/s

**Q.74** **Thomson's model is often referred to as the 'plum pudding model'. In this analogy, what does the 'plum' represent?**

**Ans**
- ✔ A. Electrons
- ✘ B. Alpha particles
- ✘ C. Protons
- ✘ D. Neutrons

**Q.75** **Vibration, which produces sound, is defined as a kind of rapid _____.**

**Ans**
- ✘ A. Linear forward motion
- ✘ B. Single directional displacement
- ✔ C. To and fro motion of an object
- ✘ D. Slow lateral motion

**Q.76** **Which of the following statements is/are INCORRECT about the loudness and softness of a sound wave?**
**(i) A loud sound has more amplitude as compared to a soft sound.**
**(ii) A loud sound has lesser energy associated with it as compared to a soft sound.**
**(iii) Loudness of sound wave is the measure of the response of our heart to the sound.**

**Ans**
- ✘ A. Only (i)
- ✘ B. Both (i) and (iii)
- ✘ C. Only (ii)
- ✔ D. Both (ii) and (iii)

**Q.77** **Which of the following statements correctly explains the position of sodium (Na) in the activity series of metals?**

**Ans**
- ✘ A. Sodium does not react with water, hence placed at the bottom of the series.
- ✘ B. Sodium is less reactive than copper and cannot displace it from salt solution.
- ✔ C. Sodium is more reactive than hydrogen and displaces it from acid.
- ✘ D. Sodium is less reactive than hydrogen and hence placed below it.

**Q.78** **If 12 J of work is done to move a charge of 2 C between two points, what is the potential difference between these points?**

**Ans**
- ✔ A. 6 V
- ✘ B. 24 V
- ✘ C. 10 V
- ✘ D. 14 V

**Q.79** **What factor primarily influences the quality and quantity of honey produced in bee farming?**

**Ans**
- ✘ A. The size of the beehive used only
- ✘ B. The colour of the bees
- ✔ C. Flower types and their abundance for nectar gathering
- ✘ D. The temperature inside the beehive alone

**Q.80** **The motion of the moon around the earth requires a centripetal force, which is provided by _____.**

**Ans**
- ✘ A. The thrust of the sun
- ✔ B. The force of attraction of the earth
- ✘ C. The inertia of the moon
- ✘ D. The internal forces of the moon

**Q.81** For a body moving with uniform acceleration, average velocity equals _____.

**Ans**
- ✗ A. Initial velocity
- ✗ B. Zero
- ✓ C. (Initial velocity + Final velocity)/2
- ✗ D. Final velocity

**Q.82** Plastids, which are found only in plant cells, help in:

**Ans**
- ✗ A. respiration
- ✓ B. photosynthesis and storage
- ✗ C. excretion
- ✗ D. transport

**Q.83** Which tissue in plants is primarily responsible for storage and basic metabolic functions in mature organs?

**Ans**
- ✗ A. Sclerenchyma
- ✓ B. Parenchyma
- ✗ C. Epidermis
- ✗ D. Collenchyma

**Q.84** Which of the following metals forms an amphoteric oxide when reacting with air?

**Ans**
- ✗ A. Calcium
- ✗ B. Sodium
- ✗ C. Potassium
- ✓ D. Aluminium

**Q.85** Which of the following statements correctly describes the transportation of blood from the heart to the lungs?

**Ans**
- ✗ A. Deoxygenated blood is pumped from the left ventricle to the lungs.
- ✗ B. Oxygenated blood flows from the left ventricle to the lungs for purification.
- ✗ C. Oxygenated blood is carried from the lungs to the right atrium.
- ✓ D. Deoxygenated blood is pumped from the right ventricle to the lungs.

**Q.86** Which of the following pairs of element names and symbols is correctly matched?

**Ans**
- ✗ A. Silver – S
- ✗ B. Mercury – Me
- ✗ C. Lead – Ld
- ✓ D. Tin – Sn

**Q.87** Which statement correctly explains the role of decomposers in an ecosystem?

**Ans**
- ✓ A. They recycle nutrients by breaking down dead organisms into simple substances
- ✗ B. They convert inorganic substances into complex organic compounds
- ✗ C. They absorb sunlight to produce energy-rich compounds
- ✗ D. They directly provide food to carnivores

**Q.88** The magnitude of force on a conductor in a magnetic field increases when _____.

**Ans**
- ✓ A. Current increases
- ✗ B. Length decreases
- ✗ C. Magnetic field decreases
- ✗ D. Current decreases

**Q.89** **In some plants, a meristematic tissue is found at the base of leaves or near the nodes, separating regions of a mature tissue. Which tissue is this?**

**Ans**
✗ A. Differentiated tissue
✓ B. Intercalary meristem
✗ C. Apical meristem
✗ D. Lateral meristem

**Q.90** **Ethanoic acid reacts with sodium carbonate to produce:**

**Ans**
✗ A. Sodium hydroxide and $CO_2$
✓ B. Sodium acetate, carbon dioxide, and water
✗ C. Sodium acetate, hydrogen, and water
✗ D. Sodium acetate and carbon monoxide

Section : **General Awareness**

**Q.91** **The inaugural railway line in the Indian subcontinent was opened in 1853 between between which two locations?**

**Ans**
✓ A. Bombay and Thane
✗ B. Jaipur and Ajmer
✗ C. Patna and Gaya
✗ D. Surat and Bharuch

**Q.92** **On which date was Engineers' Day observed in India in 2025?**

**Ans**
✗ A. 16 September
✓ B. 15 September
✗ C. 13 September
✗ D. 14 September

**Q.93** **Where was the 30$^{th}$ Senior Women's National Football Championship – Rajmata Jijabai Trophy final match played?**

**Ans**
✗ A. Raipur
✗ B. Raigarh
✗ C. Bilaspur
✓ D. Narainpur

**Q.94** **Which of the following cities experiences the retreat of Monsoon last?**

**Ans**
✗ A. Jaipur
✗ B. Mumbai
✗ C. Ahmedabad
✓ D. Chennai

**Q.95** **Which of the following classical music instruments did Ustad Bismillah Khan mostly popularise?**

**Ans**
✓ A. Shehnai
✗ B. Tabla
✗ C. Veena
✗ D. Sitar

**Q.96** **In which state was the 22nd All India TDS Conference organised to review Income Tax Act amendments?**

**Ans**
- ✔ A. Madhya Pradesh
- ✘ B. Maharshtra
- ✘ C. Rajasthan
- ✘ D. Gujarat

**Q.97** **Which of the following is NOT one of the valid ways to acquire Indian citizenship under the Citizenship Act, 1955?**

**Ans**
- ✘ A. By descent
- ✘ B. By birth
- ✔ C. By marriage
- ✘ D. By registration

**Q.98** **The Ramosi Revolt was led by which tribal leader in 1822 against Britishers?**

**Ans**
- ✔ A. Chittur Singh
- ✘ B. Veer Surendra Sai
- ✘ C. Kittur Chennamma
- ✘ D. Bakshi Jagabandhu

**Q.99** **Which of the following 1973 landmark judgments of the Supreme Court of India provided that Parliament cannot amend the 'basic structure' of the Constitution through amendments?**

**Ans**
- ✔ A. Kesavananda Bharati Case
- ✘ B. Champakam Dorairanjan Case
- ✘ C. Minerva Mills Case
- ✘ D. Golakhnath Case

**Q.100** **Which agency has bagged a Transfer of Technology (ToT) deal, valued at ₹511 crore, from the Indian Space Research Organisation, to build and operate Small Satellite Launch Vehicles (SSLVs)?**

**Ans**
- ✔ A. Hindustan Aeronautics Limited
- ✘ B. Bharat Dynamics Limited
- ✘ C. Larsen & Toubro
- ✘ D. Adani Defence

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | iON Digital Zone iDZ Machenahalli |
| Test Date | 09/03/2026 |
| Test Time | 12:45 PM - 2:15 PM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** Simplify:

$$[(120-24\div(4+2))\times 2-(50\div 5+6)]+[(18+12\times 2-8)-(9\div 3$$

**Ans**
✗ A. 252
✓ B. 242
✗ C. 232
✗ D. 262

**Q.2** **A and B can complete a work in 12 days and 8 days, respectively. They started doing the work together but after 2 days, B had to leave, and A completed the remaining work alone. The whole work was completed in _____ days.**

**Ans**
✗ A. 8
✓ B. 9
✗ C. 7
✗ D. 10

**Q.3** **During a sale, 60% of the goods are sold at a profit of 21%. Of the remaining goods, 40% are sold at a profit of 46%, and the rest are sold at a loss of 29%. If the overall profit is x%, then what is the value of x?**

**Ans**
✗ A. 3
✗ B. 3.5
✓ C. 13
✗ D. 9.5

**Q.4** **The sum of the prime factors of 84 is:**

**Ans**
✗ A. 14
✓ B. 12
✗ C. 15
✗ D. 18

**Q.5** Naveena's monthly income is ₹84,000. She spends 25% of his income on house rent, 20% on groceries, 15% on other household expenses, and saves the remaining amount. How much money (in ₹) does she save every month?

**Ans**
- ✗ A. 33,000
- ✗ B. 32,600
- ✓ C. 33,600
- ✗ D. 32,000

**Q.6** If the median and the mode are given as 65 and 60, respectively, find the mean.

**Ans**
- ✓ A. 67.5
- ✗ B. 62.5
- ✗ C. 68
- ✗ D. 70

**Q.7** Find the fourth proportional to 3.5, 7.5, and 6.3.

**Ans**
- ✗ A. 14.5
- ✗ B. 12.5
- ✓ C. 13.5
- ✗ D. 11.5

**Q.8** A shopkeeper lists the price of a fan at 36% above its cost price and offers a 25% discount on its list price. If he earns a profit of ₹134, then what is the list price (in ₹) of the fan?

**Ans**
- ✓ A. 9,112
- ✗ B. 8,851
- ✗ C. 9,135
- ✗ D. 8,987

**Q.9** Simplify: $\frac{\sqrt{16x^4 - 72x^2y^2 + 81y^4}}{\sqrt{4x^2 - 12xy + 9y^2}} - (2x - 3y)$, given that $2x > 3y$.

**Ans**
- ✗ A. $4x^2$
- ✗ B. $4x$
- ✗ C. $6y^2$
- ✓ D. $6y$

**Q.10** If 6 machines produce 120 items in 8 hours, how many items can 9 machines produce in 4 hours at the same rate?

**Ans**
- ✓ A. 90
- ✗ B. 80
- ✗ C. 120
- ✗ D. 60

**Q.11** When one-third of a number is increased by 55, the result is 83. Find the sum of the digits of the original number.

**Ans**
- ✓ A. 12
- ✗ B. 13
- ✗ C. 14
- ✗ D. 9

Q.12 Simplify:

$$\frac{2}{5} \text{ of } \left(\left(\frac{3}{4} \div 0.25\right) + \frac{1}{2}\right) - \frac{1}{3}$$

Ans
- ✗ A. $\frac{17}{15}$
- ✗ B. $\frac{13}{15}$
- ✗ C. $\frac{14}{15}$
- ✓ D. $\frac{16}{15}$

Q.13 The sum of the present ages of Lokesh and Taresh is 24 years. After 2 years, Lokesh's age will be three times that of Taresh. Lokesh's present age (in years) is:

Ans
- ✓ A. 19
- ✗ B. 17
- ✗ C. 12
- ✗ D. 22

Q.14 A 200 m long train passes a man standing on a platform in 10 seconds. How long will it take to cross another 350 m long train running at 60 km/h in the opposite direction?

Ans
- ✗ A. 12 seconds
- ✗ B. 16 seconds
- ✓ C. 15 seconds
- ✗ D. 14 seconds

Q.15 What sum of money (in ₹) will yield ₹720 as simple interest in 2 years at 6% per annum?

Ans
- ✗ A. 6400
- ✓ B. 6000
- ✗ C. 6200
- ✗ D. 5500

Q.16 Find the sum of 8 exterior angles of a 24-sided regular polygon.

Ans
- ✓ A. 120°
- ✗ B. 140°
- ✗ C. 135°
- ✗ D. 115°

Q.17 Simplify: $\frac{[5 \text{ of } (2+4)] - \{6^2 \div 3\} + 2}{3 \text{ of } (5-2) \div 9}$

Ans
- ✗ A. 18
- ✓ B. 20
- ✗ C. 16
- ✗ D. 22

Q.18 A and B together can complete a task in 10 days, B and C in 12 days and A and C in 15 days. How long will A, B and C take to complete the task working together?

Ans
- ✓ A. 8 days
- ✗ B. 10 days
- ✗ C. 9 days
- ✗ D. 7 days

Q.19 In $\Delta$ PQR, $\angle Q = 90^\circ$. If $\tan R = \frac{1}{3}$, then the value of $1 + \frac{\sec P(3\cos R - \sin P)}{\operatorname{cosec} R\,(4\sin R - \cos P)}$ is:

Ans
- ✔ A. 3
- ✘ B. 7
- ✘ C. 6
- ✘ D. 5

Q.20 The sum of 6 numbers is 240. Find their average.

Ans
- ✔ A. 40
- ✘ B. 38
- ✘ C. 41
- ✘ D. 39

Q.21 Six cubes each of side 4 cm, are placed adjacent to each other. Find the volume of the cuboid so formed.

Ans
- ✔ A. 384 cm3
- ✘ B. 512 cm3
- ✘ C. 64 cm3
- ✘ D. 256 cm3

Q.22 Kirti starts a business with ₹27,000 and after 7 months, Vaishnavi joins Kirti as her partner. After a year, the profit is divided in the ratio 8 : 9. What is Vaishnavi's contribution in the capital?

Ans
- ✔ A. ₹72,900
- ✘ B. ₹72,750
- ✘ C. ₹73,360
- ✘ D. ₹72,875

Q.23 A family's monthly income increased by 15%. They increased their monthly expenditure on food by 10% and on rent by 20%. If their initial monthly expenditure on food was ₹12,000 and on rent was ₹8,000, and their initial monthly savings were ₹15,000, what are their new monthly savings? (Assume that there is no other expenditure.)

Ans
- ✘ A. ₹15,000
- ✔ B. ₹17,450
- ✘ C. ₹18,650
- ✘ D. ₹25,000

Q.24 If the lateral surface area of a cylinder is 775.8 $cm^2$ and its height is 24 cm, then find its volume. (Use $\pi$ = 3.14 and round off to two decimal places.)

Ans
- ✘ A. 1984.78 cm3
- ✘ B. 2016.67 cm3
- ✔ C. 1996.63 cm3
- ✘ D. 1962.74 cm3

**Q.25** Calculate the simple interest if the principal amount is ₹75,000, the rate is 5%, and the time is 5 years.

**Ans**
- ✗ A. ₹16,870
- ✗ B. ₹3750
- ✓ C. ₹18,750
- ✗ D. ₹7,850

Section : **General Intelligence and Reasoning**

**Q.26** The position(s) of how many letters will remain unchanged if each letter in the word "VISCOMETRY" is arranged in alphabetical order?

**Ans**
- ✗ A. Four
- ✗ B. Two
- ✗ C. One
- ✓ D. Three

**Q.27** All 59 people are standing in a row facing North. Mahesh is 20th from the right end, while Kailash is 14th from the left end. How many people are there between Mahesh and Kailash?

**Ans**
- ✗ A. 23
- ✓ B. 25
- ✗ C. 24
- ✗ D. 26

**Q.28** BIRD is related to CLSG in a certain way based on the English alphabetical order. In the same way, RAIN is related to SDJQ. To which of the given options is STAR related, following the same logic?

**Ans**
- ✓ A. TWBU
- ✗ B. UWCV
- ✗ C. TWCV
- ✗ D. UVCU

**Q.29** In a certain code language, 'GODS' is coded as '7642' and 'DIVE' is coded as '1357'. What is the code for 'D' in that language?

**Ans**
- ✓ A. 7
- ✗ B. 1
- ✗ C. 3
- ✗ D. 4

**Q.30** What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?

3 ÷ 5 + 16 x 8 - 8 = ?

**Ans**
- ✗ A. 18
- ✓ B. 21
- ✗ C. 20
- ✗ D. 17

**Q.31** **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
- ✔ A. XY–AE
- ✘ B. NO–RS
- ✘ C. JK–NO
- ✘ D. AB–EF

**Q.32** **Select the pair which follows the same pattern as that followed by the two set of pairs given below. Both pairs follow the same pattern.**

**CMO : DKP**
**WKL : XIM**

**Ans**
- ✘ A. DQG : DNH
- ✔ B. OIY : PGZ
- ✘ C. GFR : GDR
- ✘ D. HFC : HDC

**Q.33** **What should come in place of ? in the given series based on the English alphabetical order?**

**DGYL XKTQ ROOV LSJA ?**

**Ans**
- ✘ A. FVDF
- ✘ B. EWEE
- ✘ C. EVDE
- ✔ D. FWEF

**Q.34** **Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does not belong to that group?**
**(Note: The odd man out is not based on the number of consonants/vowels or their position in the letter cluster.)**

**Ans**
- ✔ A. NOD
- ✘ B. NOU
- ✘ C. GHN
- ✘ D. DEK

**Q.35** **If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', what will come in place of the question mark (?) in the following equation?**

**3 B 2 D 12 A 4 C 3 = ?**

**Ans**
- ✔ A. 6
- ✘ B. 8
- ✘ C. 12
- ✘ D. 4

**Q.36** Refer to the following series and answer the question (All numbers are single-digit numbers only. Counting is to be done from left to right.)

(Left) 2 8 1 3 5 2 6 7 3 4 9 6 7 8 4 1 3 4 6 (Right)

How many such even digits are there each of which is immediately preceded by an odd digit and immediately followed by an even digit?

**Ans**
- ✗ A. One
- ✗ B. Four
- ✗ C. Two
- ✓ D. Three

**Q.37** Rajat is the brother of Garima. Garima is the sister of Harish. Harish is the father of Jyoti. Jyoti is the wife of Karan. How is Rajat related to Karan?

**Ans**
- ✗ A. Wife's father's father
- ✗ B. Wife's mother's father
- ✗ C. Wife`s mother`s brother
- ✓ D. Wife's father's brother

**Q.38** What should come in place of '?' in the given series?

24 35 40 51 56 ?

**Ans**
- ✗ A. 70
- ✗ B. 68
- ✗ C. 69
- ✓ D. 67

**Q.39** Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

CVT : DXW
OBL : PDO

**Ans**
- ✗ A. SKP : TLQ
- ✗ B. HZE : IAG
- ✓ C. NAU : OCX
- ✗ D. DXG : EZK

**Q.40** Refer to the following letter series and answer the question. Counting to be done from left to right.
(Left) M M C R V I K Z J N L U W X W F O Y X F G(Right)
How many such consonants are there, each of which is immediately preceded by a vowel and also immediately followed by a vowel?

**Ans**
- ✓ A. None
- ✗ B. Two
- ✗ C. One
- ✗ D. Three

**Q.41** Each letter in the word LANDMARK is arranged in alphabetical order. How many letters are there in the English alphabetical order between the letter which is fourth from the left and the one which is second from the right in the new letter cluster thus formed?

**Ans**
- ✗ A. 4
- ✗ B. 5
- ✓ C. 2
- ✗ D. 3

**Q.42** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group? **(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
- ✔ A. ME – HA
- ✘ B. WO – QI
- ✘ C. YQ – SK
- ✘ D. TL – NF

**Q.43** Ay, Bk, Cv, Du, Es, Fo and Gw are sitting around a circular table facing the centre. Cv sits to the immediate right of Ay. Du sits third to the left of Ay. Bk is the immediate neighbour of Fo and Cv. Gw is not an immediate neighbour of Du. What is the position of Es with respect to Fo?

**Ans**
- ✔ A. Second to the right
- ✘ B. Immediate right
- ✘ C. Third to the left
- ✘ D. Immediate left

**Q.44** Seven people, A, V, C, L, E, K and N, are sitting in a row, facing north. Only four people sit to the left of E. Only four people sit to the right of L. Only one person sits between K and L. V sits to the immediate left of A. C does not sit to the left of N. Who sits third to the right of C?

**Ans**
- ✘ A. K
- ✔ B. A
- ✘ C. E
- ✘ D. L

**Q.45** In a certain code language, 'KEPT' is coded as '7523' and 'OKAY' is coded as '4136'. What is the code for 'K' in that language?

**Ans**
- ✔ A. 3
- ✘ B. 7
- ✘ C. 5
- ✘ D. 1

**Q.46** Natesh starts from point Y and drives 58 km towards East. He then takes a left turn, drives 28 km, turns left and drives 40 km. He then takes a left turn and drives 71 km. He takes a right turn, drives 18 km to stop at point Z. How far (shortest distance) and towards which direction should he drive in order to reach point Y again? (All turns are 90-degree turns only unless specified.)

**Ans**
- ✔ A. 43 km towards north
- ✘ B. 41 km towards north
- ✘ C. 45 km towards west
- ✘ D. 39 km towards south

**Q.47** Dhiraj starts from Point A and drives 11 km towards west. He then takes a right turn, drives 8 km, turns right and drives 14 km. He then takes a right turn and drives 11 km. He takes a final right turn, drives 3 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again?

(All turns are 90° turns only unless specified.)

**Ans**
- ✔ A. 3 km to the north
- ✘ B. 3 km to the east
- ✘ C. 5 km to the west
- ✘ D. 3 km to the south

**Q.48** Rajdeep ranked 64th from the top and 23rd from the bottom in his class. How many students are there in his class?

**Ans**
- ✔ A. 86
- ✘ B. 85
- ✘ C. 84
- ✘ D. 87

**Q.49** In a certain code language,
P + Q means 'P is the mother of Q'
P – Q means 'P is the sister of Q'
P x Q means 'P is the father of Q'
P ÷ Q means 'P is the daughter of Q'

Based on the above, how is H related to G if 'H + S – T x G ÷ P'?

**Ans**
- ✘ A. Mother's mother
- ✔ B. Father's mother
- ✘ C. Father's sister
- ✘ D. Sister

**Q.50** Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(5, 18, 24)
(9, 22, 28)

**Ans**
- ✘ A. (11, 36, 42)
- ✘ B. (6, 19, 13)
- ✔ C. (8, 21, 27)
- ✘ D. (4, 17, 11)

## Section : General Science

**Q.51** Which of the following is the correct relation between the object distance (u), image distance (v) and focal length (f) of a convex lens?

**Ans**
- ✘ A. v - u = f
- ✔ B. (1/v) - (1/u) = 1/f
- ✘ C. v + u = f
- ✘ D. (1/v) x (1/ u) = 1/f

**Q.52** A concave lens has a focal length of 15 cm. If it forms an image 10 cm from the lens, how far away is the object placed from the lens?

**Ans**
- ✘ A. +30 cm
- ✘ B. -25 cm
- ✘ C. +6 cm
- ✔ D. -30 cm

**Q.53** **Read the given Assertion (A) and Reason (R) and select the most appropriate option.**

**(A): A woman has normal ovulation and fertilisation, but the zygote is expelled without attaching to the uterine wall because implantation has failed.**
**(R): Implantation is the process by which the blastocyst embeds in the endometrium to establish pregnancy.**

**Ans**
- ✗ A. Both A and R are true, but R is not the correct explanation of A
- ✓ B. Both A and R are true, and R is the correct explanation of A
- ✗ C. A is false, but R is true
- ✗ D. A is true, but R is false

**Q.54** **During the extraction of metals from their ores, the removal of gangue is an important preliminary step. Which of the following statements most accurately explains why different concentration methods (such as hydraulic washing, froth flotation and magnetic separation) are used for different ores?**

**Ans**
- ✓ A. Because each method exploits specific differences in physical and chemical properties between the ore and the gangue
- ✗ B. Because the choice of concentration method depends on the melting point of the ore and gangue
- ✗ C. Because gangue particles are chemically reactive and must be removed by oxidation before extraction
- ✗ D. Because all ores have identical physical properties but different chemical compositions

**Q.55** **If a velocity–time graph shows a horizontal straight line, the object is moving with _____.**

**Ans**
- ✗ A. No velocity
- ✗ B. Non-uniform acceleration
- ✓ C. Constant velocity
- ✗ D. Zero displacement

**Q.56** **What is the main advantage of using olfactory indicators?**

**Ans**
- ✗ A. They change colour sharply.
- ✓ B. They are useful for visually impaired individuals.
- ✗ C. They give exact pH values.
- ✗ D. They can be used for all solutions.

**Q.57** **Which component of phloem is responsible for the transport of food in plants?**

**Ans**
- ✓ A. Sieve tubes
- ✗ B. Phloem fibers
- ✗ C. Companion cells
- ✗ D. Phloem parenchyma

**Q.58** **If producers increase in number and herbivores decrease in number, what is the likely sudden consequence in the food chain?**

**Ans**
- ✗ A. Carnivore population will increase.
- ✗ B. Decomposers population will decline suddenly.
- ✓ C. Carnivore population will decrease due to less food.
- ✗ D. Producers will decrease due to overgrazing.

**Q.59** **A wooden block of mass 50 kg is placed on a smooth horizontal surface. A constant horizontal force of 'X' N is applied on it while it is at rest. The block acquires a velocity of 10 m/s in 2 s. What is the value of X?**

**Ans**
- ✗ A. 10 N
- ✗ B. 100 N
- ✗ C. 25 N
- ✓ D. 250 N

**Q.60** A student heats 10 g of calcium carbonate in a closed container. It decomposes into 5.6 g of calcium oxide and carbon dioxide gas. What will be the mass of carbon dioxide produced?

**Ans**
- ✔ A. 4.4 g
- ✘ B. 15.6 g
- ✘ C. 5.0 g
- ✘ D. 10.0 g

**Q.61** Which of the following practices directly contributes to crop yield improvement?

**Ans**
- ✔ A. Timely irrigation and fertilization
- ✘ B. Planting the same crop year after year
- ✘ C. Delayed harvest
- ✘ D. Ignoring pest signs

**Q.62** A porter lifts a 10 kg luggage from the ground and places it on his head at a height of 2.5 m. What is the work done by the porter on the luggage? (Using g =10 $m/s^2$)

**Ans**
- ✘ A. 500 J
- ✔ B. 250 J
- ✘ C. 100 J
- ✘ D. 25 J

**Q.63** If the gravitational force experienced by a body of mass 'm' on the surface of Earth is 'X' N. If the mass of the body is tripled, what will be the value of the gravitational force experienced by the body?

**Ans**
- ✘ A. X/9 N
- ✘ B. X N
- ✔ C. 3X N
- ✘ D. X/3 N

**Q.64** Which of the following is the correct formula for the compound calcium phosphate?

**Ans**
- ✘ A. CaPO4
- ✘ B. Ca4(PO4)3
- ✔ C. Ca3(PO4)2
- ✘ D. Ca2(PO4)3

**Q.65** Which of these is an example of a solid sol?

**Ans**
- ✔ A. Coloured gem
- ✘ B. Smoke
- ✘ C. Jelly
- ✘ D. Cheese

**Q.66** What are the tiny blobs present on stick-like structures in *Rhizopus* called?

**Ans**
- ✘ A. Roots
- ✔ B. Sporangia
- ✘ C. Hyphae
- ✘ D. Spores

**Q.67** The speed of sound depends primarily on the nature and _____ of the medium.

**Ans**
- ✘ A. Volume
- ✘ B. Pressure
- ✔ C. Temperature
- ✘ D. Amplitude

**Q.68** **An object is placed at 100 cm on the left of a convex lens of focal length 40 cm. Where should a screen be placed to right of the lens so that the image formed is real, inverted and smaller in size as compared to the object size?**

**Ans**
- ✗ A. The screen should be placed at 40 cm from the lens.
- ✗ B. The screen should be beyond 100 cm from the lens.
- ✗ C. The screen should be placed anywhere between 20 cm and 40 cm from the lens.
- ✓ D. The screen should be placed anywhere between 40 cm and 80 cm from the lens.

**Q.69** **If decomposers were removed from an ecosystem, what would be the most immediate consequence?**

**Ans**
- ✗ A. Rapid increase in herbivore population
- ✓ B. Accumulation of waste and dead matter, disrupting nutrient cycling
- ✗ C. Decrease in sunlight reaching producers
- ✗ D. Increased plant growth due to more dead organic matter

**Q.70** **The versatile nature of carbon is responsible for the formation of which of the following types of compounds?**

**Ans**
- ✗ A. Inorganic compounds
- ✓ B. Organic compounds
- ✗ C. Ionic compounds
- ✗ D. Metallic compounds

**Q.71** **What is the main purpose of balanced nutrient management in crops?**

**Ans**
- ✗ A. To maximize pesticide use
- ✗ B. To eliminate water requirements
- ✗ C. To promote weed growth
- ✓ D. To optimize soil fertility and crop yield

**Q.72** **Burning of a saturated hydrocarbon will result in which type of flame?**

**Ans**
- ✓ A. Clean flame
- ✗ B. Yellow flame
- ✗ C. Green flame
- ✗ D. Sooty flame

**Q.73** **The ratio of the unit mass of a molecule of nitrogen ($N_2$) to that of an oxygen molecule ($O_2$) is approximately:**

**Ans**
- ✗ A. 14 : 32
- ✗ B. 8 : 7
- ✓ C. 7 : 8
- ✗ D. 28 : 16

**Q.74** **Which of the following statements are correct?**

**1. Colloids appear homogeneous because their particles are very small.**
**2. Colloids are truly homogeneous at the molecular level.**
**3. Colloidal particles scatter light.**
**4. Milk is a colloidal solution.**

**Ans**
- ✓ A. 1, 3 and 4 only
- ✗ B. 1 and 2 only
- ✗ C. 2 and 4 only
- ✗ D. 1, 2, 3 and 4

**Q.75** **In a velocity–time graph, the graph is a straight horizontal line at 10 m/s for 5 seconds. Then the distance travelled is _____.**

**Ans**
- ✗ A. 10 m
- ✗ B. 2 m
- ✓ C. 50 m
- ✗ D. 5 m

**Q.76** **Which property of connective tissue enables it to bind and support different body parts?**

**Ans**
- ✗ A. Presence of cilia
- ✓ B. Presence of extracellular matrix
- ✗ C. Presence of nerve endings
- ✗ D. Presence of contractile proteins

**Q.77** **Which structure is present in plant cells but absent in animal cells?**

**Ans**
- ✓ A. Cell wall
- ✗ B. Mitochondria
- ✗ C. Cytoplasm
- ✗ D. Endoplasmic reticulum

**Q.78** **Meristematic tissue in plants is mainly characterized by:**

**Ans**
- ✓ A. Small, actively dividing cells with thin walls.
- ✗ B. Permanent storage cells.
- ✗ C. Mature cells with thick walls.
- ✗ D. Large, highly vacuolated cells.

**Q.79** **Which of the following is a function of the Golgi apparatus?**

**Ans**
- ✗ A. Protein synthesis
- ✗ B. Photosynthesis
- ✓ C. Packaging and secretion of materials
- ✗ D. ATP production

**Q.80** **A train starts from rest and reaches a speed of 216 km/h in 10 minutes. If its acceleration is uniform, what is the value of the acceleration?**

**Ans**
- ✗ A. 0.6 m/s2
- ✗ B. 0.4 m/s2
- ✗ C. 1.0 m/s2
- ✓ D. 0.1 m/s2

**Q.81** **When standing still with a heavy load on your head, you expend energy and get tired. Why is zero work done on the load?**

**Ans**
- ✗ A. The time elapsed is irrelevant.
- ✗ B. Force is not being applied.
- ✗ C. The force applied is vertical.
- ✓ D. There is no displacement of the load.

**Q.82** **A concave lens forms a virtual image when the object is placed _____.**

**Ans**
- ✗ A. At infinity only
- ✗ B. Beyond 2F only
- ✓ C. At any position in front of the lens.
- ✗ D. At 2F only

**Q.83** **Blood pressure is recorded as two values: _____ pressure, measured when the heart contracts, and _____ pressure, measured when the heart relaxes.**

**Ans**
- ✗ A. Diastolic; Systolic
- ✓ B. Systolic; Diastolic
- ✗ C. Diastolic; Venous
- ✗ D. Maximum; Systolic

**Q.84** **An ultrasonic wave has a frequency of 33 kHz. What will be the speed of this wave if its wavelength is 0.01 m?**

**Ans**
- ✗ A. 3.3 m/s
- ✓ B. 330 m/s
- ✗ C. 33 m/s
- ✗ D. 0.33 m/s

**Q.85** **The formation of micelles in soap solution occurs due to:**

**Ans**
- ✗ A. dispersion forces only
- ✓ B. hydrophobic and hydrophilic interactions in water
- ✗ C. electrostatic attraction between ions
- ✗ D. hydrogen bonding with water molecules

**Q.86** **In the respiratory tract, columnar epithelium possesses cilia. What is the primary function of these cilia?**

**Ans**
- ✗ A. To increase the surface area for absorption only
- ✗ B. To provide only mechanical support to the tract
- ✓ C. To move and push mucus forward to clear it
- ✗ D. To secrete substances onto the epithelial surface

**Q.87** **Which of the following statements about natural acid-base indicators is correct?**

**Ans**
- ✗ A. Methyl orange is a natural indicator extracted from turmeric.
- ✗ B. China rose (Hibiscus) extract turns green in bases.
- ✓ C. Turmeric turns red in basic solution.
- ✗ D. Red litmus turns blue in acids.

**Q.88** **An echo is heard in 6 s. If the distance of the reflecting surface from the source is 990 m, then how much is the speed of sound?**

**Ans**
- ✓ A. 330 m/s
- ✗ B. 660 m/s
- ✗ C. 1320 m/s
- ✗ D. 165 m/s

**Q.89** **Which of the following is a molecule formed by two atoms of the same element?**

**Ans**
- ✗ A. $O_3$
- ✓ B. $H_2$
- ✗ C. $H_2O$
- ✗ D. CO

**Q.90** **The burning of carbon to form carbon dioxide is an example of a/an:**

**Ans**
- ✗ A. Photochemical reaction
- ✓ B. Exothermic reaction
- ✗ C. Endothermic reaction
- ✗ D. Reversible reaction

**Q.91** **Division of legislative subjects into union, state and concurrent List is contained in which of the following schedules of the Constitution of India?**

**Ans**
- ✗ A. Eleventh Schedule
- ✗ B. Ninth Schedule
- ✗ C. Fifth Schedule
- ✓ D. Seventh Schedule

**Q.92** **Which country launched the first indigenous, Low-Cost Gene Therapy for Sickle Cell Disease, named "BIRSA 101"?**

**Ans**
- ✓ A. India
- ✗ B. China
- ✗ C. Spain
- ✗ D. Japan

**Q.93** **Under the 2018 amendments in Foreign Direct Investment (FDI) policy approved by the Cabinet, the maximum Foreign Direct Investment (FDI) permitted under the automatic route in Single Brand Retail Trading (SBRT) is ____**

**Ans**
- ✗ A. 60%
- ✓ B. 100%
- ✗ C. 40%
- ✗ D. 85%

**Q.94** **With reference to fluvial geomorphic processes in the Indian subcontinent, the Indo-Gangetic Plains have been formed predominantly due to the long-term accumulation of which specific type of deposits?**

**Ans**
- ✗ A. Glacial till deposited directly by valley glaciers
- ✓ B. Alluvial sediments deposited by Himalayan river systems
- ✗ C. Aeolian sand deposits formed under arid climatic conditions
- ✗ D. Marine sediments laid down by repeated sea transgressions

**Q.95** **The NAVYA (Nurturing Aspirations through Vocational Training for Young Adolescent Girls) initiative, launched on 24 June 2025, is for which age group?**

**Ans**
- ✗ A. 12 - 14 years
- ✗ B. 18 - 20 years
- ✗ C. 14 - 16 years
- ✓ D. 16 - 18 years

**Q.96** **Under the new scheme for first-time Women, SC and ST entrepreneurs, announced in the Union Budget 2025-26, what is the maximum loan amount that can be availed?**

**Ans**
- ✗ A. ₹1 crore
- ✗ B. ₹5 crore
- ✗ C. ₹50 lakh
- ✓ D. ₹2 crore

**Q.97** **The Constitution of India provided for how many types of emergencies in Part XVIII, from Articles 352 to 360?**

**Ans**
- ✓ A. Three
- ✗ B. Six
- ✗ C. Four
- ✗ D. Five

**Q.98** **Which bank joins the India Bullion Exchange as a special category client?**

**Ans**
- ✗ A. Bank of India
- ✓ B. State Bank of India
- ✗ C. Punjab National Bank
- ✗ D. Indian Bank

**Q.99** **At which session of the Indian National Congress did the party formally split into the Moderates and the Extremists?**

**Ans**
- ✗ A. Calcutta session 1906
- ✓ B. Surat session 1907
- ✗ C. Delhi session 1912
- ✗ D. Bombay session 1910

**Q.100** **Which dance form is performed by men wearing long colorful robes and tall conical caps in Jammu & Kashmir?**

**Ans**
- ✗ A. Chholiya
- ✗ B. Hikat
- ✓ C. Dumhal
- ✗ D. HurkaBaul

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | Aryabhatta Institute of Engineering and Management |
| Test Date | 09/03/2026 |
| Test Time | 4:30 PM - 6:00 PM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** **What is the mode of the following data?**

**40, 53, 47, 55, 42, 46, 50, 42, 54, 49, 40, 54, 43, 40, 44, 55, 49, 53**

**Ans**
✗ A. 55
✗ B. 49
✗ C. 53
✓ D. 40

**Q.2** **What sum of money (in ₹) will yield ₹740 as simple interest in 2 years at 5% per annum?**

**Ans**
✓ A. 7400
✗ B. 7800
✗ C. 6900
✗ D. 7600

**Q.3** **The curved surface area of a right circular cylinder is 1056 $cm^2$ and its height is 16 cm. Find the total surface area of the cylinder.**

$\left(\text{Use } \pi = \frac{22}{7}\right)$

**Ans**
✗ A. 1794 cm2
✗ B. 1974 cm2
✓ C. 1749 cm2
✗ D. 1479 cm2

**Q.4** **A dealer buys two articles X and Y for ₹1,200 each. He marks each of them at the same price. He sells X by giving two successive discounts of 80% and 44% and still earns ₹172 as profit. If he sells Y at a single discount of 88%, then what is the profit percentage on Y?**

**Ans**
✗ A. 21.5%
✓ B. 22.5%
✗ C. 21%
✗ D. 22%

**Q.5** The difference between the ages of Anuja and Mahima is 42 years. Five years ago from now, the sum of their ages was 98 years. If Anuja is older than Mahima, find Mahima's present age (in years).

**Ans**
- ✔ A. 33
- ✘ B. 28
- ✘ C. 29
- ✘ D. 27

**Q.6** A sum of money amounts to ₹52,020 in 6 months at the rate of 8% per annum when the interest is compounded quarterly. Find the sum.

**Ans**
- ✔ A. ₹50,000
- ✘ B. ₹48,000
- ✘ C. ₹49,000
- ✘ D. ₹51,000

**Q.7** A car travels 120 km at an unknown speed x km/h and then returns at (x + 20) km/h. The average speed for the whole journey is 60 km/h. Find the value of x. (Round to one decimal place.)

**Ans**
- ✘ A. 50.2
- ✔ B. 51.6
- ✘ C. 52.4
- ✘ D. 54.5

**Q.8** In a test, B got 50 marks while A got 80 marks out of 110 maximum marks. What percentage of A's marks were B's marks?

**Ans**
- ✘ A. 72.73%
- ✔ B. 62.5%
- ✘ C. 160%
- ✘ D. 110%

**Q.9** If $a = 0.1125$, then find the value of $100\left[\sqrt{1 + 2(3a) + 9a^2} - 4a\right]$.

**Ans**
- ✘ A. 87.57
- ✘ B. 85.57
- ✘ C. 87.75
- ✔ D. 88.75

**Q.10** Two numbers are in the ratio of 4 : 9. If their sum is 26, then find the mean proportional between them.

**Ans**
- ✘ A. 10
- ✘ B. 11
- ✔ C. 12
- ✘ D. 14

**Q.11** The mean of a data is 41 and its median is 98. The mode (using empirical relation) of the data is:

**Ans**
- ✔ A. 212
- ✘ B. 240
- ✘ C. 209
- ✘ D. 128

**Q.12** Which of the following numbers is not divisible by both 94 and 68?

**Ans**
- ✗ A. 6392
- ✓ B. 7990
- ✗ C. 3196
- ✗ D. 9588

**Q.13** If the length of the side of an equilateral triangle is 8 cm, find its area.

**Ans**
- ✗ A. 28.612 sq.cm.
- ✗ B. 26.812 sq.cm.
- ✗ C. 24.812 sq.cm.
- ✓ D. 27.712 sq.cm.

**Q.14** The sum of the length, breadth and height of a cuboid is p cm and its diagonal is q cm. Find its total surface area (in $cm^2$).

**Ans**
- ✗ A. $p^2 + q^2$
- ✗ B. $(p - q)^2$
- ✗ C. $\frac{p^2 - q^2}{2}$
- ✓ D. $p^2 - q^2$

**Q.15** How many positive integers less than 30 are co-prime to 30?

**Ans**
- ✗ A. 5
- ✗ B. 6
- ✓ C. 8
- ✗ D. 7

**Q.16** The difference between the ages of Sakshi and Priya is 37 years. Five years ago from now, the sum of their ages was 95 years. If Sakshi is older than Priya, find Priya's present age (in years).

**Ans**
- ✗ A. 28
- ✗ B. 43
- ✓ C. 34
- ✗ D. 24

**Q.17** Simplify: $\left(\frac{15}{24} \div \frac{15}{2}\right) \div \left(\frac{1}{8} \times \frac{16}{3} + \frac{1}{8}\right) + \frac{2}{11} \div \frac{19}{23} \text{ of } \frac{23}{11}$

**Ans**
- ✗ A. $\frac{7}{18}$
- ✗ B. $-\frac{5}{23}$
- ✗ C. $-\frac{4}{24}$
- ✓ D. $\frac{4}{19}$

**Q.18** The value of $11^3 - 8^3$ is:

**Ans**
- ✗ A. 866
- ✗ B. 759
- ✗ C. 806
- ✓ D. 819

Q.19 A shopkeeper sold a book at a loss of 7%. If the selling price had been increased by ₹120, there would have been a gain of 17%. What was the cost price (in ₹) of the book?

Ans
- ✔ A. 500
- ✘ B. 510
- ✘ C. 495
- ✘ D. 505

Q.20 If $\frac{\sin\theta+\cos\theta}{\sin\theta-\cos\theta}=11$, then the value of $\frac{25\tan^2\theta-3}{36\cot^2\theta+2}-1$ is:

Ans
- ✔ A. $\frac{2}{9}$
- ✘ B. $\frac{7}{9}$
- ✘ C. $\frac{11}{9}$
- ✘ D. 1

Q.21 A person gave 40% of his income to his wife to look after household expenditure. He gave 20% of the remaining amount to each of his two sons and one daughter. One - third of the amount now left was spent on miscellaneous items and the remaining amount ₹14,400 was deposited in the bank. Find his income.

Ans
- ✘ A. ₹1,10,000
- ✘ B. ₹1,00,000
- ✘ C. ₹96,000
- ✔ D. ₹90,000

Q.22 Which of the following numbers is divisible by 11?

Ans
- ✘ A. 502589
- ✘ B. 512579
- ✘ C. 513589
- ✔ D. 502579

Q.23 Karan and Arjun start a business. Karan invests ₹15,000 more than Arjun. Karan invests for 3 months, and Arjun invests for 4 months. At the end of the business, the total profit is ₹6,060, and Karan's share is ₹2,020 more than Arjun's share. Find the capital contributed by Karan.

Ans
- ✘ A. ₹23,885
- ✘ B. ₹24,093
- ✔ C. ₹24,000
- ✘ D. ₹24,087

Q.24 Three inlet pipes A, B, and C can fill a tank in 8 hours, 12 hours, and 24 hours, respectively. First, pipe A is opened alone for 1 hour. Then pipe B is opened, and both A and B run together for the next 2 hours. After that, pipe C is also opened, and all three pipes run together until the tank is full. How much total time, from the start, will it take to fill the tank?

Ans
- ✘ A. 4 hour 20 minutes
- ✔ B. 4 hour 50 minutes
- ✘ C. 4 hour 30 minutes
- ✘ D. 4 hour 40 minutes

**Q.25** One pipe can fill the tank in 18 min, while another pipe can empty the completely filled tank in 72 min. If both the pipes are operated together on empty tank, how long (in min) will it take to fill two-third of the tank?

**Ans**
- ✗ A. 64
- ✓ B. 16
- ✗ C. 48
- ✗ D. 32

Section : **General Intelligence and Reasoning**

**Q.26** If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', what will come in place of the question mark '?' in the following equation?

57 D 34 C 90 A 18 B 6 = ?

**Ans**
- ✗ A. 55
- ✗ B. 57
- ✗ C. 54
- ✓ D. 53

**Q.27** In a certain code language,
A + B means 'A is the sister of B'
A – B means 'A is the brother of B'
A x B means 'A is the wife of B'
A ÷ B means 'A is the father of B'
Based on the above, how is M related to R if 'M – K + L ÷ P x R'?

**Ans**
- ✗ A. Wife's brother
- ✗ B. Wife's father
- ✗ C. Wife's father's father
- ✓ D. Wife's father's brother

**Q.28** Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Note: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(6, 18, 14)
(8, 20, 16)

**Ans**
- ✗ A. (12, 28,24)
- ✗ B. (9, 21, 25)
- ✓ C. (13, 25, 21)
- ✗ D. (14, 26, 30)

**Q.29** Each vowel in the word AMBLERS is changed to the letter immediately following it in the English alphabetical order and each consonant is changed to the letter immediately preceding it in the English alphabetical order. How many letters will appear exactly twice in the new group of letters thus formed?

**Ans**
- ✗ A. Two
- ✗ B. One
- ✗ C. Three
- ✓ D. Zero

**Q.30** **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
- ✔ A. MP - RT
- ✘ B. PS - TW
- ✘ C. JM - NQ
- ✘ D. QT - UX

**Q.31** **Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. E is kept fifth from the bottom. C is kept fifth from the top. Only one box is kept between D and C. F is kept immediately below B. A is not kept below G. How many boxes are kept between G and A?**

**Ans**
- ✔ A. One
- ✘ B. Three
- ✘ C. Two
- ✘ D. None

**Q.32** **In the following triad, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one that follows the same logic.**

**MATH – AMTH – AHTM**
**MELT – EMLT – ETLM**

**Ans**
- ✘ A. TEAM – AEMT – TEAM
- ✘ B. LEAD – ALDE– ADLE
- ✘ C. HART – RTAH – AHRT
- ✔ D. COLD – OCLD – ODLC

**Q.33** **In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the set in which the numbers are related in the same way as are the numbers of the following sets.**
**(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding / subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)**
**32, 192**
**41, 246**

**Ans**
- ✔ A. 35, 210
- ✘ B. 38, 226
- ✘ C. 43, 254
- ✘ D. 44, 364

**Q.34** **Refer to the following series and answer the question. (All numbers are single-digit numbers only. Counting to be done from left to right.)**
**(Left) 7 2 9 1 3 2 9 4 1 6 8 5 4 3 7 6 4 2 8 1 3 5 (Right)**
**How many such odd digits are there, each of the which is immediately preceded by an even digit and immediately followed by an even digit?**

**Ans**
- ✘ A. Two
- ✘ B. One
- ✔ C. Three
- ✘ D. Four

**Q.35** **In a certain code language,**

**'A + B' means 'A is the son of B',**
**'A @ B' means 'A is the sister of B',**
**'A # B' means 'A is the wife of B' and**
**'A ÷ B' means 'A is the father of B'.**

**How is Q related to H if 'Q # W + R ÷ G @ H'?**

**Ans**
- ✔ A. Brother's wife
- ✘ B. Daughter
- ✘ C. Wife
- ✘ D. Brother's daughter

**Q.36** **Select the pair which follows the same pattern as that followed by the two set of pairs given below. Both pairs follow the same pattern.**
**HDF–DZB**
**GCE–CYA**

**Ans**
- ✘ A. UPQ–PLN
- ✘ B. UPQ–QMO
- ✔ C. UQS–QMO
- ✘ D. UQS–PMN

**Q.37** **S is the daughter of E. E is the wife of L. N is the mother of K. N is the sister of L. How is S related to K?**

**Ans**
- ✘ A. Mother's brother's wife
- ✘ B. Brother's daughter
- ✘ C. Brother's wife
- ✔ D. Mother's brother's daughter

**Q.38** **Seven people H, I, J, K, L, M, and N are sitting in a row facing the north. Only two people are seated to the left of L. Only three people are seated between L and H. I is seated second to the right of J. I is not an immediate neighbour of H. K is seated to the immediate right of M. Who is seated at the extreme left end of the row?**

**Ans**
- ✘ A. J
- ✘ B. K
- ✔ C. N
- ✘ D. H

**Q.39** **Select the pair which follows the same pattern as that followed by the two set of pairs given below. Both pairs follow the same pattern.**
**POK–GFB**
**FEA–WVR**

**Ans**
- ✘ A. WUP–MLH
- ✘ B. WVR–MMH
- ✘ C. WUP–NMI
- ✔ D. WVR–NMI

**Q.40** **In a certain code language,**
**A # B means 'A is the sister of B',**
**A + B means 'A is the son of B',**
**A ÷ B means 'A is the wife of B',**
**and A @ B means 'A is the father of B'.**

**How is A related to T if 'A + B # H @ K ÷ T'?**

**Ans**
- ✗ A. Wife's father's sister's husband
- ✓ B. Wife's father's sister's son
- ✗ C. Wife's father
- ✗ D. Wife's brother

**Q.41** **Each vowel in the word THALERS is changed to the letter immediately following it in the English alphabetical order and each consonant is changed to the letter immediately preceding it in the English alphabetical order. How many letters will appear exactly twice in the group of letters thus formed?**

**Ans**
- ✗ A. 2
- ✗ B. 1
- ✗ C. 3
- ✓ D. 0

**Q.42** **Seven people, C, D, E, F, J, K and L, are sitting in a row, facing north. Only three people sit between D and J. L sits to the immediate left of J. No one sits to the right of K. Only two people sit between K and L. C sits to the immediate right of E.**
**How many people sit between F and C?**

**Ans**
- ✗ A. Four
- ✓ B. Two
- ✗ C. Three
- ✗ D. One

**Q.43** **What should come in place of ? in the given series based on the English alphabetical order?**

**SJT HYI WNX LCM ?**

**Ans**
- ✗ A. ABS
- ✗ B. ASD
- ✗ C. ABR
- ✓ D. ARB

**Q.44** **Seven boxes, B, F, G, H, R, T and Y, kept one over the other, but not necessarily in the same order.**
**R is kept immediately above H. G is kept immediately above T. Only one box is kept between H and T. T is kept above R. Only one box is kept below Y. G or B are not kept at the top.**
**How many boxes are kept above T?**

**Ans**
- ✗ A. 4
- ✓ B. 2
- ✗ C. 3
- ✗ D. 1

**Q.45** What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?

4 ÷ 2 + 12 x 4 - 3 = ?

**Ans**
- ✗ A. 4
- ✗ B. 9
- ✗ C. 6
- ✓ D. 8

**Q.46** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✓ A. JD - LE
- ✗ B. HB - IC
- ✗ C. MG - NH
- ✗ D. QK - RL

**Q.47** In a certain code language, 'PICK' is coded as '2384' and 'SKIP' is coded as '4638'. What is the code for 'S' in that language?

**Ans**
- ✗ A. 8
- ✗ B. 3
- ✓ C. 6
- ✗ D. 2

**Q.48** In a certain code language, 'SNOW' is coded as '1732' and 'KNOW' is coded as '5317'. What is the code for 'K' in that language?

**Ans**
- ✓ A. 5
- ✗ B. 1
- ✗ C. 2
- ✗ D. 7

**Q.49** Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✗ A. UXV
- ✗ B. SVT
- ✓ C. RKL
- ✗ D. PSQ

**Q.50** Refer to the following letter series and answer the question that follows. Counting to be done from left to right.

(Left) E Z J K A R T S W H M F U C N P D K I E N O A K (Right)

How many such vowels are there, each of which is immediately preceded by a consonant and also immediately followed by a consonant?

**Ans**
- ✗ A. 4
- ✗ B. 1
- ✗ C. 3
- ✓ D. 2

**Q.51** **Which group of organisms is responsible for breaking down dead bodies and waste into simpler substances that return to the soil?**

**Ans**
- ✔ A. Decomposers
- ✘ B. Consumers
- ✘ C. Parasite only
- ✘ D. Producers

**Q.52** **Crossbreeding in cattle is done to achieve _____.**

**Ans**
- ✘ A. Excessive draught power
- ✘ B. Only higher milk fat content
- ✔ C. Longer lactation and disease resistance
- ✘ D. Reduced milk production

**Q.53** **Choose a term to complete the analogy.**

**Columnar Epithelium : Absorption :: Cuboidal Epithelium : _____**

**Ans**
- ✘ A. Preventing wear and tear
- ✘ B. Forming a delicate lining
- ✔ C. Mechanical support
- ✘ D. Pushing mucus

**Q.54** **What is the importance of sexual reproduction in creating variation in plant populations?**

**Ans**
- ✔ A. It mixes DNA from two parents to create new variations.
- ✘ B. It speeds up DNA copying errors.
- ✘ C. It copies DNA without any changes.
- ✘ D. It prevents any variations from occurring.

**Q.55** **Which of the following describes a key function of lysosomal enzymes?**

**Ans**
- ✘ A. Storing genetic material
- ✘ B. Creating new proteins for the cell
- ✔ C. Breaking down proteins, lipids, and carbohydrates
- ✘ D. Transporting molecules across the membrane

**Q.56** **Isotopes are atoms of the same element that have:**

**Ans**
- ✘ A. the same mass number but different atomic numbers
- ✘ B. different chemical properties
- ✘ C. different number of protons
- ✔ D. the same atomic number but different mass numbers

**Q.57** **Six resistors of 3 Ω each are connected in parallel in a circuit. What will be their effective resistance?**

**Ans**
- ✘ A. 3 Ω
- ✘ B. 18 Ω
- ✘ C. 2 Ω
- ✔ D. 0.5 Ω

**Q.58** **Metals in the middle of the activity series, such as iron and zinc, are generally extracted by:**

**Ans**
- ✗ A. Displacement from aqueous solution
- ✗ B. Electrolysis of molten salts
- ✓ C. Reduction of their oxides with carbon or carbon monoxide
- ✗ D. Heating alone without any reducing agent

**Q.59** **Which of the following is a ring compound with the molecular formula $C_6H_{12}$?**

**Ans**
- ✗ A. Benzene
- ✗ B. Hexane
- ✗ C. Butane
- ✓ D. Cyclohexane

**Q.60** **The main reason for twinkling of stars is _____.**

**Ans**
- ✓ A. Atmospheric refraction varying with time
- ✗ B. Nuclear reactions inside stars
- ✗ C. Scattering of star light
- ✗ D. Presence of clouds

**Q.61** **Lysosomes are also known as:**

**Ans**
- ✗ A. Energy powerhouses
- ✗ B. Control centers
- ✗ C. Protein factories
- ✓ D. Suicidal bags of the cell

**Q.62** **An object travels 16 m in 4 s and then another 16 m in 2 s. What is the average speed of the object?**

**Ans**
- ✗ A. 2.67 m/s
- ✗ B. 4 m/s
- ✓ C. 5.33 m/s
- ✗ D. 8 m/s

**Q.63** **Which of the following best describes the primary function of nervous tissue?**

**Ans**
- ✗ A. Contraction for movement
- ✗ B. Providing support and binding
- ✗ C. Absorption of nutrients
- ✓ D. Transmission of electrical impulses

**Q.64** **A body travelling in a straight line with a constant velocity of 50 m/s. What is the displacement of the car in 10 sec and the type of motion followed by the car, respectively?**

**Ans**
- ✗ A. 5 m and Uniform Motion
- ✓ B. 500 m and Uniform Motion
- ✗ C. 5 m and Non-Uniform Motion
- ✗ D. 500 m and Non-Uniform Motion

**Q.65** **Which of the following best distinguishes a food web from a food chain?**

**Ans**
- ✗ A. A food web allows backward energy flow; a food chain is unidirectional
- ✗ B. A food web transfers all energy; a food chain loses energy
- ✓ C. A food web shows multiple trophic levels; a food chain shows one level
- ✗ D. A food chain always has decomposers; a food web does not

**Q.66** **Which of the following is the best method to prevent corrosion of iron in coastal areas?**

**Ans**
- ✗ A. Immersing in cold water
- ✗ B. Painting with oil-based paints
- ✓ C. Galvanisation
- ✗ D. Heating the iron periodically

**Q.67** **How long does an unfertilised egg survive after being released from the ovary?**

**Ans**
- ✗ A. One month
- ✓ B. About one day
- ✗ C. One week
- ✗ D. Two hours

**Q.68** **Which of the following is the product formed when ethene ($C_2H_4$) reacts with hydrogen ($H_2$) in the presence of a catalyst nickel?**

**Ans**
- ✗ A. Propane (C3H8)
- ✗ B. Ethyne (C2H2)
- ✓ C. Ethane (C2H6)
- ✗ D. Propene (C3H6)

**Q.69** **If a sample of air is compressed to half its volume, which of the following statements is correct?**

**Ans**
- ✗ A. Air becomes a compound on compression.
- ✗ B. The composition of air changes.
- ✗ C. The proportion of gases changes.
- ✓ D. The composition of air remains same because it is a mixture.

**Q.70** **The SI unit of force (F) is _____ .**

**Ans**
- ✗ A. N m
- ✗ B. kg m/s
- ✓ C. kg $m/s^2$
- ✗ D. Joule

**Q.71** **What is the main difference between isobars and isotopes?**

**Ans**
- ✗ A. Isobars have the same atomic number; isotopes have different atomic numbers
- ✓ B. Isobars have the same mass number but different atomic numbers
- ✗ C. Isobars are atoms of the same element; isotopes are of different elements
- ✗ D. Isobars have the same number of electrons; isotopes do not

**Q.72** **The molecular mass of a compound is '60'. If it contains 40% carbon, 6.7% hydrogen, and 53.3% oxygen, what is the molecular formula?**

**Ans**
- ✓ A. $C_2H_4O_2$
- ✗ B. $C_4H_8O_4$
- ✗ C. $CH_2O$
- ✗ D. $C_3H_6O_3$

**Q.73** **Refer to the two statements given below and choose the CORRECT option.**

**Statement A: Nervous tissue is responsible for rapid transmission of electrical impulses in the body.**

**Statement B: Nervous tissue mainly provides structural and mechanical support to organs.**

**Ans**
- ✗ A. Statement A is incorrect but B is correct.
- ✓ B. Statement A is correct but B is incorrect.
- ✗ C. Both statements A and B are incorrect.
- ✗ D. Both statements A and B are correct.

**Q.74** **A body undergoes a displacement of 50 m under the action of a constant force of 5 N in the same direction as that of the force. What will be the work done under the action of this force?**

**Ans**
- ✗ A. - 250 J
- ✗ B. - 25 J
- ✗ C. + 25 J
- ✓ D. + 250 J

**Q.75** **In a prism, the emergent ray comes out at an angle different from the incident ray. What is this angle called?**

**Ans**
- ✗ A. Angle of the prism
- ✗ B. Angle of reflection
- ✓ C. Angle of deviation
- ✗ D. Angle of incidence

**Q.76** **In the process of electrolytic refining of copper, which of the following is correctly matched?**

**Ans**
- ✗ A. Anode – Pure copper
- ✗ B. Cathode – Impure copper
- ✗ C. Cathode Mud – Pure copper crystals
- ✓ D. Electrolyte – Acidified Copper sulphate solution

**Q.77** **Implantation of developing embryo occurs in which part of the female reproductive system in human beings?**

**Ans**
- ✗ A. Fallopian tubes
- ✗ B. Ovary
- ✗ C. Cervix
- ✓ D. Lining of the uterus

**Q.78** **A bus moves from one end A to the other end B of a straight 1000 m road in 100 s and then turns around and moves 500 m back to point C in another 100 s. What will be the average velocity (in m/s) and the type of motion of the bus in going from point A to point C?**

**Ans**
- ✓ A. 2.5 m/s and Non-Uniform Motion
- ✗ B. 0.4 m/s and Uniform Motion
- ✗ C. 0.4 m/s and Non-Uniform Motion
- ✗ D. 2.5 m/s and Uniform Motion

**Q.79** **Which of the following epithelial tissues is specialised for absorption and lines the inner surface of the intestine?**

**Ans**
- ✔ A. Columnar epithelium
- ✘ B. Cuboidal epithelium
- ✘ C. Ciliated epithelium
- ✘ D. Stratified epithelium

**Q.80** **What will be the pH of a 0.01 M HCl solution?**

**Ans**
- ✔ A. 2
- ✘ B. 18
- ✘ C. 8
- ✘ D. 12

**Q.81** **What are the two main categories of factors responsible for storage losses in agricultural produce?**

**Ans**
- ✘ A. Harvesting and Processing
- ✘ B. Mechanical and Thermal
- ✔ C. Biotic and Abiotic
- ✘ D. Chemical and Electrical

**Q.82** **Which of the following statements is/are correct regarding Rutherford's model of the atom?**

**Statement 1: The atom has a positively charged dense nucleus at its centre.**

**Statement 2: Electrons revolve in circular orbits around the nucleus without losing energy.**

**Statement 3: Most of the space inside the atom is empty.**

**Ans**
- ✘ A. Only 1, 2 and 3
- ✘ B. Only 1 and 2
- ✘ C. Only 2 and 3
- ✔ D. Only 1 and 3

**Q.83** **The compound with molecular formula $C_2H_4O$ can belong to which of the following functional group, and what is its IUPAC name?**

**Ans**
- ✘ A. Alcohol, ethanol
- ✘ B. Ether, ethane
- ✔ C. Aldehyde, ethanal
- ✘ D. Aldehyde, ethanol

**Q.84** **Read the given assertion and reason and select the correct option based on the analysis of these statements.**

**Assertion:** **Stethoscope uses the concept of multiple reflection of sound waves for its working.**
**Reason:** **Sound waves require a material medium for their propagation.**

**Ans**
- ✘ A. Assertion is false and reason is true.
- ✔ B. Both assertion and reason are true and the reason is not the correct explanation of the assertion.
- ✘ C. Both assertion and reason are true and the reason is the correct explanation of the assertion.
- ✘ D. Assertion is true but reason is false.

**Q.85** When sound propagates through air, the region of high pressure created by the vibrating object pushing air forward is called a _____.

**Ans**
- ✔ A. Compression (C)
- ✘ B. Medium boundary
- ✘ C. Transverse wave
- ✘ D. Rarefaction (R)

**Q.86** An object moving at 25 m/s is brought to rest in 5 seconds. The final velocity is _____.

**Ans**
- ✘ A. 25 m/s
- ✘ B. 20 m/s
- ✔ C. 0 m/s
- ✘ D. 5 m/s

**Q.87** A wire carrying current is placed between the poles of a magnet. It experiences maximum force when it ____.

**Ans**
- ✔ A. is perpendicular to the magnetic field
- ✘ B. is at 45° to the magnetic field
- ✘ C. is outside the magnetic field
- ✘ D. is parallel to the magnetic field

**Q.88** When several rays parallel to the principal axis fall on a concave mirror, how do the reflected rays behave?

**Ans**
- ✘ A. They are reflected back along the same path.
- ✘ B. They travel parallel to the principal axis after reflection.
- ✘ C. They spread out and appear to come from behind the mirror.
- ✔ D. They all meet at a single point on the principal axis.

**Q.89** An object's mass remains constant everywhere (on the Earth or the Moon), whereas its weight changes because _____.

**Ans**
- ✘ A. Weight is a scalar quantity, while mass is vector
- ✔ B. Weight depends on the local value of g, which varies with location
- ✘ C. Mass is dependent on inertia, but weight is not
- ✘ D. The SI unit of weight is Newtons, while mass is kilograms

**Q.90** Which of the following statements correctly differentiates a compound from a mixture?

**Ans**
- ✘ A. Mixtures are formed through chemical reactions.
- ✔ B. Mixtures can be separated by physical means, but compounds cannot.
- ✘ C. Compounds show variable composition, mixtures do not.
- ✘ D. Compounds retain the properties of their constituents.

Section : **General Awareness**

**Q.91** During October 2025, what first-ever scientific observation was made by ISRO's Chandrayaan-2 orbiter?

**Ans**
- ✔ A. The effects of Coronal Mass Ejections from the Sun on the Moon
- ✘ B. The discovery of a newly identified mineral present on the Moon
- ✘ C. The presence of subsurface water deposits under the lunar surface
- ✘ D. The detection of volcanic activity occurring beneath the lunar crust

**Q.92** **In which country is the military exercise ZAPAD 2025 conducted from 10 to 16 September 2025?**

**Ans**
- ✗ A. Germany
- ✓ B. Russia
- ✗ C. Japan
- ✗ D. France

**Q.93** **The term 'Armed Rebellion' was introduced under Article 352 of the Indian Constitution for the proclamation of a National Emergency by which Constitutional Amendment?**

**Ans**
- ✗ A. 42nd Constitutional Amendment Act, 1976
- ✗ B. 61st Constitutional Amendment Act, 1988
- ✓ C. 44th Constitutional Amendment Act, 1978
- ✗ D. 86th Constitutional Amendment Act, 2002

**Q.94** **Who among the following were the pivotal leaders of the Santhal Rebellion of 1855–1856?**

**Ans**
- ✓ A. Sidhu Murmu and Kanhu Murmu
- ✗ B. Tilka Manjhi and Sido Kanhu
- ✗ C. Birsa Munda and Raghunath Murmu
- ✗ D. Lalu Prasad and Sidhu Kanhu

**Q.95** **In which Indian state do the Western Ghats reach their maximum elevation, marked by the presence of Anaimudi, the highest peak of the range?**

**Ans**
- ✓ A. Kerala
- ✗ B. Maharashtra
- ✗ C. Karnataka
- ✗ D. Tamil Nadu

**Q.96** **The National Sports Governance Bill, 2025, was introduced to achieve which of the following objective?**

**Ans**
- ✗ A. To increase budget allocation for Olympic sports
- ✗ B. To improve physical and sports education in schools
- ✓ C. To establish rules for recognizing and regulating sports bodies
- ✗ D. To launch a national-level talent hunt program

**Q.97** **Who among the following made a significant contribution to Bharatanatyam as a performer, teacher, composer and scholar and was awarded Padma Bhushan in 2011?**

**Ans**
- ✗ A. Guru Bipin Singh
- ✗ B. Vempati Chinna Satyam
- ✗ C. Kalamandalam Gopi
- ✓ D. C. V. Chandrashekhar

**Q.98** **In September 2025, the Supreme Court of India reaffirmed which important legal position under the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989?**

**Ans**
- ✓ A. The grant of anticipatory bail is absolutely barred if the FIR prima facie discloses an offence under the Act
- ✗ B. The anticipatory bail may be granted only by the High Court
- ✗ C. The accused can apply for anticipatory bail under all circumstances
- ✗ D. The anticipatory bail provision has been removed from the Indian Penal Code

**Q.99** **In which year did India sign the World Trade Organization (WTO) Agreement and become a founding member of WTO?**

**Ans**

✗ A. 1993

✓ B. 1995

✗ C. 1997

✗ D. 1991

**Q.100** **"To provide opportunities for education to his child or ward between the ages of six and fourteen years" was added to the Indian Constitution as the 11$^{th}$ Fundamental Duty through which of the following amendments?**

**Ans**

✗ A. 42nd Constitutional Amendment Act, 1976

✗ B. 44th Constitutional Amendment Act, 1978

✓ C. 86th Constitutional Amendment Act, 2002

✗ D. 61st Constitutional Amendment Act, 1988

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | iON Digital Zone iDZ Laxman Nagar |
| Test Date | 10/03/2026 |
| Test Time | 9:00 AM - 10:30 AM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** **The mean of a data is 20 and its median is 30. The mode (using empirical relation) of the data is:**

**Ans**
- ✔ A. 50
- ✘ B. 110
- ✘ C. 44
- ✘ D. 131

**Q.2** **Pipe A can fill a tank in 12 hours, pipe B in 15 hours, and an outlet C can empty it in 20 hours. A and B are opened together for 5 hours, and then C is also opened. Find the total time to fill the tank.**

**Ans**
- ✘ A. 6 hours
- ✘ B. 5.5 hours
- ✘ C. 6.5 hours
- ✔ D. 7.5 hours

**Q.3** **A tap fills a tank in 11 hours. Another tap empties the full tank in 22 hours. How long (in hours) will it take to fill the tank completely, if the tank is empty and both the taps are open together?**

**Ans**
- ✔ A. 22
- ✘ B. 25
- ✘ C. 23
- ✘ D. 24

**Q.4** **Simplify:**

$$\left(\frac{5}{6}+\frac{1}{3}\right)\div\left(\frac{2}{5}+0.3\right)\times 0.5+\frac{1}{2}-\frac{1}{6}$$

**Ans**
- ✔ A. $\frac{7}{6}$
- ✘ B. $\frac{5}{6}$
- ✘ C. $\frac{1}{6}$
- ✘ D. $\frac{3}{6}$

**Q.5** If the cost of 8 pens is ₹136, then find the cost of 12 such pens.

**Ans**
- ✗ A. ₹208
- ✗ B. ₹202
- ✗ C. ₹206
- ✓ D. ₹204

**Q.6** What is the mode of the following data?

47, 43, 50, 46, 46, 40, 54, 54, 40, 54, 42, 48, 44, 55, 52, 45, 41, 41

**Ans**
- ✗ A. 40
- ✗ B. 41
- ✓ C. 54
- ✗ D. 46

**Q.7** A dealer buys two articles X and Y for ₹700 each. He marks each of them at the same price. He sells X by giving two successive discounts of 60% and 20% and still earns ₹630 as profit. If he sells Y at a single discount of 76%, then what is the profit percentage on Y?

**Ans**
- ✗ A. 41.5%
- ✓ B. 42.5%
- ✗ C. 42%
- ✗ D. 41%

**Q.8** Aarju starts a business with ₹55,000 and after 3 months, Bimla joins Aarju as her partner. After a year, the profit is divided in the ratio 8 : 9. What is Bimla's contribution in the capital?

**Ans**
- ✗ A. ₹84,240
- ✗ B. ₹84,080
- ✓ C. ₹82,500
- ✗ D. ₹82,355

**Q.9** The difference between the present ages of Ayushi and Nidhi is 26 years. Five years ago from now, the sum of their ages was 30 years. If Ayushi is older than Nidhi, find Nidhi's present age (in years).

**Ans**
- ✗ A. 6
- ✓ B. 7
- ✗ C. 10
- ✗ D. 12

**Q.10** In a college, class A has 25 students and class B has 30 students. If the number of students in class A increases by 20% in the first year and by 10% in the second year, and the number of students in class B increases by a total of 20% in two years, what is the overall percentage increase in the total number of students in the college over the two years? (Give your answer rounded off to 2 decimal places.)

**Ans**
- ✗ A. 25.85%
- ✗ B. 20.45%
- ✓ C. 25.45%
- ✗ D. 20.85%

**Q.11** A man sells two articles for ₹42000 each. He gets a profit of 45% on one article and loses 45% on the other article. What is his overall profit or loss (to the nearest integer) in this transaction?

**Ans**
- ✗ A. ₹21429 loss
- ✓ B. ₹21329 loss
- ✗ C. ₹21429 profit
- ✗ D. ₹21329 profit

**Q.12** What is the amount on ₹20,000 for six months at 12% annual interest, compounded quarterly?

**Ans**
- ✗ A. ₹21934
- ✗ B. ₹21823
- ✗ C. ₹21335
- ✓ D. ₹21218

**Q.13** The value of $27^3 - 22^3$ is:

**Ans**
- ✓ A. 9035
- ✗ B. 8823
- ✗ C. 8923
- ✗ D. 8888

**Q.14** $The\ simplified\ value\ of\ \sqrt{225} + \sqrt{0.04} - \sqrt{4.84}\ is$

**Ans**
- ✗ A. 4.03
- ✗ B. 3.82
- ✗ C. 13.53
- ✓ D. 13

**Q.15** If an exterior angle of a regular polygon is 40°, then find the number of diagonals of the polygon.

**Ans**
- ✗ A. 35
- ✓ B. 27
- ✗ C. 40
- ✗ D. 45

**Q.16** Which number, when added to each of the numbers 2, 3, 11 and 13, will make the resulting numbers in proportion?

**Ans**
- ✓ A. 7
- ✗ B. 5
- ✗ C. 4
- ✗ D. 6

**Q.17** The difference between the present ages of Juhi and Surbhi is 24 years. Five years ago from now, the sum of their ages was 66 years. If Juhi is older than Surbhi, find Surbhi's present age (in years).

**Ans**
- ✗ A. 33
- ✗ B. 18
- ✗ C. 20
- ✓ D. 26

**Q.18** If 15 notebooks cost ₹240, then how many notebooks can be bought with ₹992?

**Ans**
- ✗ A. 60
- ✓ B. 62
- ✗ C. 66
- ✗ D. 64

**Q.19** A quantity is first decreased by 12% and then again decreased by 8%. What is the overall percentage decrease?

**Ans**
- ✗ A. 21.04%
- ✗ B. 20.96%
- ✗ C. 18.96%
- ✓ D. 19.04%

**Q.20** Find the perimeter of the semi-circle of radius 21 cm $\left(\text{Take } \pi = \frac{22}{7}\right)$.

**Ans**
- ✗ A. 87 cm
- ✗ B. 66 cm
- ✓ C. 108 cm
- ✗ D. 174 cm

**Q.21** A hollow cylindrical pipe has an external radius of 7 cm, internal radius of 6 cm, and height of 20 cm. Find the total surface area of the pipe (both ends included). $\left(\text{Use } \pi = \frac{22}{7}\right)$

**Ans**
- ✓ A. 1716 $cm^2$
- ✗ B. 1670 $cm^2$
- ✗ C. 1600 $cm^2$
- ✗ D. 1485 $cm^2$

**Q.22** If $x = 5 + 2\sqrt{6}$, then find the value of $\frac{x-1}{\sqrt{x}}$.

**Ans**
- ✗ A. $\sqrt{2}$
- ✓ B. $2\sqrt{2}$
- ✗ C. $\sqrt{3} + \sqrt{2}$
- ✗ D. $3\sqrt{2}$

**Q.23** A traveller moves from City A to City B at 48 km/h and returns at 60 km/h. If the total time taken for the whole journey is 9 hours, find the distance between A and B.

**Ans**
- ✓ A. 240 km
- ✗ B. 250 km
- ✗ C. 270 km
- ✗ D. 260 km

**Q.24** What sum of money (in ₹) will yield ₹720 as simple interest in 3 years at 6% per annum?

**Ans**
- ✗ A. 4200
- ✗ B. 3500
- ✓ C. 4000
- ✗ D. 4400

Q.25 If $\cot\theta = \frac{1}{\sqrt{3}}, (0^\circ < \theta < 90^\circ)$, then the value of $\frac{2-\sin^2\theta}{1+\cos^2\theta} + (\text{cosec}^2\theta$

Ans
- ✗ A. $\frac{11}{3}$
- ✗ B. $\frac{17}{3}$
- ✓ C. $\frac{19}{3}$
- ✗ D. $\frac{29}{3}$

Section : **General Intelligence and Reasoning**

Q.26 **What should come in place of '?' in the given series?**

**47 54 63 70 79 ?**

Ans
- ✗ A. 83
- ✓ B. 86
- ✗ C. 88
- ✗ D. 84

Q.27 **What will come in the place of the question mark (?) in the following equation, if '+' and '–' are interchanged and '×' and '÷' are interchanged?**

**48 – 96 × 12 ÷ 4 + 32 = ?**

Ans
- ✗ A. 42
- ✗ B. 43
- ✗ C. 46
- ✓ D. 48

Q.28 **Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

Ans
- ✓ A. KHG
- ✗ B. NPM
- ✗ C. GIF
- ✗ D. MOL

Q.29 **Each letter in the word DEARTHS is changed to the letter immediately following it in the English alphabetical order and then all the letters thus formed are arranged in alphabetical order. Which of the following letters will be fourth from the right in the new group of letters thus formed?**

Ans
- ✗ A. S
- ✗ B. F
- ✗ C. E
- ✓ D. I

**Q.30** **Select the pair that follows the same pattern as the one followed by the two pairs given below. Both pairs follow the same pattern.**

**KNG : MLF**
**GRN : IPM**

**Ans**
- ✗ A. BGM : DEK
- ✗ B. IGH : KDG
- ✗ C. KHR : MFP
- ✓ D. JSN : LQM

**Q.31** **Anu starts from Point A and drives 3 km towards the north. He then takes a right turn, drives 2 km, turns right and drives 5 km. He then takes a right turn and drives 4 km. He takes a final right turn, drives 2 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90-degree turns only unless specified.)**

**Ans**
- ✗ A. 8 km to the North
- ✓ B. 2 km to the east
- ✗ C. 6 km to the east
- ✗ D. 4 km to the west

**Q.32** **G is the mother of Y. Y is the sister of V. S is the father of L. L is the husband of V. How is G related to L?**

**Ans**
- ✗ A. Wife's sister
- ✓ B. Wife's mother
- ✗ C. Mother
- ✗ D. Sister

**Q.33** **In a certain code language, 'DUKE' is coded as '8123' and 'DESK' is coded as '2314'. What is the code for 'S' in that language?**

**Ans**
- ✗ A. 8
- ✓ B. 4
- ✗ C. 1
- ✗ D. 2

**Q.34** **Refer to the following series and answer the question. (All numbers are single-digit numbers only. Counting to be done from left to right.)**
**(Left) 7 9 2 6 1 2 6 4 8 2 7 5 9 8 6 5 4 2 2 1 3 (Right)**
**How many such even digits are there, each of the which is immediately preceded by a perfect square and immediately followed by an even digit? (NOTE: 1 is also a perfect square)**

**Ans**
- ✗ A. Four
- ✗ B. Three
- ✓ C. Five
- ✗ D. Two

**Q.35** **A, B, C, D, E, F and G are sitting around a circular table facing the centre. Only two people are seated between E and F when counted from the right of E. Only two people are seated between F and D when counted from the left of D. Only three people are seated between E and B when counted from the left of B. C is seated to the immediate left of G. How many people are seated between A and F when counted from the right of F?**

**Ans**
- ✓ A. 1
- ✗ B. 3
- ✗ C. 4
- ✗ D. 2

**Q.36** **EHLF is related to NQUO in a certain way based on the English alphabetical order. In the same way, HKOI is related to QTXR. To which of the following is JMQK related, following the same logic?**

**Ans**
- ✗ A. VSTZ
- ✗ B. SVTZ
- ✗ C. VSZT
- ✓ D. SVZT

**Q.37** **VRHM is related to XTJO in a certain way based on the English alphabetical order. In the same way, DZPU is related to FBRW. To which of the given options is JVFA related, following the same logic?**

**Ans**
- ✓ A. LXHC
- ✗ B. LXCD
- ✗ C. LCFD
- ✗ D. LKIO

**Q.38** **Refer to the following letter series and answer the question that follows. Counting to be done from left to right.**

**(Left) D J L O E A H O A F A G E B G A N R S H X (Right)**

**How many such consonants are there, each of which is immediately preceded by a consonant and also immediately followed by a vowel?**

**Ans**
- ✗ A. Three
- ✗ B. One
- ✓ C. Two
- ✗ D. None

**Q.39** **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
- ✗ A. DI - AF
- ✗ B. XB - UY
- ✓ C. QR - MP
- ✗ D. KO - HL

**Q.40** **Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. Only two boxes are kept below D. Only three boxes are kept between E and D. C is kept above A but below G. B is kept above F but below A. Which box is kept immediately above A?**

**Ans**
- ✓ A. C
- ✗ B. D
- ✗ C. E
- ✗ D. G

**Q.41** Each vowel in the word PANDEMIC is changed to the letter immediately following it in the English alphabetical order and each consonant is changed to the letter immediately preceding it in the English alphabetical order. Which of the following letters will appear exactly twice in the new group of letters thus formed?

**Ans**
- ✗ A. M
- ✗ B. C
- ✗ C. O
- ✓ D. B

**Q.42** Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. B is kept third from the top. Only three boxes are kept between D and B. C is kept immediately below G but above F. A is kept below E but above B.
How many boxes are kept between C and A?

**Ans**
- ✗ A. Three
- ✗ B. Four
- ✗ C. One
- ✓ D. Two

**Q.43** E, R, U, T, Y, W and Q are sitting around a circular table, facing the centre of the table.
Only two people sit between T and Q when counted from the right of Q. Only three people sit between W and U when counted from the right of U. E sits to the immediate right of W. Y is an immediate neighbour of U as well as Q.
How many people sit between R and U when counted from the left of R?

**Ans**
- ✗ A. 4
- ✓ B. 3
- ✗ C. 2
- ✗ D. 1

**Q.44** In a certain code language,
P + Q means 'P is the father of Q'
P – Q means 'P is the wife of Q'
P x Q means 'P is the brother of Q'
P ÷ Q means 'P is the son of Q'

Based on the above, how is G related to K if 'F – G x H ÷ I – J ÷ K'?

**Ans**
- ✓ A. Son's Son
- ✗ B. Father's brother
- ✗ C. Mother's brother
- ✗ D. Mother's father

**Q.45** What should come in place of '?' in the given series?

6, 7, 11, 20, 36, 61, ?

**Ans**
- ✗ A. 105
- ✗ B. 110
- ✗ C. 95
- ✓ D. 97

**Q.46** In a certain code language, 'TYRE' is coded as '8526' and 'BYTE' is coded as '5986'.
What is the code for 'B' in that language?

**Ans**
- ✗ A. 6
- ✗ B. 2
- ✗ C. 8
- ✓ D. 9

**Q.47** **In a certain code language,**
**A + B means 'A is the sister of B'**
**A − B means 'A is the brother of B'**
**A × B means 'A is the wife of B'**
**A ÷ B means 'A is the father of B'**

**Based on the above, how is S related to N if 'S ÷ E + W × T − N'?**

**Ans**
✗ A. Brother's father
✓ B. Brother's wife's father
✗ C. Wife's father
✗ D. Brother's wife's brother

**Q.48** **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
✗ A. DK - FM
✗ B. HO - JQ
✓ C. KU - MT
✗ D. OV - QX

**Q.49** **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?**
**(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

**Ans**
✗ A. FI–JM
✓ B. UX–XD
✗ C. SV–WZ
✗ D. DG–HK

**Q.50** **If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '−', what will come in place of the question mark '?' in the following equation?**

**147 A 3 C 51 D 16 B 3 = ?**

**Ans**
✓ A. 52
✗ B. 50
✗ C. 54
✗ D. 59

Section : **General Science**

**Q.51** **Which of the following methods is commonly used to extract metals low in the activity series, such as mercury and copper, from their ores?**

**Ans**
✗ A. Reduction with aluminium powder
✓ B. Roasting
✗ C. Displacement by carbon monoxide gas
✗ D. Electrolysis of molten ore

**Q.52** **Why is electrolysis used for the extraction of metals high up in the reactivity series, such as sodium and aluminum?**

**Ans**
✗ A. Because these metals exist in native state
✗ B. Because these metals have low melting points
✗ C. Because these metals form volatile oxides
✓ D. Because these metals cannot be reduced by carbon or hydrogen

**Q.53** The far point of a myopic person is 80 cm in front of the eye. Assuming the far point for normal vision is infinity, what is the required power (P) of the corrective lens?

**Ans**
- ✗ A. -0.80 D
- ✗ B. +0.80 D
- ✗ C. +1.25 D
- ✓ D. -1.25 D

**Q.54** Which condition is required for methane to undergo a substitution reaction with chlorine?

**Ans**
- ✗ A. Heat
- ✗ B. Acidic medium
- ✓ C. Sunlight
- ✗ D. Electric current

**Q.55** How much energy will be available to the tertiary consumer if a food chain begins with 5000 J of energy at the producer level?

**Ans**
- ✗ A. 0.5 J
- ✗ B. 500 J
- ✓ C. 5 J
- ✗ D. 50 J

**Q.56** Which of the following isotopes is used in the treatment of cancer?

**Ans**
- ✗ A. Isotope of carbon
- ✗ B. Isotope of uranium
- ✗ C. Isotope of iodine
- ✓ D. Isotope of cobalt

**Q.57** The principal focus of a concave mirror is:

**Ans**
- ✓ A. The point where rays parallel to the principal axis converge after reflection
- ✗ B. A point on the mirror where all rays meet
- ✗ C. The pole of the mirror
- ✗ D. The center of curvature of the mirror

**Q.58** After fertilisation in humans, where does the growth and development of the embryo mainly occur?

**Ans**
- ✗ A. Fallopian tube
- ✓ B. Uterus
- ✗ C. Vagina
- ✗ D. Ovary

**Q.59** Which characteristic best describes parenchyma?

**Ans**
- ✗ A. Rigid cells that withstand bending.
- ✓ B. Living cells with thin walls, capable of division in young tissues.
- ✗ C. Dead at maturity with thick secondary walls.
- ✗ D. Cells arranged in a single layer with guarding function.

**Q.60** Why is vegetative propagation useful for agriculture purposes?

**Ans**
- ✓ A. It produces identical plants rapidly
- ✗ B. It requires seeds for every generation
- ✗ C. It prevents diseases naturally
- ✗ D. It increases genetic variation

**Q.61** **Which of the following is NOT a factor responsible for grain storage losses?**

**Ans**
- ✗ A. Rodents
- ✗ B. Inadequate moisture and temperature
- ✓ C. High-quality packaging
- ✗ D. Fungi and bacteria

**Q.62** **A constant force of 21 N moves a body through 3 m in its own direction. Work done is ____.**

**Ans**
- ✓ A. 63 J
- ✗ B. 18 J
- ✗ C. 7 J
- ✗ D. 24 J

**Q.63** **How much work is required to move a charge of 3 C between two points that have a potential difference of 15 V?**

**Ans**
- ✓ A. 45 J
- ✗ B. 14 J
- ✗ C. 5 J
- ✗ D. 21 J

**Q.64** **Which of the following correctly differentiates ligament from tendon in human connective tissue?**

**Ans**
- ✗ A. Both ligament and tendon connect bones to bones but differ in color
- ✗ B. Ligament connects muscle to bone, while tendon connects bone to bone
- ✓ C. Ligament connects bone to bone; tendon connects muscle to bone
- ✗ D. Tendon is elastic, while ligament is completely non-elastic

**Q.65** **Which of the following is the best example of uniform circular motion?**

**Ans**
- ✗ A. A roller coaster on a loop
- ✗ B. A yo-yo being swung in a vertical circle at changing speed
- ✗ C. A racing car on a curved track slowing down
- ✓ D. Moon revolving around the Earth in a circular orbit

**Q.66** **Match the elements in Column I with their correct electron distribution in Column II according to the Bohr–Bury rules.**

| Element | Electron Distribution |
|---|---|
| A. Sodium (Na) | 1. 2, 8, 2 |
| B. Magnesium (Mg) | 2. 2, 8, 1 |
| C. Aluminium (Al) | 3. 2, 8, 3 |
| D. Calcium (Ca) | 4. 2, 8, 8, 2 |

**Ans**
- ✓ A. A–2, B–1, C–3, D–4
- ✗ B. A–2, B–3, C–1, D–4
- ✗ C. A–2, B–3, C–4, D–1
- ✗ D. A–1, B–3, C–2, D–4

**Q.67** **Which of the following statements best explains the functional advantage of the pollen tube formation in the process of fertilisation in flowering plants?**

**Ans**
- ✓ A. It ensures direct transfer of the male germ-cell to the ovary, preventing wastage of pollen grains
- ✗ B. It helps the pollen grain to release its stored nutrients for the ovule to develop into a seed
- ✗ C. It enables the ovary to release egg cells toward the pollen grain for fusion to take place
- ✗ D. It allows the pollen grain to attach firmly to the stigma for self-pollination to occur efficiently

**Q.68** **Which of the following pairs of compounds contain the same total number of atoms per molecule?**

**Ans**
- ✗ A. $NH_3$ and $CH_4$
- ✗ B. $CO_2$ and $H_2O_2$
- ✓ C. $H_2SO_4$ and $N_2O_5$
- ✗ D. $C_2H_6O$ and $PCl_3$

**Q.69** **A wire has a resistance of 10 Ω. If it is stretched to three times its original length (volume remaining constant), its new resistance will be _____.**

**Ans**
- ✗ A. 10 Ω
- ✗ B. 30 Ω
- ✓ C. 90 Ω
- ✗ D. 3.33 Ω

**Q.70** **Which of the following statements is/are true regarding the speed of sound?**
**(i) The speed of sound decreases with an increase in the temperature of the medium.**
**(ii) The speed of sound in solid state is greater than the speed of sound in gaseous state under the same external conditions.**
**(iii) The speed of sound is independent of the properties of the medium through which it travels.**

**Ans**
- ✗ A. Both (i) and (iii)
- ✗ B. Only (iii)
- ✗ C. Both (i) and (ii)
- ✓ D. Only (ii)

**Q.71** **Which of the following combinations best explains why waste generation has become a major environmental issue in modern societies?**

**Ans**
- ✗ A. Increased use of biodegradable materials and better disposal habits
- ✓ B. Improved lifestyles leading to more disposable and non-biodegradable materials
- ✗ C. Government regulations that limit the collection of biodegradable waste and its recycling
- ✗ D. Reduced use of packaging materials and enhanced recycling

**Q.72** **Why is regular and controlled irrigation important for crop production?**

**Ans**
- ✗ A. It reduces fertilizer use by supplying nutrients through water.
- ✗ B. It increases soil salinity and prevents root growth.
- ✗ C. It makes plants dependent on artificial watering.
- ✓ D. It ensures optimal water supply at critical growth stages.

**Q.73** **The motion of an athlete running along a circular path with constant speed is an example of accelerated motion because _____.**

**Ans**
- ✗ A. The mass of the athlete is constant
- ✓ B. The direction of motion changes continuously
- ✗ C. A constant external force is applied
- ✗ D. The athlete's speed is increasing

**Q.74** **Which of the following correctly represents the unit mass of a molecule of water ($H_2O$)?**

**Ans**
- ✗ A. 20 u
- ✓ B. 18 u
- ✗ C. 10 u
- ✗ D. 16 u

**Q.75** **Which of the following correctly represents a diatomic element?**

**Ans**
- ✗ A. He
- ✓ B. $H_2$
- ✗ C. H
- ✗ D. CO

**Q.76** **A scientist observed that an iron railing near the sea corroded faster than the same type of railing in a dry city. What could the main reason be?**

**Ans**
- ✗ A. The sea air is more humid, diluting the rusting process.
- ✗ B. The iron near the sea is exposed to more sunlight.
- ✓ C. Sea air contains salt and moisture, which accelerates rusting.
- ✗ D. The city air has less oxygen, preventing rust.

**Q.77** **What causes only the animal cell to burst when both plant and animal cells are placed in pure water?**

**Ans**
- ✗ A. Animal cells have a thicker membrane.
- ✗ B. Osmosis occurs only in animal cells.
- ✓ C. Plant cells have a rigid cell wall.
- ✗ D. Plant cells can actively pump out water.

**Q.78** **An object with a mass of 15 kg is placed 8 m above the ground. How much potential energy does the object have? (Using g = 9.8 $m/s^2$)**

**Ans**
- ✗ A. 784 J
- ✗ B. 980 J
- ✗ C. 1500 J
- ✓ D. 1176 J

**Q.79** **The deeply folded inner membrane of mitochondria helps to increase the _____ for ATP generation.**

**Ans**
- ✗ A. Colour
- ✓ B. Surface area
- ✗ C. Cell wall thickness
- ✗ D. Volume

**Q.80** **Which of the following is correct for substitution reaction?**

**Ans**
- ✗ A. A reaction where two compounds combine to form one.
- ✓ B. A reaction where atoms or groups in a molecule are replaced by another atom or group.
- ✗ C. A reaction where a compound breaks down into simpler substances.
- ✗ D. A reaction where hydrogen is added to a compound.

**Q.81** **Which of the following statements is true with respect to the reaction of a metal 'A' with metal 'B' of its solution, in which metal 'A' displaces metal 'B'?**

**Ans**
- ✓ A. 'A' is more reactive than 'B'.
- ✗ B. The reaction cannot take place at all.
- ✗ C. 'B' is more reactive than 'A'.
- ✗ D. Both 'A' and 'B' have the same reactivity.

**Q.82** A farmer walks along the boundary of a square field with side 11 m, completing one round in 20 seconds. After walking for 3 minutes and 20 seconds, what is the magnitude of the displacement from his starting point?

**Ans**
- ✔ A. 0 m
- ✘ B. 11 m
- ✘ C. 22 m
- ✘ D. 15.56 m

**Q.83** Which of the following tissues is responsible for limb and body movement?

**Ans**
- ✔ A. Skeletal muscle
- ✘ B. Cardiac muscle
- ✘ C. Smooth muscle
- ✘ D. Epithelial tissue

**Q.84** What is the concentration of $H^+$ ions in pure water at 25°C ?

**Ans**
- ✔ A. 1×10−7 M
- ✘ B. 1×10−1 M
- ✘ C. 1×10−4 M
- ✘ D. 1×10−5 M

**Q.85** Choose a term to complete the analogy.

Chlorenchyma : Photosynthesis :: Aerenchyma : _____

**Ans**
- ✘ A. Mechanical strength
- ✘ B. Water absorption
- ✘ C. Food storage
- ✔ D. Buoyancy

**Q.86** An object has a mass of 12 kg and moves with a constant speed of 8 m/s. How much kinetic energy does it have?

**Ans**
- ✘ A. 512 J
- ✘ B. 768 J
- ✘ C. 256 J
- ✔ D. 384 J

**Q.87** Which of the following pairs are isotopes?

**Ans**
- ✔ A. $^{1}H$ and $^{2}H$
- ✘ B. $^{12}C$ and $^{14}N$
- ✘ C. $^{40}Ca$ and $^{40}Ar$
- ✘ D. $^{16}O$ and $^{16}F$

**Q.88** Two resistors of 5 Ω and 15 Ω are connected in series to a battery of 10 V. How much will flow through the circuit?

**Ans**
- ✘ A. 200 A
- ✘ B. 0.4 A
- ✔ C. 0.5 A
- ✘ D. 2 A

**Q.89** **Which of the following is NOT explained by the Universal Law of Gravitation?**

**Ans**
✔ A. Resistance offered by air to a moving object
✘ B. Formation of tides
✘ C. Falling of apples from a tree
✘ D. Weight of objects on Earth

**Q.90** **If the speed of light in a medium is $2.25 \times 10^8$ m/s, its refractive index is _____.**

**Ans**
✘ A. 1.75
✔ B. 1.33
✘ C. 1.50
✘ D. 0.75

Section : **General Awareness**

**Q.91** **Which of the following articles of the Constitution of India provides for the mechanism and power of Parliament to amend the Constitution?**

**Ans**
✔ A. Article 368
✘ B. Article 372
✘ C. Article 362
✘ D. Article 356

**Q.92** **What is the main purpose of the vehicle-mounted Laser DEW MK-II(A) tested by DRDO in April 2025?**

**Ans**
✘ A. Anti-ballistic missile defense
✘ B. Space communication
✔ C. Drone neutralization
✘ D. Satellite launching

**Q.93** **Which distinguishing feature primarily differentiates a biosphere reserve from a national park in India, as per conservation and management objectives?**

**Ans**
✘ A. Biosphere Reserves (BRs) does not aim at conservation of biological diversity.
✘ B. Biosphere Reserves (BRs) covers a smaller geographical area than national parks.
✔ C. Biosphere Reserves (BRs) allow research, tourism, and local livelihoods in designated buffer and transition zones.
✘ D. Biosphere Reserves (BRs) focuses exclusively on protection of wild animals.

**Q.94** **Match the following.**

**Person Musical Instrument**
**a. Amir Ali Khan i. Sitar**
**b. Anoushaka Shankar ii. Ghatam**
**c. T.H. Vinayakram iii. Sarod**
**d. Bismillah Khan iv. Shehnai**

**Ans**
✘ A. a-iv; b-ii; c-iii; d-i
✘ B. a-ii; b-iii; c-i; d-iv
✘ C. a-ii; b-iv; c-i; d-iii
✔ D. a-iii; b-i; c-ii; d-iv

**Q.95** **The Second Five-Year Plan (1956–61) was strategically designed to accelerate India's long-term growth by prioritizing which of the following sectors?**

**Ans**
✘ A. Renewable energy expansion
✘ B. Public health infrastructure
✔ C. Heavy industries
✘ D. Village-level artisan development

**Q.96** **Which major operation did the Indian government launch in May 2025 following the terrorist attack in Pahalgam?**

**Ans**
- ✔ A. Operation Sindoor
- ✘ B. Operation Vijay
- ✘ C. Operation Trident
- ✘ D. Operation Shakti

**Q.97** **The provision of 'Single citizenship' for all in the Indian Constitution is adopted from the constitution of which of the following countries?**

**Ans**
- ✘ A. Canadian Constitution
- ✘ B. Australian Constitution
- ✘ C. US Constitution
- ✔ D. British Constitution

**Q.98** **The Supreme Court dismissed which state's plea to halt Karnataka's Mekedatu project in November 2025?**

**Ans**
- ✘ A. Andhra Pradesh
- ✘ B. Goa
- ✔ C. Tamil Nadu
- ✘ D. Maharashtra

**Q.99** **Keshab Chandra Sen was a prominent leader of which of the following reform movements in India?**

**Ans**
- ✘ A. Arya Samaj
- ✘ B. Prarthana Samaj
- ✔ C. Brahmo Samaj
- ✘ D. Ramakrishna Mission

**Q.100** **Which private Indian company has recently achieved a significant milestone by becoming the first to receive approval for offering satellite-based internet services in India?**

**Ans**
- ✔ A. Ananth Technologies
- ✘ B. Tata Communications
- ✘ C. SpaceX
- ✘ D. Reliance Jio

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | National Council for the Church Social Action India |
| Test Date | 10/03/2026 |
| Test Time | 12:45 PM - 2:15 PM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** **The difference between the present ages of Ayushi and Nidhi is 21 years. Five years ago from now, the sum of their ages was 83 years. If Ayushi is older than Nidhi, find Nidhi's present age (in years).**

**Ans**
✗ A. 31
✗ B. 38
✓ C. 36
✗ D. 33

**Q.2** **Three pipes X, Y, and Z can fill a tank in 12, 15, and 20 hours, respectively. All three pipes are opened together but pipe Z is closed 3 hours before the tank is completely filled. In how many hours will the tank be filled?**

**Ans**
✗ A. 6 hours 15 minutes
✗ B. 6 hours 45 minutes
✓ C. 5 hours 45 minutes
✗ D. 5 hours 15 minutes

**Q.3** **If the product of two numbers is 98,304 and their HCF is 128, then find the LCM of the numbers.**

**Ans**
✗ A. 789
✓ B. 768
✗ C. 786
✗ D. 766

**Q.4** **A dealer buys two articles X and Y for ₹800 each. He marks each of them at the same price. He sells X by giving two successive discounts of 73% and 37% and still earns ₹901 as profit. If he sells Y at a single discount of 89%, then what is the profit percentage on Y?**

**Ans**
✗ A. 36.5%
✗ B. 36%
✗ C. 37%
✓ D. 37.5%

**Q.5** If the fourth proportional to 2x, 3x, and 12 is y, find y.

**Ans**
- ✔ A. 18
- ✘ B. 20
- ✘ C. 16
- ✘ D. 24

**Q.6** One pipe can fill the tank in 14 min, while another pipe can empty the completely filled tank in 63 min. If both the pipes are operated together on empty tank, how long (in min) will it take to fill one-third of the tank?

**Ans**
- ✘ A. 24
- ✘ B. 12
- ✔ C. 6
- ✘ D. 18

**Q.7** If 9A7B is divisible by 55, find A + B.

**Ans**
- ✘ A. 16
- ✘ B. 11
- ✘ C. 7
- ✔ D. 5

**Q.8** The sum of the present ages of a father and his son is 60 years. Five years ago from now, the product of numerical values of their ages was 525. Find the present age (in years) of the father.

**Ans**
- ✘ A. 50
- ✔ B. 40
- ✘ C. 55
- ✘ D. 45

**Q.9** Which of the following numbers is NOT divisible by both 6 and 9?

**Ans**
- ✔ A. 45
- ✘ B. 90
- ✘ C. 54
- ✘ D. 72

**Q.10** $\text{Simplify: } [\{76 \times (24 \div 3) + 2 \times 18\} \div 644] \times \frac{20}{2}$

**Ans**
- ✘ A. 4
- ✔ B. 10
- ✘ C. 20
- ✘ D. 16

**Q.11** The mean of a data is 47 and its median is 61. The mode (using empirical relation) of the data is:

**Ans**
- ✘ A. 23
- ✘ B. 111
- ✘ C. 148
- ✔ D. 89

Q.12 If $\cot\theta = \frac{1}{\sqrt{3}}, (0° < \theta < 90°)$, then the value of $\frac{2-\sin^2\theta}{1+\cos^2\theta} + \text{cosec}^2\theta$

Ans
- ✗ A. $-\frac{2}{3}$
- ✗ B. $\frac{5}{3}$
- ✗ C. $\frac{2}{3}$
- ✓ D. $-\frac{5}{3}$

Q.13 A trader claims to sell spice at a profit of 15% but also dishonestly uses a weight which is 14% less than what is mentioned on it. Find the total percentage of profit earned by the trader. (Round the answer to the nearest whole number)

Ans
- ✗ A. 39%
- ✗ B. 36%
- ✗ C. 31%
- ✓ D. 34%

Q.14 If the area of an equilateral triangle is given as 900 $m^2$, then what is its perimeter?

Ans
- ✗ A. $60\sqrt[4]{21}$ m
- ✗ B. $60\sqrt[4]{81}$ m
- ✗ C. $60\sqrt[3]{27}$ m
- ✓ D. $60\sqrt[4]{27}$ m

Q.15 Simplify: $\frac{(120-12)\div(24\div2)-12+7}{5\times12\div10-(6\times4)\div12}$

Ans
- ✓ A. 1
- ✗ B. $-1$
- ✗ C. $\frac{3}{2}$
- ✗ D. $\frac{2}{3}$

Q.16 Mr.John spent 20% of his monthly income on food and 20% on children's education. 40% of the remaining income, he spent on shopping and transport together and 20% of the rest was spent on medical expenses. If he is left with ₹23,040, after all these expenditures, what is his monthly income?

Ans
- ✗ A. ₹86,000
- ✗ B. ₹92,000
- ✗ C. ₹96,000
- ✓ D. ₹80,000

Q.17 If a + b + c = 13 and ab + bc + ca = 4, then what is the value of ab(a + b) + bc(b + c) + ca(c + a) + 3abc?

Ans
- ✓ A. 52
- ✗ B. 17
- ✗ C. 9
- ✗ D. 38

**Q.18** The difference between two parallel sides of a trapezium is 9 cm. The perpendicular distance between them is 52 cm. If the area of the trapezium is 988 cm $^2$, find the lengths of the parallel sides (in cm).

**Ans**
- ✗ A. 35.5, 20.5
- ✗ B. 29.5, 20.5
- ✗ C. 18.5, 12.5
- ✓ D. 23.5, 14.5

**Q.19** When one-third of a number is increased by 25, the result is 100. Find the sum of the digits of the original number.

**Ans**
- ✗ A. 12
- ✗ B. 10
- ✓ C. 9
- ✗ D. 7

**Q.20** A 180-meter-long train passes a pole in 12 seconds. A second 120-meter-long train is moving in the same direction as of the first train and crosses the first train in 15 seconds. What is the speed of the second train?

**Ans**
- ✗ A. 110 km/h
- ✗ B. 115 km/h
- ✗ C. 120 km/h
- ✓ D. 126 km/h

**Q.21** What is the mode of the following data?

43, 44, 43, 53, 42, 44, 46, 47, 55, 50, 52, 55, 40, 45, 44, 53, 48, 48

**Ans**
- ✗ A. 53
- ✗ B. 55
- ✗ C. 43
- ✓ D. 44

**Q.22** Lalit deposits ₹42,000 in his account that pays an annual interest rate of 20% compounded half yearly. Calculate the total amount in his account after one year.

**Ans**
- ✓ A. ₹50,820
- ✗ B. ₹50,680
- ✗ C. ₹50,650
- ✗ D. ₹50,880

**Q.23** A number when increased by 110%, gives 3570. The number is:

**Ans**
- ✗ A. 850
- ✗ B. 3400
- ✓ C. 1700
- ✗ D. 5100

**Q.24** The length of a diagonal of a rectangular park is 25 meters, and that of one of its sides is 15 meters. Find the perimeter of the park.

**Ans**
- ✗ A. 40 meters
- ✗ B. 60 meters
- ✓ C. 70 meters
- ✗ D. 50 meters

**Q.25** What sum of money (in ₹) will yield ₹720 as simple interest in 3 years at 8% per annum?

**Ans**
- ✗ A. 3200
- ✗ B. 3400
- ✗ C. 2500
- ✓ D. 3000

Section : **General Intelligence and Reasoning**

**Q.26** If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', what will come in place of the question mark '?' in the following equation?

4 B 5 D 20 A 2 C 17 = ? D 3

**Ans**
- ✗ A. 50
- ✗ B. 20
- ✓ C. 30
- ✗ D. 35

**Q.27** If 'A' stands for '÷', 'B' stands for '×', 'C' stands for '+' and 'D' stands for '–', what will come in place of the question mark '?' in the following equation?

5 B 2 D 10 A 2 C 12 = ? D 3

**Ans**
- ✗ A. 15
- ✗ B. 30
- ✓ C. 20
- ✗ D. 12

**Q.28** Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✓ A. GFT
- ✗ B. DGE
- ✗ C. PSQ
- ✗ D. JMK

**Q.29** Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✗ A. NQO
- ✗ B. RUS
- ✗ C. KNL
- ✓ D. MHG

**Q.30** Each vowel in the word LARKISH is changed to the letter immediately following it in the English alphabetical order and each consonant is changed to the letter immediately preceding it in the English alphabetical order. How many letters will appear exactly twice in the group of letters thus formed?

**Ans**
- ✗ A. 3
- ✗ B. 2
- ✗ C. 0
- ✓ D. 1

**Q.31** Refer to the following series and answer the question. (All numbers are single-digit numbers only. Counting to be done from left to right.)
(Left) 7 3 2 5 1 4 6 8 3 4 9 7 5 4 2 6 1 7 9 (Right)
How many such digits are there, each of which is immediately preceded by an even digit and immediately followed by an odd digit?

**Ans**
- ✔ A. Five
- ✘ B. Four
- ✘ C. Three
- ✘ D. Two

**Q.32** What should come in place of '?' in the given series?

13 26 52 104 208 ?

**Ans**
- ✘ A. 415
- ✘ B. 414
- ✘ C. 417
- ✔ D. 416

**Q.33** E, R, U, T, Y, W and Q are sitting around a circular table, facing the centre of the table.
U sits third to the left of Q. W sits second to the left of R. Q is the immediate neighbour of both T and W. E is not an immediate neighbour of U.
How many people sit between W and Y when counted from the right of Y?

**Ans**
- ✘ A. 3
- ✔ B. 2
- ✘ C. 1
- ✘ D. 4

**Q.34** Sunny starts from Point A and drives 5 km towards the north. He then takes a left turn, drives 6 km, turns left and drives 7 km. He then takes a left turn and drives 8 km. He takes a final left turn, drives 2 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90-degree turns only unless specified.)

**Ans**
- ✔ A. 2 km to the west
- ✘ B. 4 km to the South
- ✘ C. 1 km to the east
- ✘ D. 3 km to the North

**Q.35** Seven boxes, G, H, I, J, O, K, and L, are kept one over the other, but not necessarily in the same order. J is kept second from the bottom. Only three boxes are kept between J and I. K is kept at one of the positions below J. Only G is kept between I and L. H is kept at one of the positions above I. How many boxes are kept between O and K?

**Ans**
- ✘ A. Three
- ✔ B. One
- ✘ C. Four
- ✘ D. Two

**Q.36** Select the pair which follows the same pattern as that followed by the two set of pairs given below. Both pairs follow the same pattern.
GDA–WTQ
URO–KHE

**Ans**
- ✘ A. AWS–PMJ
- ✔ B. AXU–QNK
- ✘ C. AWS–QNK
- ✘ D. AXU–PNJ

**Q.37** **Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does not belong to that group? (Note: The odd man out is not based on the number of consonants/vowels or their position in the letter cluster.)**

**Ans**
- ✗ A. DZA
- ✓ B. MJK
- ✗ C. EAB
- ✗ D. CYZ

**Q.38** **What should come in place of '?' in the given series?**

**5 20 80 320 1280 ?**

**Ans**
- ✓ A. 5120
- ✗ B. 5128
- ✗ C. 5130
- ✗ D. 5134

**Q.39** **FG 151 is related to EH 101 in a certain way. In the same way, MN 262 is related to LO 212. To which of the following is UV 379 related, following the same logic?**

**Ans**
- ✗ A. SX 339
- ✓ B. TW 329
- ✗ C. TX 329
- ✗ D. SW 349

**Q.40** **Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.**

**ZRD : WPC**
**WET : TCS**

**Ans**
- ✗ A. XAP : UYN
- ✗ B. VYA : UWX
- ✓ C. YDG : VBF
- ✗ D. RKF : OID

**Q.41** **In a certain code language,**
**A # B means 'A is the mother of B',**
**A + B means 'A is the daughter of B',**
**A ÷ B means 'A is the wife of B',**
**and A @ B means 'A is the father of B'.**

**How is A related to T if 'A + B @ H # K ÷ T'?**

**Ans**
- ✓ A. Wife's mother's sister
- ✗ B. Wife's mother's mother
- ✗ C. Wife's mother
- ✗ D. Wife's sister

**Q.42** **Refer to the following series and answer the question. (All numbers are single-digit numbers only. Counting to be done from left to right.)**
**(Left) 2 4 9 6 7 1 4 6 3 9 5 2 4 8 6 1 3 2 7 6 2 5 8 1 (Right)**
**How many such odd digits are there, each of the which is immediately preceded by an odd digit and immediately followed by an even digit?**

**Ans**
- ✗ A. Four
- ✗ B. Two
- ✓ C. Three
- ✗ D. One

**Q.43** In a certain code language, 'CURL' is coded as '4386' and 'LURE' is coded as '5846'. What is the code for 'E' in that language?

**Ans**
- ✗ A. 8
- ✗ B. 3
- ✗ C. 6
- ✓ D. 5

**Q.44** Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does not belong to that group? (Note: The odd man out is not based on the number of consonants/vowels or their position in the letter cluster.)

**Ans**
- ✗ A. QUR
- ✓ B. INJ
- ✗ C. JNK
- ✗ D. GKH

**Q.45** Nehal ranked $22^{nd}$ from the top and $10^{th}$ from the bottom in his class. How many students are there in his class?

**Ans**
- ✓ A. 31
- ✗ B. 33
- ✗ C. 32
- ✗ D. 30

**Q.46** **Sanjay starts from point Y and drives 32 km towards West. He then takes a left turn, drives 51 km, turns right and drives 66 km. He then takes a right turn and drives 14 km. He takes a right turn, drives 45 km. He then turns left, drives 37 km to stop at point Z. How far (shortest distance) and towards which direction should he drive in order to reach point Y again? (All turns are 90-degree turns only unless specified.)**

**Ans**
- ✗ A. 49 km towards east
- ✓ B. 53 km towards east
- ✗ C. 51 km towards west
- ✗ D. 55 km towards north

**Q.47** Each letter in the word BESWARM is changed to the letter immediately following it in the English alphabetical order and then all the letters thus formed are arranged in the English alphabetical order. Which of the following letters will be fourth from the right in the new group of letters thus formed?

**Ans**
- ✗ A. F
- ✗ B. S
- ✓ C. N
- ✗ D. X

**Q.48** Six friends D, E, F, G, J and K are sitting around a circular table facing the center of the table. E sits third to the left of F. F sits second to the left of D. Only J sits between F and G. K is not an immediate neighbor of E. How many people sit between K and G when counted from the right of G?

**Ans**
- ✗ A. Three
- ✗ B. One
- ✗ C. None
- ✓ D. Two

**Q.49** **Chandan starts from Point A and drives 11 km towards east. He then takes a left turn, drives 8 km, turns left and drives 13 km. He then takes a left turn and drives 13 km. He takes a final left turn, drives 2 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again?**

**(All turns are 90° turns only unless specified.)**

**Ans**
- ✗ A. 3 km to the west
- ✗ B. 5 km to the south
- ✗ C. 3 km to the east
- ✓ D. 5 km to the north

**Q.50** **In a certain code language, 'KIDS' is coded as '1248' and 'SILK' is coded as '2941'. What is the code for 'L' in that language?**

**Ans**
- ✓ A. 9
- ✗ B. 1
- ✗ C. 2
- ✗ D. 8

Section : **General Science**

**Q.51** **Which of the following statement(s) is/are true when a beam of white light is incident on a glass prism?**

**(i) The white light undergoes dispersion.**
**(ii) The speed of light remains constant when it goes from air into the prism.**
**(iii) The speed of light decreases as the light goes from air into the prism.**

**Ans**
- ✗ A. Only (i)
- ✗ B. Only (ii)
- ✓ C. Both (i) and (iii)
- ✗ D. Both (ii) and (iii)

**Q.52** **A strong magnetic field produced inside a solenoid can be used to magnetise a piece of soft iron placed inside the coil. The resulting magnet is called a/an _____.**

**Ans**
- ✗ A. Permanent magnet
- ✗ B. Toroid
- ✓ C. Electromagnet
- ✗ D. Natural magnet

**Q.53** **The alpha particles that passed straight through the gold foil showed that:**

**Ans**
- ✓ A. the atom is mostly empty space
- ✗ B. the atom has a positive charge
- ✗ C. the nucleus is huge
- ✗ D. the nucleus is negatively charged

**Q.54** **If a conductor has a potential difference of 1 V across its ends and a current of 1 A flows through it, what is the resistance of the conductor?**

**Ans**
- ✗ A. 2 Ω
- ✓ B. 1 Ω
- ✗ C. 10 Ω
- ✗ D. 0.5 Ω

**Q.55** **Which of the following movements is controlled by unstriated and involuntary smooth muscle tissue?**

**Ans**
- ✗ A. Waving the hand
- ✗ B. Moving the legs to walk
- ✗ C. Rhythmic contraction of the heart
- ✓ D. Movement of food in the alimentary canal

**Q.56** **Why does the sky appear dark to passengers flying at very high altitudes?**

**Ans**
- ✗ A. They are above the atmosphere.
- ✗ B. The path of light is scattered back towards the sun.
- ✗ C. The air molecules absorb all blue light at that altitude.
- ✓ D. Scattering of light is not prominent at such heights.

**Q.57** **Two beakers contain sugar solution of different concentrations. A semipermeable membrane separates them. After some time, the level of solution in one beaker rises while in the other, it falls. Which property of solutions does this experiment best demonstrate, and why?**

**Ans**
- ✗ A. Evaporation – because water molecules escape from the surface of the solution causing a level difference
- ✓ B. Osmosis – because solvent molecules move from the dilute solution to the concentrated solution through the semipermeable membrane
- ✗ C. Sedimentation – because sugar crystals settle at the bottom due to gravity
- ✗ D. Diffusion – because sugar molecules move freely across the membrane until equilibrium is reached

**Q.58** **Which of the following are properties of ionic compounds?**

**A. High melting point**
**B. Soluble in non-polar solvents**
**C. Conduct electricity in solid state**
**D. Brittle in nature**

**Ans**
- ✗ A. Only (C) and (D)
- ✗ B. Only (C) and (B)
- ✗ C. Only (A) and (B)
- ✓ D. Only (A) and (D)

**Q.59** **Which of the following statements is correct regarding molecules of an element?**

**Ans**
- ✗ A. Molecules of an element always contain two or more different types of atoms.
- ✗ B. Elements do not form molecules, only compounds do.
- ✓ C. A molecule of an element consists of only one type of atom bonded together.
- ✗ D. All elements exist as monoatomic molecules in their natural state.

**Q.60** **If A displaces B, and C displaces A, then the order of reactivity is:**

**Ans**
- ✗ A. C > B > A
- ✗ B. B > A > C
- ✓ C. C > A > B
- ✗ D. A > B > C

**Q.61** **A body of mass 10 kg is thrown vertically upwards with a velocity of 10 m/s. How much potential energy will be possessed by the body when it reaches the maximum height? (Take g = 10 $m/s^2$)**

**Ans**
- ✗ A. 2.5 J
- ✗ B. 25 J
- ✓ C. 500 J
- ✗ D. 250 J

**Q.62** **A sound wave has a frequency of 2 kHz and a wavelength of 45 cm. How much time will it take to cover a distance of 1.8 km?**

**Ans**
- ✗ A. 1 second
- ✗ B. 4 seconds
- ✓ C. 2 seconds
- ✗ D. 0.5 seconds

**Q.63** **What is produced when an acid reacts with a metal hydrogen carbonate?**

**Ans**
- ✗ A. Salt, oxygen and water
- ✓ B. Salt, carbon dioxide and water
- ✗ C. Salt, ammonia and water
- ✗ D. Salt, hydrogen gas and water

**Q.64** **Which part of a plant cell helps it stay intact and prevents bursting in a hypotonic environment?**

**Ans**
- ✗ A. Cell membrane
- ✗ B. Vacuole
- ✗ C. Cytoplasm
- ✓ D. Cell wall made of cellulose

**Q.65** **The principal role of the large central vacuole in mature plant cells is to:**

**Ans**
- ✗ A. Carry out cellular respiration to produce energy.
- ✓ B. Store cell sap and help maintain turgor pressure.
- ✗ C. Control cell division and heredity.
- ✗ D. Synthesize proteins for export.

**Q.66** **Which of the following statements correctly describes the difference between mass and weight?**

**Ans**
- ✗ A. Mass changes from one planet to another, but weight stays the same.
- ✗ B. Both mass and weight change with location.
- ✓ C. Mass stays the same everywhere, but weight changes with location.
- ✗ D. Weight and mass both remain constant everywhere.

**Q.67** **Why are xylem and phloem called "complex permanent tissues"?**

**Ans**
- ✗ A. They are temporary in function and disappear after growth.
- ✗ B. Their cells can divide and form new tissues.
- ✗ C. They consist of only one type of cell for performing a single function.
- ✓ D. They contain different types of cells working together for transport.

**Q.68** **In a school canteen, students notice that many plastic cups and plates are thrown away daily. To solve this problem, they suggest switching to steel plates and reusable water bottles. This action mainly promotes _____.**

**Ans**
- ✗ A. Faster waste collection
- ✗ B. More plastic recycling
- ✗ C. Better packaging design
- ✓ D. Reduction and reuse of waste

**Q.69** **The SI unit of the universal gravitation constant is _____.**

**Ans**
- ✗ A. Nm-2kg2
- ✗ B. Nm2kg-1
- ✓ C. Nm2kg-2
- ✗ D. Nm-2kg-1

**Q.70** **Why is the use of condoms during sexual intercourse recommended?**

**Ans**
- ✗ A. Condoms are required by law to maintain the population balance
- ✗ B. Condoms are used to increase fertility in both males and females
- ✓ C. Condoms help prevent the transmission of sexually transmitted diseases to some extent
- ✗ D. Condoms completely eliminate the risk of pregnancy and infections

**Q.71** **A 2.0 cm tall object is placed 20 cm from a convex lens of focal length 15 cm. What is the magnification produced by the lens?**

**Ans**
- ✗ A. +3
- ✗ B. - 1
- ✓ C. -3
- ✗ D. +1

**Q.72** **Which of the following pairs must represent the same element?**

**Ans**
- ✗ A. Different number of protons, same number of neutrons
- ✓ B. Same atomic number, different mass numbers
- ✗ C. Same number of neutrons, different atomic numbers
- ✗ D. Same mass number, different atomic numbers

**Q.73** **Food chains generally do not extend beyond four trophic levels because:**

**Ans**
- ✗ A. decomposers outnumber consumers
- ✓ B. of large loss of energy at each level
- ✗ C. carnivores feed only on producers
- ✗ D. of limited number of producers

**Q.74** **If the radius of the Earth were to double while mass remains the same, the new value of g would be _____the original value.**

**Ans**
- ✓ A. One-fourth
- ✗ B. Half
- ✗ C. 2 times
- ✗ D. 4 times

**Q.75** **Read the given statements carefully and select the correct option.**

**Statement-I: Most carbon compounds are poor conductors of electricity.**
**Statement-II: Carbon compounds have low melting and boiling points as compared to ionic compounds.**

**Ans**
- ✗ A. Both the statements are false.
- ✓ B. Both the statements are true.
- ✗ C. Statement-I is false but statement-II is true.
- ✗ D. Statement-I is true but statement-II is false.

**Q.76** **What is the main purpose of hybridisation in crop improvement programmes?**

**Ans**
- ✗ A. To produce genetically identical plants through cloning
- ✗ B. To grow crops without using fertilizers or irrigation
- ✗ C. To increase the natural mutation rate in crop plants
- ✓ D. To combine desirable traits by crossing genetically dissimilar plants

**Q.77** **Ethanol and ethanoic acid react in the presence of concentrated sulphuric acid to form a sweet-smelling compound. Which of the following correctly identifies the reaction type and the role of concentrated $H_2SO_4$?**

**Ans**
- ✔ A. It is an esterification reaction; $H_2SO_4$ acts as a catalyst and a dehydrating agent.
- ✘ B. It is an oxidation reaction; $H_2SO_4$ acts as an oxidizing agent.
- ✘ C. It is a neutralization reaction; $H_2SO_4$ acts as an acid to neutralize the base.
- ✘ D. It is a substitution reaction; $H_2SO_4$ acts as a dehydrating agent to remove water molecules.

**Q.78** **The female reproductive part of the flower is known as:**

**Ans**
- ✘ A. stamens
- ✔ B. pistil
- ✘ C. sepals
- ✘ D. petals

**Q.79** **Read the given statements carefully. Select which statement(s) is/are correct.**

**Statement-I: There are some substances whose odour changes in acidic or basic media. These are called olfactory indicators.**
**Statement-II: Vanilla extract and onion can be used as olfactory indicators.**

**Ans**
- ✔ A. Both statements I and II are true.
- ✘ B. Statement-I is true but statement-II is false.
- ✘ C. Both statements I and II are false.
- ✘ D. Statement-I is false but statement-II is true.

**Q.80** **Which of the following best explains why anaerobic respiration releases less energy than aerobic respiration?**

**Ans**
- ✘ A. It uses less glucose.
- ✘ B. It occurs slower than aerobic respiration.
- ✘ C. It does not require enzymes.
- ✔ D. It partially breaks down glucose.

**Q.81** **In Fleming's Left Hand Rule, which finger represents the direction of the magnetic field?**

**Ans**
- ✘ A. Little finger
- ✘ B. Middle finger
- ✔ C. First (index) finger
- ✘ D. Thumb

**Q.82** **In a dug well, water is collected from:**

**Ans**
- ✘ A. Deep strata
- ✘ B. Neighbouring strata
- ✘ C. Impervious strata
- ✔ D. Water-bearing strata

**Q.83** **What is the primary function of the axon in a neuron?**

**Ans**
- ✘ A. Provide structural support to the neuron.
- ✔ B. Transmit electrical impulses to other neurons or target organs.
- ✘ C. Store neurotransmitters for later use.
- ✘ D. Supply nutrients to the cell body.

**Q.84** **Which of the following observations best confirms that a neutralisation reaction has occurred?**

**Ans**
- ✔ A. The pH of the solution becomes close to 7.
- ✘ B. The temperature of the solution drops drastically.
- ✘ C. The solution changes from blue to red.
- ✘ D. A gas with a pungent smell is evolved.

**Q.85** **Epithelial tissue primarily functions in:**

**Ans**
- ✘ A. Support
- ✔ B. Secretion and protection
- ✘ C. Coordination
- ✘ D. Muscle contraction

**Q.86** **What is the formula unit mass of ammonium sulphate $(NH_4)_2SO_4$?**

**Ans**
- ✘ A. 146 u
- ✔ B. 132 u
- ✘ C. 98 u
- ✘ D. 114 u

**Q.87** **Reshma swims back and forth in a 120 m long pool, covering a total distance of 240 m in 1 minute. What is her average velocity?**

**Ans**
- ✘ A. 2 m/s
- ✔ B. 0 m/s
- ✘ C. 4 m/s
- ✘ D. 5 m/s

**Q.88** **A girl weighing 420 N climbs a rope to a height of 6 m and takes 20 seconds to do it. What is her power output?**

**Ans**
- ✘ A. 90 W
- ✘ B. 155 W
- ✔ C. 126 W
- ✘ D. 105 W

**Q.89** **A train starting from rest reaches a speed of 40 km/h in 10 minutes. What is its final speed in m/s?**

**Ans**
- ✘ A. 6.67 m/s
- ✘ B. 4 m/s
- ✘ C. 400 m/s
- ✔ D. 11.11 m/s

**Q.90** **The M shell can take a maximum of ___ electrons, but in Ca it has ____ electrons. [Atomic Number of Ca = 20]**

**Ans**
- ✘ A. 8, 8
- ✘ B. 18, 10
- ✘ C. 8, 10
- ✔ D. 18, 8

Section : **General Awareness**

**Q.91** **Who became the first Indian senior world champion in speed skating by winning the 1,000 m sprint at the World Championships in September 2025?**

**Ans**
- ✗ A. Dhanush Babu
- ✓ B. Anandkumar Velkumar
- ✗ C. Anish Raj
- ✗ D. Krish Sharma

**Q.92** **Which of the following is the primary objective of Mission Sudarshan Chakra, launched by India in August 2025?**

**Ans**
- ✗ A. Support agricultural innovation
- ✗ B. Strengthen civil aviation
- ✓ C. Create a powerful defence weapon system
- ✗ D. Promote economic reform

**Q.93** **Which of the following Directive Principles was NOT added to the Indian Constitution as part of the 42$^{nd}$ Amendment Act of 1976?**

**Ans**
- ✗ A. Article 48A: To protect and improve the environment and safeguard forests and wildlife
- ✓ B. Article 38: State to minimise inequalities in income, status, facilities and opportunities
- ✗ C. Article 39: To secure opportunities for healthy development of children
- ✗ D. Article 39A: To promote equal justice and to provide free legal aid to the poor

**Q.94** **Which of the following renowned Indian musicians performed at the Red Fort on the occasion of India's independence in 1947?**

**Ans**
- ✗ A. Pandit Ravi Shankar
- ✗ B. Pandit Bhimsen Joshi
- ✓ C. Ustad Bismillah Khan
- ✗ D. Pandit Hariprasad Chaurasia

**Q.95** **Which of the following committees, in its 2009 report, is known for introducing a widely used method to estimate poverty levels in India?**

**Ans**
- ✗ A. Rangarajan Expert Group
- ✗ B. B.N. Yugandhar Committee
- ✓ C. Suresh Tendulkar Committee
- ✗ D. A.V. Subramanian Committee

**Q.96** **Who took the oath as Bihar's Chief Minister for the record 10$^{th}$ time in 2025?**

**Ans**
- ✗ A. Shri Nishant Kumar
- ✗ B. Tejashwi Prasad Yadav
- ✓ C. Shri Nitish Kumar
- ✗ D. Lalu Prasad Yadav

**Q.97** **Allocation of seats to States and Union Territories in the Rajya Sabha is provided under which of the following Schedules of the Constitution of India?**

**Ans**
- ✗ A. Eighth Schedule
- ✗ B. Tenth Schedule
- ✗ C. Sixth Schedule
- ✓ D. Fourth Schedule

**Q.98** **Cherrapunji and Mawsynram, two places that generally receive the maximum rainfall in India, are located in:**

**Ans**
- ✗ A. Nilgiri Hills
- ✗ B. Aravalli Hills
- ✗ C. Satpura Hills
- ✓ D. Khasi Hills

**Q.99** **Which of the following successfully conducted user trials of the Akash-NG missile?**

**Ans**
- ✓ A. Defence Research and Development Organisation (DRDO)
- ✗ B. Bharat Electronics (BEL)
- ✗ C. Hindustan Aeronautics (HAL)
- ✗ D. Mazagon Dock Shipbuilders

**Q.100** **Which policy of Lord Dalhousie was a significant political cause of the 1857 Revolt?**

**Ans**
- ✗ A. Vernacular Press Act
- ✗ B. Ryotwari System
- ✗ C. Dual Government
- ✓ D. Doctrine of Lapse

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# रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD
## सीईएन ०२ /२०२५ - तकनीशियन ग्रेड I सिगनल और तकनीशियन ग्रेड III
## CEN 02/2025 – Technician Grade I Signal and Technician Grade III

| | |
|---|---|
| Test Centre Name | Radha Raman Assessment Services Private Limited |
| Test Date | 10/03/2026 |
| Test Time | 4:30 PM - 6:00 PM |
| Subject | RRB Technician Grade III |

*** Note**
**Correct Answer will carry 1 mark per Question.**
**Incorrect Answer will carry 1/3 Negative mark per Question.**

**1. Options shown in green color with a tick icon are correct.**
**2. Chosen option on the right of the question indicates the option selected by the candidate.**

Section : **Mathematics**

**Q.1** **A cylindrical rod has an outer curved surface area of 7900 $cm^2$. If the length of the rod is 3 cm, then the outer radius (in cm) of the rod, correct to two places of decimal, is:**
$\left(\text{Take } \pi = \frac{22}{7}\right)$

**Ans**
✔ A. 418.94
✘ B. 419.12
✘ C. 417.52
✘ D. 420.85

**Q.2** **In a class, there are 36 boys and 24 girls. By what percentage should the number of girls be increased so that it becomes equal to the number of boys?**

**Ans**
✘ A. 30%
✘ B. 40%
✘ C. 60%
✔ D. 50%

**Q.3** **When one-third of a number is increased by 10, the result is 65. Find the sum of the digits of the original number.**

**Ans**
✔ A. 12
✘ B. 11
✘ C. 9
✘ D. 14

**Q.4** **A can do a piece of work in 63 hours; B and C together can do it in 48 hours, while A and C together can do it in 36 hours. How long (in hours) will B alone take to do it?**

**Ans**
✔ A. 112
✘ B. 114
✘ C. 111
✘ D. 113

Q.5 If $2\tan A = 3$, then the value of $(\sec A + \tan A - 1)(\sec A - \tan A \cdot$

Ans
✗ A. $2$
✗ B. $\frac{1}{3}$
✗ C. $\frac{2}{3}$
✓ D. $3$

Q.6 Given that $74^{0.45} = x$, $74^{0.12} = y$ and $x^z = y^2$, then the value of z is close to:

Ans
✓ A. 0.53
✗ B. 2.52
✗ C. 3.99
✗ D. 1.45

Q.7 During a sale, 44% of the goods are sold at a profit of 47%. Of the remaining goods, 25% are sold at a profit of 22%, and the rest are sold at a loss of 38%. If the overall profit is x%, what is the value of x?

Ans
✗ A. 18.5
✓ B. 7.8
✗ C. 12.4
✗ D. 18

Q.8 A, B, and C invested money in the ratio of 2 : 3 : 4 for periods in the ratio of 6 : 4 : 3, respectively. If the total profit is ₹1,32,000, what is the share of C?

Ans
✗ A. ₹43,000
✗ B. ₹45,000
✗ C. ₹42,000
✓ D. ₹44,000

Q.9 Find the value of $38 - [27 - (90 \div 5 - (12 - 18 \div 6) \div 3)]$.

Ans
✓ A. 26
✗ B. 24
✗ C. 25
✗ D. 22

Q.10 What sum of money (in ₹) will yield ₹700 as simple interest in 2 years at 8% per annum?

Ans
✗ A. 4575
✓ B. 4375
✗ C. 3875
✗ D. 4775

Q.11 G is the centroid of the equilateral triangle ABC. If AB = 36 cm, then length (in cm) of AG is:

Ans
✗ A. $10\sqrt{3}$
✗ B. $8\sqrt{6}$
✓ C. $12\sqrt{3}$
✗ D. $6\sqrt{6}$

Q.12 If $a + b = 12$ and ab=8 then the numerical value of $\left(\frac{a}{b} + \frac{b}{a}\right)$ will be:

Ans
- ✗ A. 14
- ✗ B. 20
- ✓ C. 16
- ✗ D. 12

Q.13 What is the mode of the following data?
50, 43, 40, 51, 44, 46, 40, 43, 41, 45, 46, 40, 45, 47, 45, 49, 47, 40

Ans
- ✗ A. 45
- ✗ B. 46
- ✓ C. 40
- ✗ D. 43

Q.14 Simplify: (3.6 × 2.5) − (4.8 ÷ 1.6) + (3.2 × 0.5)

Ans
- ✗ A. 7.4
- ✗ B. 7.8
- ✗ C. 7.2
- ✓ D. 7.6

Q.15 Find the third proportional to $a^3 - b^3$ and $a^2 + b^2 + ab$, when a = 16 and b = 12.

Ans
- ✗ A. 158
- ✓ B. 148
- ✗ C. 150
- ✗ D. 160

Q.16 The average age of six girls increases by four months, if a 12 - year old girl is replaced by a new girl. The age of the new girl is:

Ans
- ✗ A. 13 years
- ✗ B. 16 years
- ✗ C. 15 years
- ✓ D. 14 years

Q.17 A dealer buys two articles X and Y for ₹3,400 each. He marks each of them at the same price. He sells X by giving two successive discounts of 10% and 50% and still earns ₹323 as profit. If he sells Y at a single discount of 28%, then what is the profit percentage on Y?

Ans
- ✗ A. 74%
- ✗ B. 75%
- ✗ C. 74.2%
- ✓ D. 75.2%

Q.18 A trapezium has parallel sides of lengths 17 cm and 29 cm, and the distance between them is 15 cm. What is the area of the trapezium?

Ans
- ✗ A. 335 cm2
- ✗ B. 315 cm2
- ✗ C. 325 cm2
- ✓ D. 345 cm2

**Q.19** In a family, the sum of the ages of a father and son is 50 years. 10 years from now, the difference in their ages will be 20 years. Find the ratio of the son's age to the father's age.

**Ans**
- ✔ A. 3:7
- ✘ B. 4:7
- ✘ C. 5:8
- ✘ D. 2:7

**Q.20** Which of the following numbers is divisible by both 17 and 13?

**Ans**
- ✔ A. 21658
- ✘ B. 21401
- ✘ C. 22372
- ✘ D. 20049

**Q.21** A can complete a piece of work in 10 days and B can complete the same work in 15 days, when each works individually. Both A and B work together for 3 days. After that, B leaves the work, and A alone completes the remaining work. How many days will A take to finish the remaining work alone?

**Ans**
- ✘ A. 6 days
- ✔ B. 5 days
- ✘ C. 8 days
- ✘ D. 10 days

**Q.22** If 40 pages are printed in 5 minutes by a printer, how many pages will be printed in 3 hours?

**Ans**
- ✔ A. 1440
- ✘ B. 1620
- ✘ C. 1810
- ✘ D. 1560

**Q.23** The price of a laptop increased by 20% in the first month, then decreased by 10% in the second month, and increased again by 15% in the third month. If the original price of the laptop was ₹1,20,000, what is the final price after these three changes?

**Ans**
- ✘ A. ₹1,42,800
- ✔ B. ₹1,49,040
- ✘ C. ₹1,41,000
- ✘ D. ₹1,38,000

**Q.24** Two persons A and B start from the same point. A walks at 5 km/h. After 't' hours B starts and catches A after 2 hours of his own walking. If B's speed is 8 km/h, what is the value of 't'?

**Ans**
- ✘ A. 1.3
- ✘ B. 1.5
- ✔ C. 1.2
- ✘ D. 1.4

Q.25 The salary of Mina is ₹80,000. Out of which she deposits x% amoun for the money deposited after 3 years is ₹17,400, then find the value

Ans
✗ A. 25
✓ B. 15
✗ C. 20
✗ D. 12

Section : **General Intelligence and Reasoning**

Q.26 **What should come in place of '?' in the given series?**

**29 35 46 52 63 ?**

Ans
✗ A. 67
✗ B. 70
✓ C. 69
✗ D. 71

Q.27 **Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which is the one that does not belong to that group? (Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)**

Ans
✓ A. PU – MR
✗ B. FK – DI
✗ C. JO – HM
✗ D. CH – AF

Q.28 **What should come in place of ? in the given series based on the English alphabetical order?**

**GXK OFS WNA EVI ?**

Ans
✗ A. MDO
✗ B. MDR
✓ C. MDQ
✗ D. MRF

Q.29 **What should come in place of ? in the given series based on the English alphabetical order?**

**CHM FKK INI LQG ?**

Ans
✓ A. OTE
✗ B. HGY
✗ C. OLI
✗ D. NHG

**Q.30** Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

GAU : JDX
REF : UHI

**Ans**
- ✗ A. QEW : SGY
- ✗ B. ZTD : CWH
- ✗ C. SYI : UZL
- ✓ D. CNH : FQK

**Q.31** The position(s) of how many letters will remain unchanged if each letter in the word EDUCATORS is arranged in English alphabetical order?

**Ans**
- ✗ A. Four
- ✓ B. None
- ✗ C. One
- ✗ D. Two

**Q.32** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?
(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

**Ans**
- ✗ A. UW–SU
- ✓ B. IK–FK
- ✗ C. OQ–MO
- ✗ D. DF–BD

**Q.33** All the individual letters in the word PICKLED are arranged in alphabetical order. How many letters are there in the English alphabetical order between the letter which is second from the left and the one which is fourth from the right in the new letter cluster thus formed?

**Ans**
- ✗ A. Three
- ✓ B. Four
- ✗ C. Two
- ✗ D. One

**Q.34** If 'P' stands for '×', 'Q' stands for '÷', 'R' stands for '–' and 'S' stands for '+', then what will come in place of the question mark (?) in the following equation?

53 R 61 S 96 P 3 Q 2 S 28 P 6 R 99 Q 3 S 32 = ?

**Ans**
- ✓ A. 303
- ✗ B. 348
- ✗ C. 328
- ✗ D. 365

**Q.35** AD 24 is related to BE 12 in a certain way. In the same way, KN 68 is related to LO 34. To which of the following is HK 42 related, following the same logic?

**Ans**
- ✗ A. JM 33
- ✗ B. IM 21
- ✗ C. JL 31
- ✓ D. IL 21

**Q.36** Refer to the following letter series and answer the question that follows. Counting to be done from left to right.

(Left) S I C X Z O A K L N T E W A Q D F H G U K O (Right)

How many such consonants are there, each of which is immediately preceded by a vowel and also immediately followed by a vowel?

**Ans**
- ✗ A. Three
- ✗ B. One
- ✗ C. None
- ✓ D. Two

**Q.37** In a certain code language, 'mind your business' is coded as 'gv tr fy' and 'your turn now' is coded as 'cb gv kq'. How is 'your' coded in the given language? (All the codes are two-letter codes only.)

**Ans**
- ✗ A. kq
- ✓ B. gv
- ✗ C. tr
- ✗ D. fy

**Q.38** In a certain code language,

A + B means 'A is the sister of B'
A – B means 'A is the brother of B'
A x B means 'A is the wife of B'
A ÷ B means 'A is the father of B'

Based on the above, how is T related to K if 'T ÷ G – D + M x K'?

**Ans**
- ✓ A. Wife's father
- ✗ B. Wife's brother
- ✗ C. Father
- ✗ D. Brother

**Q.39** In a row of 47 people facing north, Kamu sits $12^{th}$ from the left end. If only 12 people sit to the right of Tara, then how many people sit between Kamu and Tara?

**Ans**
- ✗ A. 19
- ✗ B. 21
- ✓ C. 22
- ✗ D. 20

**Q.40** Shreya is the wife of Govind. Govind is the brother of Harshit. Harshit is the father of Mahak. Mahak is the sister of Aditya. How is Shreya related to Aditya?

**Ans**
- ✓ A. Father's brother's wife
- ✗ B. Father's brother's daughter
- ✗ C. Mother's brother's daughter
- ✗ D. Mother's brother's wife

**Q.41** Refer to the following number series and answer the question that follows. (All numbers are single-digit numbers only. Counting to be done from left to right only.)

(Left) 3 5 4 3 6 7 8 9 9 6 6 3 3 7 8 8 1 7 5 3 (Right)

How many such odd numbers are there, each of which is immediately preceded by an even number and also immediately followed by an odd number?

Ans
- ✗ A. ONE
- ✗ B. NONE
- ✗ C. TWO
- ✓ D. THREE

**Q.42** In a certain code language, 'never fear life' is coded as 'ro sb kp' and 'now or never' is coded as 'sb tg ct'. How is 'never' coded in the given language? (All the codes are two-letter codes only.)

Ans
- ✓ A. sb
- ✗ B. ct
- ✗ C. tg
- ✗ D. kp

**Q.43** Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. C is not kept below G. Only five boxes are kept below E. Only one box is kept between C and E. B is kept above A but below G. F is not the topmost box. Which box is kept immediately below F?

Ans
- ✗ A. E
- ✗ B. B
- ✗ C. D
- ✓ D. C

**Q.44** Seven people, A, K, Q, D, E, F and N, are sitting in a row, facing north. D sits sixth from the right end of the row. Only three people sit between F and D. E is the immediate neighbour of Q and N. K sits second to the left of N. Who sits third to the left of A?

Ans
- ✗ A. K
- ✓ B. E
- ✗ C. Q
- ✗ D. D

**Q.45** GDFH is related to JGIK in a certain way based on the English alphabetical order. In the same way, OLNP is related to ROQS. To which of the given options is TQSU related, following the same logic?

Ans
- ✗ A. WUTX
- ✗ B. WTUX
- ✓ C. WTVX
- ✗ D. VTWY

**Q.46** What should come in place of '?' in the given series?

7 21 63 189 567 ?

Ans
- ✓ A. 1701
- ✗ B. 1703
- ✗ C. 1702
- ✗ D. 1700

**Q.47** What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?

8 ÷ 2 + 14 x 7 - 7 = ?

**Ans**
- ✗ A. 14
- ✗ B. 18
- ✓ C. 21
- ✗ D. 12

**Q.48** Mr. Ok starts from Point O and drives 7 km towards the west. He then takes a right turn, drives 7 km, turns right and drives 2 km. He then takes a left turn and drives 6 km. He then takes a right turn and drives 19 km. He then takes a right turn and drives 16 km. He then takes a final right turn, drives 14 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point O again? (All turns are 90 degrees turns only unless specified.)

**Ans**
- ✗ A. 4 km towards South
- ✗ B. 4 km towards East
- ✗ C. 3 km towards West
- ✓ D. 3 km towards North

**Q.49** **Ap, Bx, Cu, Dk, Ey, Fn and Gm are sitting around a circular table facing the centre. Dk sits to the immediate right of Bx. Cu is the immediate neighbour of Ey and Dk. Fn sits second to the right of Ap. What is the position of Gm with respect to Ey?**

**Ans**
- ✓ A. Second to the right
- ✗ B. Third to the right
- ✗ C. Second to the left
- ✗ D. Immediate left

**Q.50** Keval starts from point Y and drives 77 km towards North. He then takes a right turn, drives 34 km, turns right and drives 36 km. He then takes a right turn and drives 65 km. He then turns left, drives 41 km to stop at point Z. How far (shortest distance) and towards which direction should he drive in order to reach point Y again? (All turns are 90-degree turns only unless specified.)

**Ans**
- ✗ A. 29 km towards west
- ✗ B. 30 km towards east
- ✗ C. 33 km towards north
- ✓ D. 31 km towards east

## Section : **General Science**

**Q.51** If the pH of a solution is 3, what is the concentration of hydrogen ions in the solution?

**Ans**
- ✓ A. 1×10−3 M
- ✗ B. 3×10−2M
- ✗ C. 1×10−2 M
- ✗ D. 3×10−3 M

**Q.52** What happens to a ray of light that either passes through the principal focus (for a convex lens) or appears to meet at the principal focus (for a concave lens) before striking the lens?

**Ans**
- ✗ A. It bends randomly after refraction.
- ✓ B. It emerges parallel to the principal axis after refraction.
- ✗ C. It forms an image at the focal plane of the lens.
- ✗ D. It always converges at the optical centre.

**Q.53** **Which of the following is the method used for refining metals such as copper, zinc and silver?**

**Ans**
- ✔ A. Electrolytic refining
- ✘ B. Smelting
- ✘ C. Distillation
- ✘ D. Extraction

**Q.54** **Even though action and reaction forces are equal in size, they may not cause equal accelerations. Why?**

**Ans**
- ✔ A. Because each force acts on a different object, and the objects may have different masses
- ✘ B. Because reaction forces are always weaker in effect
- ✘ C. Because only the larger force causes acceleration
- ✘ D. Because the forces act on the same object

**Q.55** **If an element forms an ion with a charge of −2, what does this indicate about its valency?**

**Ans**
- ✘ A. The element has lost 2 electrons.
- ✘ B. The element has gained 2 protons.
- ✘ C. The element has 2 electrons in the nucleus.
- ✔ D. The element has gained 2 electrons.

**Q.56** **Choose a term to complete the analogy.**

**Prokaryotic cell : Small and simple :: Eukaryotic cell : _____**

**Ans**
- ✘ A. Same size and complexity
- ✘ B. Irregular and simple
- ✘ C. Smaller and simple
- ✔ D. Larger and complex

**Q.57** **If the velocity-time graph is curved (non-linear), the object is moving with _____.**

**Ans**
- ✔ A. Non-uniform acceleration
- ✘ B. Constant rate of change of momentum
- ✘ C. Uniform acceleration
- ✘ D. Constant speed

**Q.58** **A convex mirror produces a magnification of 1/3 when an object is placed at a distance of 30 cm from it. How much will be the image distance?**

**Ans**
- ✔ A. + 10 cm
- ✘ B. + 90 cm
- ✘ C. - 10 cm
- ✘ D. - 90 cm

**Q.59** **Which cropping pattern maintains soil fertility through planned crop succession?**

**Ans**
- ✘ A. Monocropping
- ✔ B. Crop rotation
- ✘ C. Mixed cropping
- ✘ D. Relay cropping

**Q.60** **Identify the product formed when copper metal is exposed to dilute hydrochloric acid.**

**Ans**
- ✔ A. No reaction
- ✘ B. Only Salt
- ✘ C. Salt and hydrogen gas
- ✘ D. Salt and chlorine gas

**Q.61** **Complete the analogy.**

**Kharif : Rainy season :: Rabi :_____**

**Ans**
- ✘ A. Summer season
- ✔ B. Winter season
- ✘ C. Autumn season
- ✘ D. Spring season

**Q.62** **The rough endoplasmic reticulum is associated with:**

**Ans**
- ✘ A. Lipid synthesis
- ✘ B. DNA replication
- ✘ C. Enzyme breakdown
- ✔ D. Protein synthesis

**Q.63** **If two isotopes of an element 'X' are X-35 and X-37, the average atomic mass of chlorine (if X-35 = 25% and X-37 = 75%) will be:**

**Ans**
- ✘ A. 34.5 u
- ✘ B. 35.5 u
- ✘ C. 36.0 u
- ✔ D. 36.5 u

**Q.64** **The distance between the pole and the position of the object placed in front of a concave mirror is 120 cm. A real and inverted image is formed by this mirror on a screen at 40 cm from the pole of this mirror. What will be the focal length of this mirror?**

**Ans**
- ✘ A. + 30 cm
- ✔ B. - 30 cm
- ✘ C. - 60 cm
- ✘ D. + 60 cm

**Q.65** **Choose a term to complete the analogy.**

**Apical Meristem : Length :: Lateral Meristem : _____**

**Ans**
- ✘ A. Tips of stems
- ✘ B. Cell differentiation only
- ✔ C. Girth
- ✘ D. Nodes

**Q.66** **Addition reactions are characteristic of which type of hydrocarbons?**

**Ans**
- ✔ A. Both alkynes and alkenes
- ✘ B. Only alkanes
- ✘ C. Only alkenes
- ✘ D. Only alkynes

**Q.67** **Which of the following relations is incorrect for electric power (P)?**

**Ans**
- ✗ A. P=VI
- ✗ B. P=I2R
- ✗ C. P=V2/R
- ✓ D. P=R/V2

**Q.68** **In a chemical reaction, 5.6 g of sodium reacts with 8.0 g of chlorine to form sodium chloride. What is the mass of sodium chloride formed according to the Law of Conservation of Mass?**

**Ans**
- ✗ A. 8.0 g
- ✗ B. 12.4 g
- ✓ C. 13.6 g
- ✗ D. 14.4 g

**Q.69** **Which property do isobars share?**

**Ans**
- ✗ A. Same chemical properties
- ✗ B. Same number of protons
- ✗ C. Same atomic number
- ✓ D. Same mass number

**Q.70** **A device often used in electric circuits to change the resistance without changing the voltage source is the _____.**

**Ans**
- ✗ A. Fuse
- ✗ B. Voltmeter
- ✓ C. Rheostat
- ✗ D. Ammeter

**Q.71** **Which of the following correctly explains why veins have valves but arteries do not?**

**Ans**
- ✗ A. Veins carry blood under high pressure, so valves prevent it from bursting
- ✗ B. Arteries are located deep inside the body and are supported by muscles
- ✗ C. Arteries carry oxygenated blood and do not need valves
- ✓ D. Veins carry blood at low pressure and need valves to prevent backflow

**Q.72** **The centre of curvature (C) of a concave mirror is located _____.**

**Ans**
- ✓ A. In front of the mirror
- ✗ B. At the pole (P)
- ✗ C. Behind the mirror
- ✗ D. At infinity

**Q.73** **Which of the following is NOT attributed to Areolar connective tissues in the human body?**

**Ans**
- ✗ A. Filling the space inside organs
- ✓ B. Storing fat globules for insulation
- ✗ C. Helping in the repair of tissues
- ✗ D. Supporting internal organs

**Q.74** **A car has a mass of 120 kg. How much work must be done to raise its speed from 72 km/h to 108 km/h?**

**Ans**
- ✗ A. $4.0 \times 10^4$ J
- ✓ B. $3.0 \times 10^4$ J
- ✗ C. $2.0 \times 10^4$ J
- ✗ D. $1.0 \times 10^4$ J

**Q.75** **The difference in electrical conductivity between diamond and graphite arises because:**

**Ans**
- ✗ A. Both have free electrons, but in different numbers
- ✗ B. Diamond has tightly packed ions
- ✓ C. Graphite has delocalized electrons; diamond does not
- ✗ D. Diamond has metallic bonding, graphite does not

**Q.76** **What specialisation is commonly found in the epidermal cells of plant roots to aid in their primary function?**

**Ans**
- ✗ A. Large air cavities (aerenchyma)
- ✗ B. Irregularly thickened corners
- ✓ C. Long, hair-like extensions
- ✗ D. A thick, waxy coating of cutin

**Q.77** **Two bodies A and B are travelling in uniform motion, the slope of the distance- time graph of body A is greater than the slope of the distance - time graph of body B. Which of the following statements is correct?**

**Ans**
- ✓ A. The speed of body A is greater than speed of body B.
- ✗ B. The speed of body A is less than the speed of body B.
- ✗ C. The speed of body A is equal to the speed of body B.
- ✗ D. The acceleration of body A is greater than the acceleration of body B.

**Q.78** **Which of the following is/are NOT true about action reaction forces?**

**(i) Action reaction forces are unequal in magnitude and always act in the same direction.**
**(ii) Action reaction forces act on different bodies.**
**(iii) Action reaction forces act on the same body.**

**Ans**
- ✗ A. Both (i) and (ii)
- ✓ B. Both (i) and (iii)
- ✗ C. Only (ii)
- ✗ D. Only (iii)

**Q.79** **The solubility of gases in liquids generally:**

**Ans**
- ✗ A. First increases then decreases with increase in temperature
- ✗ B. Increases with increase in temperature
- ✗ C. Is unaffected by temperature
- ✓ D. Decreases with increase in temperature

**Q.80** **A convex mirror of focal length 'X' cm forms an image at a distance of 8 cm when the object is placed at a distance of 40 cm in front of the mirror. What is the value of X?**

**Ans**
- ✗ A. - 20/3 cm
- ✓ B. + 10 cm
- ✗ C. - 10 cm
- ✗ D. + 20/3 cm

**Q.81** **Meristematic tissue contributes to plant growth because its cells:**

**Ans**
- ✗ A. Are permanently differentiated
- ✓ B. Continuously divide throughout life
- ✗ C. Contain large central vacuoles
- ✗ D. Have thick secondary walls

**Q.82** **Which of the following is correct regarding the male and female gamete?**

**Ans**
- ✔ A. Male gamete is small and motile; and female gamete is larger and non-motile.
- ✘ B. Male gamete is large and non-motile; and female gamete is smaller and motile.
- ✘ C. Male gamete is small and non-motile; and female gamete is larger and motile.
- ✘ D. Male gamete is large and motile; and female gamete is smaller and non-motile.

**Q.83** **Which of the following pairs are correctly matched as structural isomers?**
**A) Pentane – 2-methylbutane**
**B) Butane – 2-methylpropane**
**C) Benzene – cyclohexene**

**Ans**
- ✘ A. A, B and C
- ✘ B. A and C only
- ✔ C. A and B only
- ✘ D. B and C only

**Q.84** **The location of an object is always described by specifying a point of reference known as the _____.**

**Ans**
- ✘ A. Axis
- ✘ B. Displacement
- ✔ C. Origin
- ✘ D. Final position

**Q.85** **Which statement most accurately describes why food webs provide greater stability to an ecosystem compared to single food chains?**

**Ans**
- ✔ A. They allow multiple feeding relationships, ensuring balance.
- ✘ B. They involve only producers.
- ✘ C. They recycle only energy.
- ✘ D. They have fewer organisms.

**Q.86** **What is formed when the male germ-cell from the pollen grain fuses with the female gamete in flowering plants?**

**Ans**
- ✘ A. Ovule
- ✔ B. Zygote
- ✘ C. Stigma
- ✘ D. Pollen grain

**Q.87** **A distance–time graph for uniform motion must pass through _____.**

**Ans**
- ✘ A. (0, 1)
- ✘ B. (1, 1) only
- ✔ C. The origin
- ✘ D. Any point

**Q.88** **In the electrolytic refining of copper, which of the following acts as the anode?**

**Ans**
- ✘ A. Carbon electrode
- ✘ B. Pure copper plate
- ✔ C. Impure copper block
- ✘ D. Copper sulphate solution

**Q.89** _____ is a process in which persistent, non-degradable chemicals become progressively more concentrated at each higher trophic level in a food chain.

**Ans**
- ✗ A. Bioremediation
- ✓ B. Biological magnification
- ✗ C. Biodegradation
- ✗ D. Ecological succession

**Q.90** According to Bohr's model, where are electrons found in an atom?

**Ans**
- ✗ A. Resting outside the atom in free space
- ✗ B. Randomly scattered inside the atom
- ✓ C. Moving in fixed circular orbits around the nucleus
- ✗ D. Fixed positions inside the nucleus

## Section : General Awareness

**Q.91** India shares a *maritime boundary* (sea boundary) with which one of the following countries across the Arabian Sea or the Indian Ocean?

**Ans**
- ✗ A. Afghanistan
- ✗ B. Mongolia
- ✗ C. Russia
- ✓ D. Maldives

**Q.92** PM Modi unveils how many Global Initiatives at the G20 Johannesburg Summit 2025?

**Ans**
- ✗ A. Four
- ✗ B. Five
- ✓ C. Six
- ✗ D. Seven

**Q.93** The Henley Passport Index 2025 ranks India at which rank globally?

**Ans**
- ✗ A. 83
- ✗ B. 84
- ✓ C. 85
- ✗ D. 86

**Q.94** In which year did India completely eliminate Quantitative Restrictions (QRs) on imports as part of trade liberalization?

**Ans**
- ✓ A. 2001
- ✗ B. 2005
- ✗ C. 1998
- ✗ D. 1996

**Q.95** According to the Ministry of Defence, what was India's highest-ever defence production in 2024–25?

**Ans**
- ✗ A. ₹3.14 Lakh Crore
- ✗ B. ₹2.94 Lakh Crore
- ✗ C. ₹2.54 Lakh Crore
- ✓ D. ₹1.54 Lakh Crore

**Q.96** **What is the focus of the 6G research project at IIIT-Naya Raipur funded under DST's TTDF scheme?**

**Ans**
- ✔ A. Developing a prototype for 6G cell-free communication
- ✘ B. Expanding smartphone production facilities
- ✘ C. Building a 50-qubit quantum computer
- ✘ D. Creating an AI-driven telecom cloud platform

**Q.97** **Who among the following appoints the members of the State Public Service Commission (SPSC) under Article 316 of the Constitution of India?**

**Ans**
- ✔ A. Governor of the State
- ✘ B. Prime Minister of India
- ✘ C. President of India
- ✘ D. Chief Justice of the High Court

**Q.98** **Which among the following battles in 1757 marked the beginning of British political control in India?**

**Ans**
- ✘ A. Battle of Seringapatam
- ✘ B. Battle of Buxar
- ✔ C. Battle of Plassey
- ✘ D. Battle of Colachel

**Q.99** **Which Indian classical dance form originated in the southern state of Tamil Nadu and is traditionally performed in temples as a devotional offering?**

**Ans**
- ✘ A. Mohiniyattam
- ✘ B. Odissi
- ✘ C. Kathak
- ✔ D. Bharatanatyam

**Q.100** **Provincial autonomy in provinces in place of dyarchy was introduced by which of the following British Indian government legislations?**

**Ans**
- ✘ A. Indian Councils Act of 1892
- ✘ B. Government of India Act of 1919
- ✔ C. Government of India Act of 1935
- ✘ D. Indian Councils Act of 1909

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