रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS
सी ई एन - ०१/२०२५ - CEN - 01/2025
सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot

RRB ALP 2025 CBT 2

Assistant Loco Pilot | CEN 01/2025 | CBT 2 | Mechanic Radio & TV

ENGLISH ANSWER KEY

Official Answer Key

All 2 Shifts · 28-07-2026 to 28-07-2026

Questions	175 (Part A 100 + Part B 75)
Marking	+1 correct / -1/3 wrong
Duration	2 hours 30 minutes (Part A 90 min + Part B 60 min)
Sections	Part A 100 (Maths, Reasoning, Basic Sci & Engg) · Part B 75 (trade)

Every paper is set from the saved RRB question paper, with the official 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.

Check your marks, normalized score and zone-wise rank free at
rank.qmaths.in

Blackbook

Score & Rank Calculator · rank.qmaths.in

Compiled 28 October 2026

INDEX · Click any row to open that paper

RRB ALP 2025 CBT 2 (Mechanic Radio & TV) (English) · 2 shifts

DAY	DATE	SHIFT	TIME	PAGE
Day 1	**28-07-2026**	Shift 1	09:30 - 12:00	**3**
Day 1	**28-07-2026**	Shift 2	14:30 - 17:00	**24**

रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS
सी ई एन - ०१/२०२५ - CEN - 01/2025
सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot

Exam	RRB ALP 2025 CBT 2 (CEN 01/2025)
Paper	Mechanic Radio & TV
Test Date	28 Jul 2026
Test Time	9:30 AM - 12:00 PM
Language	English

*** Note**
Correct answer carries 1 mark; each incorrect answer carries a negative mark of 1/3.
1. The option shown in green with a tick is the correct answer as per the official answer key.
2. RRB shuffles question order for every candidate inside each Part; this paper follows the order of one real response sheet.

Section : Part A

Q.1 **If Rohan's income increases by 20% and his expenditure increases by 10%, then his savings increase by ₹1,200. If his original income was ₹12,000, what was his original expenditure? (Assume that savings = income – expenditure.)**

Ans
✗ 1. ₹10,000
✗ 2. ₹11,000
✓ **3. ₹12,000**
✗ 4. ₹9,000

Q.2 **Which feature is a requirement of the BIS drawing standard in engineering drawings?**

Ans
✗ 1. Freehand sketches without scale
✗ 2. Margin lines of random width
✓ **3. Title block with specific information**
✗ 4. Use of colored pencils for clarity

Q.3 **What should come in place of the question mark (?) in the given series?**

98, 104, 116, 134, 158, ?

Ans
✗ 1. 184
✗ 2. 186
✓ **3. 188**
✗ 4. 190

Q.4 If the mean of the following data is 40, then what is the value of x?

Class	10-20	20-30	30-40	40-50	50-60
Frequency	30	27	44	29	X

Ans
✓ **1. 82**
✗ 2. 98
✗ 3. 99
✗ 4. 93

Q.5 **Which property of a fuse wire ensures it melts quickly when excess current flows?**

Ans
✗ 1. High electrical resistance
✗ 2. High melting point
✗ 3. Thick wire
✓ **4. Low melting point**

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.6 There are two types of silver–copper alloys. The first alloy contains $93\frac{1}{3}\%$ silver, while the second alloy contains $86\frac{2}{3}\%$ silver. Find the amount of the first alloy that should be mixed with some quantity of the second alloy to obtain a 100 kg mixture containing 90% silver.

Ans
- ✗ 1. 48 kg
- ✗ 2. 52 kg
- ✓ **3. 50 kg**
- ✗ 4. 45 kg

Q.7 A trader buys 187 pens at ₹23 each. During transportation, 7 pens get damaged and cannot be sold. He sells the remaining pens at ₹27 each. Find his profit percentage. (rounded off to one decimal place)

Ans
- ✗ 1. 13.7%
- ✗ 2. 14.1%
- ✓ **3. 13.0%**
- ✗ 4. 12.6%

Q.8 A car travels on a highway, and its odometer records a reading of 180 km at 8:00 am and 240 km at 9:30 am. Based on this information, which statement best describes the car's average speed during this interval?

Ans
- ✗ 1. The car's average speed is 240 km per hour since that was the odometer reading at 9:30 am.
- ✗ 2. The car's average speed is 60 km per hour based only on the change in odometer readings.
- ✓ **3. The car's average speed is 40 km per hour as calculated from the odometer readings and time interval.**
- ✗ 4. The car's average speed is 180 km per hour since that was the odometer reading at 8:00 am.

Q.9 A cyclist covers 120 meters in 16 seconds on a straight road, then immediately covers 180 meters in 24 seconds on a similar road segment. What is the average speed of the cyclist during the entire journey?

Ans
- ✓ **1. 7.5 meters per second**
- ✗ 2. 7.0 meters per second
- ✗ 3. 6.5 meters per second
- ✗ 4. 8.0 meters per second

Q.10 What do touch gestures in Microsoft Windows allow users to do?

Ans
- ✗ 1. Type faster on the keyboard
- ✗ 2. Connect external devices
- ✓ **3. Perform actions using finger movements**
- ✗ 4. Increase screen brightness

Q.11 Which of the following is both, an input and output device?

Ans
- ✗ 1. Keyboard
- ✓ **2. Touchscreen monitor**
- ✗ 3. Projector
- ✗ 4. Printer

Q.12 In third angle projection, where is the object placed relative to the plane of projection?

Ans
- ✓ **1. The object is placed in the third quadrant**
- ✗ 2. The object is placed in the second quadrant
- ✗ 3. The object is placed in the first quadrant
- ✗ 4. The object is placed in the fourth quadrant

Q.13 An engineer uses fault tree analysis to assess a machine-related injury in a factory. Which step should be taken first according to standard procedure?

Ans
- ✗ 1. Establish preventive measures to control risks
- ✗ 2. List all possible causes of failures
- ✗ 3. Validate the analysis using workplace data
- ✓ **4. Define the top event representing the injury**

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.14 In a certain code language,
A + B means 'A is the mother of B',
A − B means 'A is the brother of B',
A × B means 'A is the wife of B' and
A % B means 'A is the father of B'.

How is Shreya related to Mahak if 'Shreya + Dev − Taran × Harshit % Mahak'?

Ans
✗ 1. Father's sister
✗ 2. Mother's sister
✗ 3. Father's mother
✓ **4. Mother's mother**

Q.15 Which of the following scenarios best demonstrates the conversion of chemical energy to mechanical energy?

Ans
✗ 1. A flashlight turns on after inserting new batteries
✗ 2. A stone falls off a table to the ground
✗ 3. A stretched rubber band snaps back to its original shape
✓ **4. A runner uses stored energy from food to sprint forward**

Q.16 A shopkeeper marks a product 75% above cost price and offers two successive discounts of 30% and 40%. What is the profit or loss percentage?

Ans
✗ 1. 15.7% profit
✗ 2. 20.9% profit
✓ **3. 26.5% loss**
✗ 4. 22.6% profit

Q.17 Refer to the following letter series and answer the question that follows. Counting to be done from left to right only.

(Left) A T D E B R C L M Q O N P J M Q E A O Z W F U K S L (Right)

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

Ans
✓ **1. 3**
✗ 2. 1
✗ 3. 2
✗ 4. 0

Q.18 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
✗ 1. DJ – GM
✗ 2. AF – DI
✓ **3. CH – EK**
✗ 4. BG – EJ

Q.19 Refer to the given letter series and answer the question that follows. Counting to be done from left to right.

(Left) B F O P P S Q A L M K A W X S N U Q J O M Y (Right)

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

Ans
✗ 1. 6
✗ 2. 4
✗ 3. 7
✓ **4. 5**

Q.20 What is the primary function of a fire hydrant in a workplace safety system?

Ans
✗ 1. Removing hazardous fumes from the area
✗ 2. Detecting smoke and warning employees
✓ **3. Supplying large quantities of water to fight fires**
✗ 4. Activating fire alarms automatically in emergencies

Q.21 Which approach most effectively reduces both nitrogen and phosphorus concentrations during wastewater treatment?

Ans
✓ **1. Biological and chemical nutrient removal**
✗ 2. Primary sedimentation with extended aeration
✗ 3. UV disinfection following secondary treatment
✗ 4. Surface-flow constructed wetlands

Blackbook

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.22 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

QOI 5, OMG 10, MKE 15, KIC 20, ?

Ans
✓ 1. IGA 25
✗ 2. IHS 23
✗ 3. HIZ 30
✗ 4. JHZ 24

Q.23 Refer to the following letter and symbol series and answer the question that follows. Counting to be done from left to right.

(Left) Z @ B R J # D * Q A M S % P L V O U S N T W Z (Right)

How many such symbols are there, each of which is immediately preceded by a letter and also immediately followed by a letter?

Ans
✗ 1. None
✓ 2. Four
✗ 3. Three
✗ 4. Two

Q.24 A sum of ₹420 is divided among A, B, C, and D such that: A : B = 4 : x, B : C = x : 7, C : D = 6 : (x – 3). If B and C together get ₹210, find the value of x.

Ans
✗ 1. 42
✗ 2. 27
✓ 3. 39
✗ 4. 53

Q.25 Three pipes A, B and C can fill a tank in 12 hours, 18 hours and 24 hours, respectively. A leak at the bottom can empty the full tank in 36 hours. If all the pipes are opened together, in how many hours will the tank be filled? (Round off your answer to two decimal places.)

Ans
✗ 1. 3.33 hours
✗ 2. 5.56 hours
✓ 3. 6.55 hours
✗ 4. 9.45 hours

Q.26 A pendulum takes 60 seconds to complete 24 oscillations. If its length is increased and it now takes 72 seconds for the same number of oscillations, what has happened to its time period?

Ans
✓ 1. It has increased to 3.0 seconds
✗ 2. It has decreased to 1.5 seconds
✗ 3. It remains at 2.5 seconds
✗ 4. It has decreased to 2.0 seconds

Q.27 An engineer is tasked with creating the front view of a mechanical part. The part has a rectangular base with a vertical circular hole passing through it and a triangular prism attached on top. Which of the following best describes what will be visible in the front view?

Ans
✗ 1. Only the rectangular base outline will be visible in the front view drawing
✓ 2. The outline of rectangular base and triangular prism will be visible but hole is not shown
✗ 3. The outline of triangular prism and circular hole will be visible in front view only
✗ 4. Only the triangular prism will be clearly visible in the front view drawing

Q.28 An engineering student is tasked with creating a detailed side view of a complex machine part for an assembly drawing. Which approach will most accurately represent all features visible from the side while avoiding hidden overlaps or misinterpretations?

Ans
✓ 1. Project all visible elements from the side and omit hidden features unless needed
✗ 2. Use only hidden lines for representing features on the far side in the view
✗ 3. Sketch the side view freely without using projections from the main view
✗ 4. Include all features even those not visible from the selected side view

Q.29 If $\left(x+\frac{1}{x}\right) = 3$, find the value of $\left(x^3+\frac{1}{x^3}\right)$.

Ans
✗ 1. 20
✗ 2. 16
✓ 3. 18
✗ 4. 15

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.30 A sample of water is heated from 15 degrees Celsius to 35 degrees Celsius. What is the temperature change in Kelvin?

Ans
✓ 1. The temperature change is 20 K.
✗ 2. The temperature change is 30 K.
✗ 3. The temperature change is 50 K.
✗ 4. The temperature change is 15 K.

Q.31 In a certain code language, 'KING' is coded as '9713' and 'ITCH' is coded as '2945'. What is the code for 'I' in the given code language?

Ans
✗ 1. 2
✓ 2. 9
✗ 3. 7
✗ 4. 4

Q.32 Simplify: 60 - {(-8) × (-16 - 19 - 2)} ÷ [5 × {2 + (-1) × (-1)}]

Ans
✗ 1. $\frac{594}{15}$
✗ 2. $\frac{614}{15}$
✗ 3. $\frac{608}{15}$
✓ 4. $\frac{604}{15}$

Q.33 A worker's hand is at risk of injury from a mechanical shearing action. Which situation best describes a shearing hazard?

Ans
✗ 1. A hand touching a hot metallic machine surface during maintenance activity
✓ 2. A hand caught between a moving blade and a fixed machine surface during operation
✗ 3. A hand sliding repeatedly across a rough abrasive machine surface during work
✗ 4. A hand becoming entangled in a rotating machine shaft during operation

Q.34 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

UMD ZQG EUJ JYM ?

Ans
✗ 1. PDP
✗ 2. NBQ
✗ 3. NDO
✓ 4. OCP

Q.35 If a scooter travels at a constant speed of 25 km per hour, how far will it travel in 4 hours?

Ans
✗ 1. 120 km
✓ 2. 100 km
✗ 3. 75 km
✗ 4. 80 km

Q.36 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements: All girls are hens. No hen is a cat.
Conclusion (I): No girl is a cat.
Conclusion (II): Some cats are hens.

Ans
✗ 1. Neither conclusion (I) nor (II) follows
✗ 2. Both conclusions (I) and (II) follow
✓ 3. Only conclusion (I) follows
✗ 4. Only conclusion (II) follows

Q.37 What is the simplified value of the expression $\left[\frac{\cos A}{(1 - \tan A)}\right] + \left[\frac{\sin A}{(1 - \cot A)}\right]$?

Ans
✓ 1. cos A + sin A
✗ 2. sin A – cos A
✗ 3. 1
✗ 4. 0

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.38 Which of the following best describes a key environmental concern associated with improper disposal of e-waste?

Ans
✓ 1. Release of toxic metals into soil and water
✗ 2. Enhanced biodegradation of plastics
✗ 3. Increased recycling rates of precious metals
✗ 4. Release of greenhouse gases from decomposition

Q.39 Solve the system of equations:

$$-3x+2y-z=-1,\ 6x-6y+7z=-7,\ 3x-4y+4z=-6$$

Ans
✗ 1. $x=1, y=2, z=2$
✓ 2. $x=2, y=2, z=-1$
✗ 3. $x=2, y=1, z=-3$
✗ 4. $x=-2, y=2, z=11$

Q.40 In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.
Among the five poles—I, N, C, H, and L—each having a different height, which pole is the tallest?
(I) I is shorter than N but taller than C. C is taller than only one pole.
(II) H is taller than L.

Ans
✗ 1. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
✗ 2. Data in statement I alone is sufficient to answer the question while data in statement II is not
✓ 3. Both statements I and II together are NOT sufficient to answer the question
✗ 4. Data in statement II alone is sufficient to answer the question while data in statement I is not

---

Q.41 In this question, a group of numbers/symbols is coded using letter codes as per the codes given below and the conditions which follow. The correct combination of codes following the conditions is your answer. If none of the conditions follow, then the codes for the respective number/symbol are to be followed directly as given in the table.

Number/symbol	6	1	&	3	%	8	+	4	#	7	@	5	2	$
Code	R	V	G	D	S	C	T	L	F	W	H	U	Y	N

Conditions:
(i) If the first element is a symbol and the last element is an odd number, the codes for these two (the first and the last elements) are to be interchanged.
(ii) If the first element is an odd number and the last an even number, the first and last elements are to be coded as ©.
(iii) If both the second and third elements are perfect squares, the third element is to be coded as the code for the second element.

What will be the code for the following group?
+ 6 $ 2 7

Ans
✗ 1. STMWV
✗ 2. WSNYT
✓ 3. WRNYT
✗ 4. TSNWW

Q.42 A boat sails 40 km downstream and then 40 km upstream in a river. The boat's speed in still water is 12 km/hr and the speed of the stream is 4 km/hr. How much time does the boat take to cover the entire distance (both upstream and downstream)?

Ans
✗ 1. 8 hours
✓ 2. 7.5 hours
✗ 3. 10 hours
✗ 4. 6 hours

Q.43 Which of the following statements correctly reflects the characteristics of a Local Area Network (LAN) and the role of Ethernet within it?

Ans
✗ 1. Ethernet in a LAN provides low-speed data transfer and connects users over public Internet infrastructure.
✗ 2. A LAN always requires Gigabit Ethernet to function and is insecure because it allows open access to all network devices.
✗ 3. LANs are designed for long-distance communication and use Ethernet primarily for wireless data exchange.
✓ 4. Ethernet is a standard that governs how devices in a LAN communicate via wired connections, supporting speeds from 10 Mbps to 1000 Mbps.

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.44 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:
Some glasses are spoons.
All spoons are forks.

Conclusions:
(I) Some glasses are forks.
(II) All forks are spoons.

Ans
✗ 1. Only conclusion (II) follows
✗ 2. Neither conclusion (I) nor (II) follows
✓ **3. Only conclusion (I) follows**
✗ 4. Both conclusions (I) and (II) follow

Q.45 Seven boxes, P, Q, S, T, U, V, and W, are kept one over the other, but not necessarily in the same order. Only three boxes are kept above S. Exactly one box is kept between T and S. Exactly three boxes are kept between T and U, and U is kept somewhere above S. V is kept immediately below U. W is kept at one of the places above P. Q is not kept immediately above or below T. Based on the given information, which box is kept at the lowermost position?

Ans
✗ 1. V
✗ 2. S
✓ **3. P**
✗ 4. Q

Q.46 A diamond ring costs ₹85,000. Its price is reduced first by 11% and then by 4% on the reduced price. Find the final price of the ring after both discounts.

Ans
✓ **1. ₹72,624**
✗ 2. ₹74,624
✗ 3. ₹72,604
✗ 4. ₹73,624

Q.47 Which is the most important safety check before operating any machine in a workshop?

Ans
✗ 1. Ensure the machine area is properly illuminated
✗ 2. Wipe the machine with a dry cloth before use
✗ 3. Check if the machine is plugged in properly
✓ **4. Inspect the machine for loose or damaged parts**

Q.48 What is the best description of the purpose of multi-view drawing in engineering drawing?

Ans
✗ 1. To show different colors of an object for better visual appearance
✗ 2. To view an object from only one direction
✓ **3. To represent different sides of an object clearly on a flat surface**
✗ 4. To present the object in a single three-dimensional visual form only

Q.49 An engineer is tasked with creating a hollow cone for a machine part, where the wall thickness must be consistent and the slant height is critical for assembly. Which factor is most important to ensure the cone will fit correctly in the final design?

Ans
✗ 1. Matching only the overall height of the cone
✗ 2. Prioritizing uniform wall thickness over all other features
✗ 3. Focusing only on base diameter for precise fit
✓ **4. Ensuring the slant height matches the assembly requirement**

Q.50 Which of the following statements correctly describes average velocity and its SI unit?

Ans
✓ **1. Average velocity is the total displacement divided by total time, and its unit is meter per second.**
✗ 2. Average velocity is the total distance divided by total time, and its unit is meter per second.
✗ 3. Average velocity is the total distance divided by total time, and its unit is kilometer per hour.
✗ 4. Average velocity is the total displacement divided by total time, and its unit is kilometer per hour.

Q.51 Find the LCM of 72, 78, and 90.

Ans
✗ 1. 4250
✓ **2. 4680**
✗ 3. 4280
✗ 4. 4120

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.52 If 'A' stands for '+', 'B' stands for '−', 'C' stands for '×' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

28 A 16 C 3 B 12 D 4 = ?

Ans
✗ 1. 72
✓ 2. 73
✗ 3. 70
✗ 4. 71

Q.53 A mechanical engineer must design a flange joint where two pipes are to be connected at a 45-degree angle. Which method should the engineer use to accurately represent the intersection line on a technical drawing of the two cylindrical pipes?

Ans
✓ 1. Draw the true shape of the intersection using auxiliary projection
✗ 2. Represent the intersection as a straight line in the side view
✗ 3. Use only standard orthographic projection without auxiliary views
✗ 4. Draw a simple circle at the junction in the top view

Q.54 Which line symbol is commonly used in engineering drawings to represent a hidden edge that is not directly visible?

Ans
✗ 1. Solid thick line
✗ 2. Chain thin line
✗ 3. Zigzag line
✓ 4. Dashed line

Q.55 A roller coaster at the top of its track has maximum potential energy. As it descends and speeds up, what principle explains why the sum of its kinetic and potential energies remains constant if we ignore friction and air resistance?

Ans
✗ 1. Law of inertia
✗ 2. Principle of inertia
✓ 3. Law of conservation of energy
✗ 4. Principle of superposition

Q.56 A tangent PQ at a point P of a circle of radius 5 cm meets a line through the center O at a point Q such that OQ = 12 cm. What is the length of PQ?

Ans
✗ 1. $\sqrt{117}$ cm
✓ 2. $\sqrt{119}$ cm
✗ 3. $\sqrt{97}$ cm
✗ 4. $\sqrt{107}$ cm

Q.57 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 S?

Ans
✗ 1. Mother's mother
✗ 2. Son's wife
✗ 3. Son's wife's sister
✓ 4. Son's wife's mother

Q.58 In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Q. Among five people – A, B, C, D, and E – who is the tallest?
(I) A is taller than B. B is taller than C.
(II) D is taller than E.

Ans
✓ 1. Both statements I and II together are NOT sufficient to answer the question.
✗ 2. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
✗ 3. Data in statement II alone is sufficient to answer the question while data in statement I is not
✗ 4. Data in statement I alone is sufficient to answer the question while data in statement II is not

Q.59 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?

14 A 30 B 45 C 15 D 9 = ?

Ans
✓ 1. 27
✗ 2. 29
✗ 3. 25
✗ 4. 28

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.60 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
✓ 1. QK-VA
✗ 2. EY-KO
✗ 3. TN-ZD
✗ 4. WQ-CG

Q.61 A conical tent has a base radius of 14 m and a height of 48 m. How many cubic meters of air can it hold? (Use $\pi = \frac{22}{7}$)

Ans
✗ 1. 8956
✓ 2. 9856
✗ 3. 9865
✗ 4. 9568

Q.62 Namia is facing the west. She turns left and walks 15 m. She turns left and walks 25 m. She again turns left and walks 40 m. She finally turns left and walks 40 m to reach home. In which direction is her home with respect to the starting point?

Ans
✗ 1. South-East
✗ 2. South-West
✗ 3. North-East
✓ 4. North-West

Q.63 A trader marks an article 25% above its cost price. He allows a discount of 10% on the marked price. After giving the discount, he makes a profit of ₹180 on the article. What is the cost price of the article?

Ans
✗ 1. ₹1,260
✗ 2. ₹1,200
✗ 3. ₹1,380
✓ 4. ₹1,440

Q.64 Three workers, X, Y, and Z, can complete a certain job in 10 days, 12 days, and 15 days, respectively. Determine the number of days required for them to complete the job when they work together.

Ans
✗ 1. 8 days
✗ 2. 6 days
✗ 3. 5 days
✓ 4. 4 days

Q.65 What is an email used for?

Ans
✗ 1. File storage
✗ 2. Creating documents
✓ 3. Sending messages
✗ 4. Data processing

Q.66 Which integrated strategy best addresses soil pollution, falling crop yields, and low microbial activity near an industrial zone?

Ans
✗ 1. Expand urban areas into farmland.
✓ 2. Control industrial waste for sustainability.
✗ 3. Reforestation in nearby urban centers.
✗ 4. Ban all regional chemical fertilizers.

Q.67 A train X crosses a man who is sitting in another train Y, which is moving in the opposite direction, in 8 seconds. However, when both trains are moving in the same direction, train X takes 20 seconds to pass the same man. If the length of train X is 360 meters and the length of train Y (in which the man is sitting) is 240 meters, what is the speed of train Y?

Ans
✓ 1. 48.6 km/h
✗ 2. 46.5 km/h
✗ 3. 45.3 km/h
✗ 4. 45.8 km/h

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.68 The circumference of the base of a solid right circular cylinder is 88 cm and its height is 150 cm. What is the volume (in cm^3) of the cylinder?

$\left(\text{Take } \pi = \frac{22}{7}\right)$

Ans
✗ 1. 92550
✗ 2. 92500
✗ 3. 92450
✓ 4. 92400

Q.69 In how many years will a sum of ₹16,000 at 10% per annum compounded semi-annually become ₹18,522?

Ans
✗ 1. 2.5 years
✗ 2. 2 years
✗ 3. 1 year
✓ 4. 1.5 years

Q.70 A, B, C, D, X, Y and Z are sitting around a circular table facing the centre of the table.
Only two people sit between X and Z when counted from the right of X. Only two people sit between Z and D. Only three people sit between X and B. A sits to the immediate left of C.
Who sits third to the left of Y?

Ans
✗ 1. X
✓ 2. C
✗ 3. Z
✗ 4. A

Q.71 E, F, G, H, L and M live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on, till the topmost floor is numbered 6. Only three people live above G. Only two people live between L and E. Only two people live between M and G. E lives below G but above F. How many people live below H?

Ans
✗ 1. One
✗ 2. Four
✗ 3. Two
✓ 4. Three

Q.72 16 is related to 260 following a certain logic. Following the same logic, 25 is related to 630. To which of the following is 9 related, following the same logic?

(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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

Ans
✗ 1. 732
✓ 2. 84
✗ 3. 729
✗ 4. 78

Q.73 Which statement best describes a 'point' in engineering drawing?

Ans
✗ 1. A point is a short line segment used to mark measurements.
✗ 2. A point is the intersection of two lines and always has measurable length.
✗ 3. A point represents a small area with both length and width.
✓ 4. A point indicates a precise location but has no size, length, or width.

Q.74 The average of 8 numbers is 45. If one number, 59, is removed, what will the new average be?

Ans
✗ 1. 42.5
✗ 2. 42
✓ 3. 43
✗ 4. 41.5

Q.75 If 'A' stands for '+', 'B' stands for '–', 'C' stands for '×' and 'D' stands for '÷', then what will come in place of the question mark (?) in the following equation?

31 B 35 D 7 A 9 C 2 = ?

Ans
✗ 1. 46
✗ 2. 48
✓ 3. 44
✗ 4. 42

Blackbook

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.76 An object has a mass of 10 kilograms. How does its weight on the Moon compare to its weight on Earth?

Ans
✗ 1. The object weighs more on the Moon than on Earth
✗ 2. The object weighs the same on both the Moon and Earth
✗ 3. The object weighs zero on the Moon
✓ **4. The object weighs less on the Moon than on Earth**

Q.77 When using a hand file during fitting operations, which action demonstrates adherence to tool safety protocols?

Ans
✗ 1. Applying excessive downward force when filing
✗ 2. Filing above shoulder height for better leverage
✓ **3. Fitting a proper handle securely to the tang**
✗ 4. Holding the file near its tang during filing work

Q.78 Below are given two sets of numbers. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given 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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

10 - 100 - 50 - 25; 2 - 4 - 2 - 1

Ans
✗ 1. 12 - 144 - 62 - 31
✓ **2. 4 - 16 - 8 - 4**
✗ 3. 8 - 64 - 32 - 14
✗ 4. 5 - 25 - 15 - 7

Q.79 A thermometer shows a reading of 37 degrees Celsius. What is the corresponding temperature in Kelvin?

Ans
✓ **1. 310 K**
✗ 2. 320 K
✗ 3. 300 K
✗ 4. 270 K

Q.80 The median of the following data is :
25, 15, 23, 25, 17, 27, 20, 18, 24, 30, 19, 28, 35, 10, 31, 40

Ans
✗ 1. 20.5
✓ **2. 24.5**
✗ 3. 25
✗ 4. 23.5

Q.81 A runner completes one lap of a 200 meter circular track in 50 seconds. What is the average speed of the runner?

Ans
✗ 1. 3 meter per second
✓ **2. 4 meter per second**
✗ 3. 3.5 meter per second
✗ 4. 4.5 meter per second

Q.82 P, Q, R, S and T have different ages. T is elder than only one person. S is elder than P but younger than Q. R is elder than Q. Who is the youngest?

Ans
✓ **1. P**
✗ 2. R
✗ 3. Q
✗ 4. S

Q.83 Which of the following best defines 'work' in physics?

Ans
✗ 1. Work is done if a force acts at any angle to the motion.
✓ **2. Work is done when a force moves an object in the direction of the force.**
✗ 3. Work is done when energy is stored in an object.
✗ 4. Work is done whenever a force is applied, regardless of movement.

Q.84 O, P, Q, U and V have different heights. Only three people have heights between V and Q. P is taller than U but shorter than O. V is taller than Q.
How many people are shorter than P?

Ans
✗ 1. Four
✗ 2. One
✗ 3. Three
✓ **4. Two**

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.85 The simple interest earned on a certain sum of money for 3 years at 15% per annum is ₹2,700. Find the sum.

Ans
✗ 1. ₹5,000
✗ 2. ₹9,000
✓ **3. ₹6,000**
✗ 4. ₹8,000

Q.86 Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

BIP : EMU
GNU : JRZ

Ans
✗ 1. XDE : PON
✗ 2. CGW : NHT
✓ **3. FMT : IQY**
✗ 4. VCD : GRD

Q.87 Which component makes up the largest proportion of Earth's atmosphere by volume?

Ans
✗ 1. Oxygen
✗ 2. Argon
✗ 3. Carbon dioxide
✓ **4. Nitrogen**

Q.88 Which situation best describes an entanglement hazard in a mechanical workshop?

Ans
✓ **1. Loose clothing caught in a rotating shaft**
✗ 2. Gloves worn near hot surfaces
✗ 3. Hand pinched between gears
✗ 4. Finger cut by a sharp edge

Q.89 A car travels 60 km north in 2 hours, then 40 km south in the next 1 hour. What is the car's average velocity over the entire trip?

Ans
✗ 1. 20 km/h south
✓ **2. 6.7 km/h north**
✗ 3. 33.3 km/h north
✗ 4. 0 km/h

Q.90 PJAE is related to JOWH in a certain way based on the English alphabetical order. In the same way, OIVC is related to INRF. To which of the following is NEZF related to following the same logic?

Ans
✗ 1. IKUH
✗ 2. IJVJ
✓ **3. HJVI**
✗ 4. HKVJ

Q.91 What should come in place of the question mark (?) in the given series?

74, 83, 101, 128, ?, 209

Ans
✗ 1. 176
✓ **2. 164**
✗ 3. 155
✗ 4. 146

Q.92 In a spreadsheet application, a user selects a range of cells and presses Ctrl + C, followed by Ctrl + V in a different worksheet. What happens to the data?

Ans
✗ 1. The selected cells are deleted from the original worksheet.
✗ 2. The selected cells are saved to a new file.
✓ **3. The selected cells are copied to the new worksheet.**
✗ 4. The selected cells are moved to the new worksheet.

Q.93 What is the typical temperature range covered by a laboratory thermometer used in school experiments?

Ans
✗ 1. Minus fifty to fifty degrees Celsius
✗ 2. Thirty five to forty two degrees Celsius
✓ **3. Minus ten to one hundred and ten degrees Celsius**
✗ 4. Zero to two hundred degrees Celsius

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.94 A father distributed two different amounts among his sons P, Q, R and S. First amount was distributed in the ratio 5 : 4 : 3 : 2 and the second amount was distributed in the ratio 6 : 7 : 8 : 9. If the second amount is thrice the first amount, then which son will get the maximum amount?

Ans
✓ 1. S
✗ 2. R
✗ 3. Q
✗ 4. P

Q.95 A car travels 90 km east and then 30 km west along the same straight road. If the entire journey takes 3 hours, what is the average velocity of the car?

Ans
✗ 1. 40 km/h east
✗ 2. 50 km/h north
✗ 3. 30 km/h east
✓ 4. 20 km/h east

Q.96 A laboratory record shows a distance of 0.004 kilometers between two points. How should this be written in SI units of length for a scientific report?

Ans
✗ 1. 400 cm
✓ 2. 4 m
✗ 3. 4000 mm
✗ 4. 0.4 m

Q.97 When a moving car suddenly applies brakes, its kinetic energy is transformed mainly into which form of energy?

Ans
✗ 1. Light energy
✗ 2. Sound energy
✗ 3. Potential energy
✓ 4. Heat energy

Q.98 A car of mass 1200 kg accelerates from rest to a speed of 20 m/s on a straight road. If the kinetic energy gained by the car is completely due to the work done by the engine, which of the following best represents the total kinetic energy acquired by the car at this speed?

Ans
✗ 1. 480,000 joules
✗ 2. 12,000 joules
✗ 3. 24,000 joules
✓ 4. 240,000 joules

Q.99 What is the main purpose of ambient air quality standards?

Ans
✗ 1. To require all industries to reduce emissions by the exact same percentage.
✓ 2. To set legally permissible limits for specific pollutants to protect public health.
✗ 3. To focus exclusively on industrial operations while ignoring other sectors.
✗ 4. To ensure air is routinely sampled to map historical pollution trends.

Q.100 Two students move identical boxes through a distance of 10 m. Student A applies a force of 50 N, while Student B applies a force of 100 N. What is the difference in the work done by the two students?

Ans
✗ 1. 50 J
✗ 2. 1000 J
✓ 3. 500 J
✗ 4. 0 J

Section : Part B (Mechanic Radio & TV)

Q.101 For a sensor used to measure signals over a wide frequency range, which dynamic characteristic is most important for maintaining measurement accuracy?

Ans
✗ 1. High output sensitivity over a narrow operating bandwidth
✓ 2. Nearly uniform amplitude response across the required frequency range
✗ 3. Gradual attenuation near the upper frequency limit of operation
✗ 4. Linear phase variation throughout the operating frequency range

Q.102 When testing a differentiating module, what steady-state output is expected if a constant DC voltage is applied at the input?

Ans
✗ 1. The output will oscillate rapidly
✓ 2. There will be little to no output signal
✗ 3. It will produce a sinewave output signal
✗ 4. It will amplify the input significantly

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.103 While preparing a fabrication drawing, a fitter needs to indicate a hidden edge on a 80 mm thick plate. According to BIS SP 46-2003, which line type should the fitter use to represent the hidden edge?

Ans
✗ 1. Thick chain lines with alternately long and short dashes
✗ 2. Continuous thick lines for visible outlines
✓ **3. Short, evenly spaced dashed lines with equal-length dashes**
✗ 4. Thin chain lines with longer dashes and dots

Q.104 What feature within an electronic circuit simulation environment provides rapid access to standard resistors, capacitors, and transistors for schematic assembly?

Ans
✗ 1. Output waveform analysis
✓ **2. Library components**
✗ 3. Custom schematic drawing
✗ 4. Simulation speed

Q.105 Which color is commonly used for 'Danger' safety signs in workplaces?

Ans
✗ 1. Yellow
✗ 2. Blue
✓ **3. Red**
✗ 4. Green

Q.106 What steps need to be followed to correctly install a Direct to Home (DTH) system at a customer's residence?

Ans
✗ 1. Only connect the set-top box to the TV
✗ 2. Place the dish indoors and connect with any cable
✓ **3. Mount the dish securely, align it towards the satellite, connect with cable and connect the set-top box to the TV**
✗ 4. Install the dish at any angle without alignment

Q.107 What happens to the output voltage amplitude of an LVDT when the core moves farther from the null position?

Ans
✓ **1. It increases proportionally**
✗ 2. It decreases gradually
✗ 3. It changes randomly
✗ 4. It remains constant

Q.108 In circuit simulation software, after placing a 10 kΩ resistor from the component library, how can its value be changed to 15 kΩ?

Ans
✗ 1. The resistor value is locked and a new unique custom library file must be written from scratch.
✗ 2. The software automatically calculates and overwrites the library value based on mouse positioning.
✗ 3. The technician must manually stitch multiple 10k-ohm models together in a complex network series.
✓ **4. The properties menu of the placed library component can be opened to edit its nominal electrical value directly.**

Q.109 In an RS latch built using NOR gates, what will be the output Q when S = 1 and R = 0?

Ans
✗ 1. Q will always toggle
✗ 2. Q will always remain unchanged
✓ **3. Q = 1**
✗ 4. Q = 0

Q.110 The circuit used for demodulating a standard AM signal at the receiver end is a/an _____

Ans
✗ 1. Phase Discriminator
✗ 2. Armstrong circuit
✗ 3. Ratio detector
✓ **4. Envelope detector**

Q.111 In an area prone to frequent power fluctuations, a technician should select a DTH set-top box featuring a built-in _____ to protect internal components against severe _____.

Ans
✗ 1. Advanced remote control, configuration delays
✗ 2. Antenna alignment tool, signal errors
✓ **3. Power stabilizer, voltage fluctuations**
✗ 4. High-capacity hard drive, storage limits

Q.112 During testing of a multiplexer module, the output occasionally remains in its previous logic state instead of following the newly selected input. Which test is most appropriate for locating the fault?

Ans
✓ **1. Apply input pulses to all channels and observe output synchronization**
✗ 2. Check static output states for each selection input
✗ 3. Inspect the module for visible signs of corrosion
✗ 4. Increase the supply voltage and observe output

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.113 In the context of IF coils, what does the term 'Q factor' refer to?

Ans
✗ 1. It indicates the maximum power rating of the coil
✗ 2. It is the physical size of the coil
✗ 3. It refers to the maximum current the coil can handle
✓ **4. It indicates the selectivity and sharpness of resonance**

Q.114 Which meter is used to measure both active and reactive power for power factor billing applications?

Ans
✗ 1. Dynamometer power factor meter
✗ 2. Single-phase energy meter
✗ 3. Induction wattmeter
✓ **4. Trivector meter**

Q.115 A technician needs to design an op-amp based inverting amplifier with a gain of -10. If the input resistor is 2 kΩ, what value should the feedback resistor have?

Ans
✗ 1. 2 kΩ
✗ 2. 10 kΩ
✓ **3. 20 kΩ**
✗ 4. 5 kΩ

Q.116 Which unit is used to measure the electrical resistance?

Ans
✓ **1. Ohm**
✗ 2. Ampere
✗ 3. Volt
✗ 4. Watt

Q.117 What is the cladding in an optical fiber responsible for?

Ans
✗ 1. It amplifies optical signals
✗ 2. It prevents overheating
✗ 3. It transmits electrical signals
✓ **4. It confines light within the core**

Q.118 If a ramp input is applied to a differentiator op-amp, the output will be:

Ans
✗ 1. Triangular wave
✗ 2. Zero
✗ 3. Square wave
✓ **4. Constant**

Q.119 What is the phase difference between the input and output signals of a non-inverting op-amp configuration?

Ans
✓ **1. 0°**
✗ 2. 90°
✗ 3. 45°
✗ 4. 180°

Q.120 A fitter needs to remove excess metal from a workpiece after marking but before filing. Which tool is most suitable for this operation?

Ans
✗ 1. Screwdriver
✗ 2. File
✗ 3. Spanner
✓ **4. Chisel**

Q.121 If a voltage cut-off system fails in an SMPS, what is the most likely consequence for the connected load?

Ans
✓ **1. The load may be exposed to damaging overvoltage conditions**
✗ 2. The system will automatically stabilize the output voltage
✗ 3. The load will operate at a constant voltage regardless of supply changes
✗ 4. The load efficiency will significantly increase

Q.122 Why is the soldering iron tip filed before tinning?

Ans
✓ **1. To remove oxide scales from the surface**
✗ 2. To increase the heat retention of the tip
✗ 3. To remove old solder from the tip
✗ 4. To shape the tip for fine work

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary**
GET IT ON Google Play

Q.123 Why is a DIAC unsuitable for use as a standard rectifier in a power supply circuit?

Ans
✗ 1. It has more than two terminals, complicating connections
✗ 2. It is designed for DC, not AC, applications
✗ 3. It is larger and more expensive than standard diodes
✓ **4. It conducts only after a specific breakover voltage is reached, not at all input voltages**

Q.124 If you want to verify the correct operation of a half adder circuit using a truth table, how many unique input combinations of A and B must you test to complete the table?

Ans
✗ 1. Eight input combinations
✗ 2. Three input combinations
✗ 3. Two input combinations
✓ **4. Four input combinations**

Q.125 Which DVR rear-panel interface is used to connect analog CCTV camera video cables for recording and playback?

Ans
✓ **1. BNC Input Ports**
✗ 2. RJ-45 LAN Sockets
✗ 3. HDMI Output Ports
✗ 4. USB 3.0 Ports

Q.126 Which connector type is threaded and crimped onto the coaxial cable for connection to the LNB and set-top box?

Ans
✗ 1. RS-232 connector
✗ 2. RJ-45 connector
✓ **3. F-type connector**
✗ 4. RCA connector

Q.127 When testing a power supply in an LED TV, why is it important to discharge capacitors before handling the board?

Ans
✗ 1. To confirm the cooling fan is operating
✗ 2. To verify all board traces are continuous
✗ 3. To reset static charge on the board
✓ **4. To prevent shock from stored voltage**

Q.128 Which effect is minimized by spacing the turns of an RF coil farther apart?

Ans
✗ 1. Skin effect
✓ **2. Parasitic capacitance**
✗ 3. Coil resistance
✗ 4. Core losses

Q.129 In an op-amp differentiator, what will be the output if a constant (DC) voltage is applied at the input?

Ans
✗ 1. The output will oscillate
✗ 2. The output will decrease linearly
✗ 3. The output will increase linearly
✓ **4. A short-duration impulse signal followed by zero output**

Q.130 Which factor should be considered when selecting a soldering iron tip for a joint?

Ans
✓ **1. The area of the tip face should be approximately equal to the area of the joint**
✗ 2. The tip should be much larger than the joint area
✗ 3. The tip should always be very sharp for all joints
✗ 4. The tip should be flat for every joint

Q.131 What is the primary function of an RGB connector when used with LCD or LED-backlit LCD TVs?

Ans
✓ **1. To transmit separate red, green, and blue signals**
✗ 2. To transmit digital audio signals
✗ 3. To supply power to the TV
✗ 4. To transmit combined analog video signals

Q.132 According to a trigonometric table, what is the value of cos 60°?

Ans
✗ 1. 1.000
✗ 2. 0.707
✓ **3. 0.500**
✗ 4. 0.866

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary**
GET IT ON Google Play

Q.133 In a stabilizer, which feature of a relay guarantees that it activates only when required?

Ans
✗ 1. Physical size of the relay
✓ **2. Set activation voltage level**
✗ 3. Coil resistance value
✗ 4. Contact material quality

Q.134 In a simple envelope detector used for AM demodulation, what is the main role of the capacitor?

Ans
✗ 1. To convert frequency to voltage
✓ **2. To smooth out the rectified signal**
✗ 3. To generate oscillations
✗ 4. To amplify the signal

Q.135 A worker in an ITI workshop notices an electrical fire starting from a faulty power tool. Which extinguisher should be used, and why?

Ans
✓ **1. Use a carbon dioxide extinguisher because it is non-conductive and residue-free.**
✗ 2. Use a water extinguisher because it cools burning materials safely.
✗ 3. Use a foam extinguisher because it covers the burning surface.
✗ 4. Use a wet chemical extinguisher because it suppresses cooking-oil fires.

Q.136 In FM transmission, the Guard Band is used to _____.

Ans
✓ **1. Prevent interference between adjacent stations**
✗ 2. Increase the signal strength
✗ 3. Protect the antenna from lightning
✗ 4. Cool the transmitter

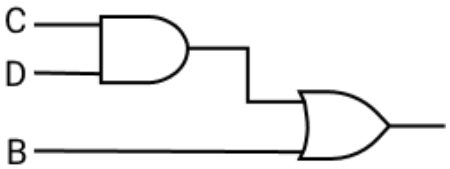
Q.137 Which block in the IC-555 diagram is responsible for changing the state of the output when the trigger or threshold voltage is crossed?

Ans
✓ **1. SR flip-flop**
✗ 2. Output buffer
✗ 3. Discharge transistor
✗ 4. Voltage divider

Q.138 A classroom demonstration aims to show how an LED TV's IR receiver interprets remote-control commands. Which method best illustrates this function?

Ans
✗ 1. Replace the remote batteries and note signal strength
✗ 2. Move the remote closer and note stronger reception
✓ **3. Send different IR command codes and note TV responses**
✗ 4. Send identical IR commands and note repeated responses

Q.139 The output expression of the given logic circuit is _____.



Ans
✗ 1. $B(C+D)$
✗ 2. $B+C+D$
✗ 3. BCD
✓ 4. $B+CD$

Q.140 While drilling through a thin metal sheet, the technician wants to reduce burr formation at the exit side. Which method is most effective?

Ans
✓ **1. Support the sheet with a backing material**
✗ 2. Stop drilling before breakthrough
✗ 3. Use maximum feed pressure
✗ 4. Increase drilling speed significantly

Q.141 A student wants to minimize losses in the IF transformer circuit. Which design change should be avoided to ensure low losses?

Ans
✗ 1. Minimizing stray capacitance between windings
✗ 2. Shielding the transformer from external fields
✗ 3. Using a ferrite core for the transformer
✓ **4. Using thin wire for the coil windings**

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.142 In a DC circuit, to measure the _____, a multimeter (in DC mode) is connected in _____ with the load.

Ans
✗ 1. current; parallel
✓ **2. current; series**
✗ 3. power factor; parallel
✗ 4. voltage; series

Q.143 During a layout job in the carpentry trade, an ITI student must set six equal points on a 150 mm line to prepare a drawing in the instrument box. Which instrument should be used?

Ans
✗ 1. Inking pen used with the T-square for equal point marking
✗ 2. Lengthening bar fitted to the large-size compass for stepping off the line
✓ **3. Large-size divider adjusted step by step along the line**
✗ 4. Small bow compass adjusted to the required spacing

Q.144 In an optical fiber, total internal reflection occurs when the angle of incidence at the core–cladding interface is _____.

Ans
✗ 1. Triple the critical angle
✗ 2. Less than the critical angle
✓ **3. Greater than the critical angle**
✗ 4. Equal to the critical angle

Q.145 What is the role of the infrared transmitter in a TV remote control?

Ans
✗ 1. To display images on the screen
✗ 2. To receive signals from the TV
✗ 3. To convert light into electrical signals
✓ **4. To send coded control signals to the TV**

Q.146 Which combination of sensors is best suited for monitoring both the position of a robotic arm and detecting the presence of metallic objects on an assembly line?

Ans
✗ 1. Ultrasonic sensor and thermocouple
✗ 2. LVDT and capacitive sensor
✓ **3. Potentiometer and inductive proximity sensor**
✗ 4. Thermistor and photoelectric sensor

Q.147 A 150-metre underground coaxial cable run carrying an HD-TVI video signal has completely failed. The technician needs to pinpoint the exact structural location of a clean break or crushing damage inside the conduit without digging up the run. Which tool is optimized for this task?

Ans
✗ 1. Cable Continuity Beeper
✗ 2. Analog Tone Generator and Probe
✗ 3. Visual Fault Locator (VFL)
✓ **4. Time Domain Reflectometer (TDR)**

Q.148 A technician builds a circuit for Y = A · B, but accidentally connects inputs A and B to an OR gate instead of an AND gate. What will happen?

Ans
✗ 1. Output remains LOW at all times
✗ 2. Output remains the same as intended
✗ 3. Output becomes HIGH only when both inputs are LOW
✓ **4. Output becomes HIGH when any one input becomes HIGH**

Q.149 Rods of length 1.25 m and 0.875 m are available in a workshop. Which combination will give a total length of 3.375 m?

Ans
✗ 1. Three rods of 1.25 m
✗ 2. One rod each of 1.25 m and 0.875 m
✗ 3. Four rods of 0.875 m
✓ **4. Two rods of 1.25 m and one rod of 0.875 m**

Q.150 Gas tubes are considered which type of electronic component?

Ans
✗ 1. Active component
✓ **2. Passive component**
✗ 3. Insulating layer
✗ 4. Electrolyte

Q.151 Which of the following circuits is not a part of an AM receiver but is used in an FM receiver?

Ans
✗ 1. Oscillator
✓ **2. De-emphasis circuit**
✗ 3. RF tuner
✗ 4. Mixer

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.152 The input impedance of an ideal op-amp is _____ and the output impedance is _____.

Ans
✗ 1. Zero, Infinite
✓ **2. Infinite, Zero**
✗ 3. Zero, Zero
✗ 4. Infinite, Infinite

Q.153 The output stage of a typical Op-amp is usually a:

Ans
✗ 1. Common Emitter amplifier
✓ **2. Class AB Push-pull amplifier**
✗ 3. Differential amplifier
✗ 4. Common Base amplifier

Q.154 Which method correctly implements a two-input NAND gate using only NOR gates?

Ans
✗ 1. Using cross-coupled NOR gates to form the required logic circuit
✗ 2. Implementing an OR function using NOR gates and then inverting the output
✓ **3. Implementing an AND function using NOR gates and then inverting the output**
✗ 4. Applying a NOR operation directly to the input signals

Q.155 What principle allows a 3D TV to create the perception of depth?

Ans
✗ 1. Sending one image to both eyes
✗ 2. Increasing screen brightness
✓ **3. Displaying slightly different images to each eye**
✗ 4. Reducing the display color range

Q.156 What is the purpose of a voltage regulator module in an electronic circuit?

Ans
✓ **1. To maintain a consistent output voltage despite input fluctuations**
✗ 2. To supply a variable voltage to loads as needed during input variations
✗ 3. To increase the current to a load automatically due to input variations
✗ 4. To decrease resistance in the power supply line due to load variations

Q.157 In a fabrication shop, a drawing instructor asks a trainee to draw a line parallel to a given inclined line through a point 20 mm away from it. Which of the following procedures should be used?

Ans
✗ 1. Use only the T-square and draw a fresh inclined line
✗ 2. Use a protractor to measure 20 mm from the line and mark the point
✗ 3. Use a compass to transfer 20 mm and connect the points freely
✓ **4. Use two set-squares, keep one fixed and slide the other to the required point**

Q.158 What does UJT stand for in electronics?

Ans
✗ 1. Universal Junction Transistor
✗ 2. Unijunctional Transistor
✗ 3. Unilateral Junction Transistor
✓ **4. Unijunction Transistor**

Q.159 Which of the following is a fundamental advantage of photoelectric proximity switches over inductive proximity switches?

Ans
✗ 1. Higher resistance to dust and airborne contamination
✓ **2. Ability to detect metallic as well as non-metallic objects**
✗ 3. Immunity to optical interference and ambient light variations
✗ 4. Ability to detect objects through electromagnetic induction

Q.160 While checking connections on a digital trainer kit, a technician wants to prevent unwanted toggling at the output of a JK flip-flop. Which input combination should be avoided?

Ans
✗ 1. J = 0, K = 0
✗ 2. J = 0, K = 1
✓ **3. J = 1, K = 1**
✗ 4. J = 1, K = 0

Q.161 In an ITI workshop drawing test, a student must construct a circle divided into 12 equal parts without using set-squares. Which drawing instrument supports this work?

Ans
✓ **1. Protractor used to mark equal angular divisions on the circle**
✗ 2. T-square used to keep the circle center aligned with the board edge
✗ 3. Divider used to transfer equal chord lengths around the circle
✗ 4. Scale used to mark equal radii from the circle centre

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.162 While observing signals on a digital trainer kit, a technician notices that the output frequency becomes half of the clock frequency. Which flip-flop can perform this function?

Ans
✗ 1. JK flip-flop (J ≠ K condition)
✗ 2. JK flip-flop (J = K = 0)
✓ **3. T flip-flop**
✗ 4. SR flip-flop

Q.163 An IR receiver in an LCD TV is malfunctioning and randomly triggers commands without a remote present. What is the cause?

Ans
✗ 1. Loose speaker wires causing signal feedback
✓ **2. Ambient infrared noise interfering with the IR receiver circuit**
✗ 3. Faulty TV backlight inverter causing display flickering
✗ 4. Damaged TV display panel affecting image output

Q.164 A user wants to design a sequential circuit in which the output toggles on each clock pulse when both inputs are active. Which flip flop should be used?

Ans
✓ **1. JK flip flop**
✗ 2. RS flip flop using NAND gate
✗ 3. RS flip flop using NOR gate
✗ 4. D flip flop

Q.165 Consider the following statements regarding inverter and UPS and select the correct option.

Statement 1: An inverter provides backup power during a power outage.
Statement 2: A UPS switches to battery power without any delay when main power fails.

Ans
✗ 1. Both statements are correct
✗ 2. Both statements are incorrect
✓ **3. Only statement 1 is correct**
✗ 4. Only statement 2 is correct

Q.166 When securing an ATM kiosk, which camera placement helps identify potential fraudsters while protecting customers' PIN-entry privacy?

Ans
✗ 1. A camera placed low on the floor pointing upward to capture the shoes of the person using the machine.
✓ **2. A hidden pinhole camera embedded inside the ATM fascia at eye-level or a CCTV angled directly at the user's face.**
✗ 3. A wide-angle camera mounted directly overhead to monitor the user's keystrokes on the PIN pad.
✗ 4. A long-range camera positioned across the street to capture the license plates of all arriving customers.

Q.167 Suppose you are tasked with implementing the Boolean equation $Y = \overline{(A.B)}$ in a workshop. Which combination of basic logic gates would you use to construct this equation?

Ans
✓ **1. AND gate followed by NOT gate**
✗ 2. OR gate only
✗ 3. OR gate followed by NOT gate
✗ 4. NOT gate only

Q.168 When the temperature of an intrinsic semiconductor increases, what happens to its resistance?

Ans
✗ 1. It remains constant
✗ 2. It increases sharply
✗ 3. It becomes infinite
✓ **4. It decreases**

Q.169 An optical fiber link has attenuation of 0.2 dB/km. What is the total loss over a 5 km fiber length?

Ans
✗ 1. 2 dB
✗ 2. 5 dB
✓ **3. 1 dB**
✗ 4. 7 dB

Q.170 In a right-angled triangle, the Pythagoras theorem is mainly used to determine:

Ans
✗ 1. The perimeter of the triangle
✓ **2. The length of the third side**
✗ 3. The area of the triangle
✗ 4. The measure of an angle

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.171 In a moving coil instrument, the coil is wound on a lightweight aluminum bobbin to provide _____ damping, while a permanent magnet with a central cylindrical _____ produces a uniform radial magnetic field.

Ans
- ✗ 1. eddy current; permanent magnet
- ✓ **2. eddy current; soft iron core**
- ✗ 3. fluid friction; copper core
- ✗ 4. pneumatic; air core

Q.172 An industrial facility requires continuous power for critical machines. If the main supply fails, the system must instantly switch to backup without any interruption. Which configuration is most suitable for this scenario?

Ans
- ✗ 1. Standard inverter
- ✗ 2. Off line UPS
- ✗ 3. Line interactive UPS
- ✓ **4. On line UPS**

Q.173 Which of the following sets contains a property that is undesirable for insulating materials?

Ans
- ✗ 1. High dielectric strength, flexibility, mechanical strength
- ✓ **2. Mechanical strength, flexibility, hygroscopic nature**
- ✗ 3. High dielectric strength, non-hygroscopic nature, mechanical strength
- ✗ 4. Non-hygroscopic nature, high dielectric strength, flexibility

Q.174 If a liquid spill is discovered on the workshop floor, what is the best immediate action to prevent injury?

Ans
- ✓ **1. Clean the spill and place a warning sign**
- ✗ 2. Cover the spill with paper towels only
- ✗ 3. Leave the spill for cleaning staff
- ✗ 4. Ignore the spill and continue working

Q.175 Which terminal in a phototube is responsible for emitting electrons when exposed to light?

Ans
- ✗ 1. Grid
- ✗ 2. Anode
- ✗ 3. Filament
- ✓ **4. Cathode**

Blackbook

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

रेल भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS
सी ई एन - ०१/२०२५ - CEN - 01/2025
सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot

Exam	RRB ALP 2025 CBT 2 (CEN 01/2025)
Paper	Mechanic Radio & TV
Test Date	28 Jul 2026
Test Time	2:30 PM - 5:00 PM
Language	English

*** Note**
Correct answer carries 1 mark; each incorrect answer carries a negative mark of 1/3.
1. The option shown in green with a tick is the correct answer as per the official answer key.
2. RRB shuffles question order for every candidate inside each Part; this paper follows the order of one real response sheet.

Section : Part A

Q.1 **Which of the following correctly states the full form of CD and the technology used to store data on it?**

Ans
✓ **1. Compact Disc, Optical Storage**
✗ 2. Compact Drive, Optical Storage
✗ 3. Compact Disc, Magnetic Storage
✗ 4. Compact Drive, Magnetic Storage

Q.2 **A ramp is used to lift a box to a platform 2 m high. To reduce the effort required, the ramp length is increased from 4 m to 8 m. Assuming negligible friction, what remains unchanged?**

Ans
✗ 1. The mechanical advantage
✓ **2. The work done in raising the box**
✗ 3. The force required
✗ 4. The distance moved along the ramp

Q.3 **A car travels from point A to point B in a zigzag path, covering a total distance of 200 meters. If the shortest straight-line distance between A and B is 120 meters, which statement best describes the car's distance and displacement?**

Ans
✗ 1. The distance is 120 meters; the displacement is 200 meters
✗ 2. The distance is 200 meters; the displacement is 200 meters
✓ **3. The distance is 200 meters; the displacement is 120 meters**
✗ 4. The distance is 120 meters; the displacement is 120 meters

Q.4 **Which statement best describes how the mass and speed of an object affect its kinetic energy?**

Ans
✗ 1. An object with less mass and lower speed will have more kinetic energy.
✓ **2. An object with greater mass and higher speed will have more kinetic energy.**
✗ 3. An object with same mass but higher speed will have less kinetic energy.
✗ 4. An object with greater mass but lower speed will have more kinetic energy.

Q.5 **What is a key feature of single stroke lettering in technical drawings?**

Ans
✗ 1. Each character is made with several parallel lines.
✓ **2. Each character is made with one continuous stroke.**
✗ 3. Each character is outlined and then filled.
✗ 4. Each character is shaded after drawing.

Q.6 **Two trains are moving in opposite directions. The first train is 120 m long and runs at 54 km/h. The second train is 180 m long and runs at 72 km/h. How much time will they take to cross each other completely?**
(Rounded up to two decimal places)

Ans
✗ 1. 7.57 seconds
✗ 2. 8.43 seconds
✓ **3. 8.57 seconds**
✗ 4. 9.25 seconds

Q.7 **Refer to the given letter series and answer the question that follows. Counting to be done from left to right only.**

(Left) H S A N D D I A D F P A J O S K I O Z O T 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
✗ 1. Six
✗ 2. Five
✗ 3. Three
✓ **4. Four**

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.8 What information does a kilometer stone provide to travelers on a road?

Ans
✗ 1. Direction of travel
✓ **2. Distance from a reference point**
✗ 3. Time taken to reach destination
✗ 4. Speed of the vehicle

Q.9 Which of the following is the best example of municipal solid waste?

Ans
✗ 1. Hospital biomedical waste
✗ 2. Mining tailings
✗ 3. Industrial process waste
✓ **4. Household kitchen garbage**

Q.10 Which tool safety measure best prevents injuries when cleaning a workshop lathe after use?

Ans
✗ 1. Using a rag to remove metal dust from the lathe
✗ 2. Wiping metal chips using bare hands directly
✓ **3. Using a brush to remove metal chips from the lathe**
✗ 4. Blowing chips away with compressed air around the lathe

Q.11 P, Q and R are three batsmen. The ratios of runs scored by them in a certain match were as follows:

P : Q = 5 : 7 and Q : R = 2 : 3.

If they scored a total of 765 runs, then find the number of runs scored by R.

Ans
✗ 1. 378
✗ 2. 350
✓ **3. 357**
✗ 4. 336

Q.12 A sum of money invested at simple interest amounts to ₹21,500 in 5 years and ₹26,000 in 8 years. Find the principal amount (in ₹).

Ans
✗ 1. 7,500
✗ 2. 15,500
✗ 3. 12,000
✓ **4. 14,000**

Q.13 A cyclist travels from the kilometer stone marked 52 to the stone marked 79. How far has the cyclist traveled?

Ans
✓ **1. 27 kilometers**
✗ 2. 31 kilometers
✗ 3. 52 kilometers
✗ 4. 131 kilometers

Q.14 What is the primary role of the Central Processing Unit (CPU) in a computer system?

Ans
✗ 1. To store long-term data
✓ **2. To execute program instructions**
✗ 3. To manage network connections
✗ 4. To display output on the screen

Q.15 Five students, N, O, R, S and T, have different heights. T is taller than N. R is taller than S but shorter than O. S is taller than N. More than two people are taller than T. How many people are shorter than R?

Ans
✗ 1. Two
✗ 2. None
✗ 3. One
✓ **4. Three**

Q.16 Why are electric wires in household appliances usually covered with plastic or rubber coating?

Ans
✓ **1. To prevent electric shocks by insulation**
✗ 2. To produce more heat
✗ 3. To make the wires heavier
✗ 4. To increase the flow of current

Q.17 A hiker lifts a backpack from the ground to a ledge 2 meters above the ground. Which situation would result in the greatest increase in the backpack's gravitational potential energy?

Ans
✗ 1. Carrying the same backpack horizontally for 2 meters
✓ **2. Lifting a heavier backpack to the same 2-meter ledge**
✗ 3. Lifting the same backpack to a 1-meter ledge
✗ 4. Lifting a lighter backpack to the same 2-meter ledge

Blackbook

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.18 When drawing repeated 67° angles on an engineering sheet, which practice best helps minimize cumulative alignment errors?

Ans
✗ 1. Drawing all angles continuously without intermediate verification
✓ 2. Using the same reference line for all repeated angles
✗ 3. Relying solely on the initial protractor alignment for all angles
✗ 4. Marking all angles lightly with a pencil before finalizing

Q.19 Why does biomedical waste require special handling compared to general municipal waste?

Ans
✓ 1. It may contain infectious agents that pose health risks.
✗ 2. It is more likely to be recycled than other types of waste.
✗ 3. It has higher chemical content and is always toxic.
✗ 4. It is always radioactive and requires heavy shielding.

Q.20 Refer to the given letter series and answer the question that follows.

(Left) A X T N K R Q K C P S I D F J U D O R G Z M B E L (Right)

How many letters are there in the English alphabetical series between the letter that is fourth from the right end and the letter that is third from the left end of the series?

Ans
✗ 1. 3
✗ 2. 4
✓ 3. 6
✗ 4. 5

Q.21 If $x + \frac{1}{x} = 5$, then $\frac{x^3 - 5x^2 + 5x}{x^2 + 1}$ is equal to:

Ans
✗ 1. $\frac{1}{5}$
✓ 2. $\frac{4}{5}$
✗ 3. $\frac{2}{5}$
✗ 4. $\frac{3}{5}$

Q.22 The cost of a diamond varies directly with the square of its weight. A diamond broke into four pieces with weights in the ratio 2:4:1:3. If it had been broken into four equal pieces, the loss would have been ₹60,000. What was the original cost of the diamond?

Ans
✓ 1. ₹80,000
✗ 2. ₹78,000
✗ 3. ₹75,000
✗ 4. ₹82,000

Q.23 A, B, C, D and E have different heights. E is taller than C but shorter than A. Only one person is taller than A. D is shorter than C. Who amongst them is the third tallest?

Ans
✗ 1. C
✗ 2. A
✓ 3. E
✗ 4. B

Q.24 Simplify the following expression.

11 of 7 + 125 ÷ 5 + 99 ÷ 11 × 7 − 17 of 7 + 7 × 6 - (91 ÷ 7 + 7 × 5)

Ans
✗ 1. 48
✗ 2. 36
✓ 3. 40
✗ 4. 44

Q.25 G is the mother of Y. Y is the sister of V. S is the father of L. L is the son of V. How is G related to L?

Ans
✗ 1. Mother
✗ 2. Sister
✓ 3. Mother's mother
✗ 4. Mother's sister

Q.26 Which symbol best represents a battery in an electric circuit diagram according to standard conventions?

Ans
✗ 1. Two short lines placed together
✗ 2. A single long line only
✗ 3. Two circles connected in series
✓ 4. A pair of long and short parallel lines placed alternately

Blackbook

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.27 An astronaut weighs 600 N on Earth. During a moon mission, she performs an experiment to measure her weight on the moon. Which value is closest to her expected weight on the moon, and why?

Ans
✗ 1. 200 N, because the Moon's gravity is about one-third of Earth's.
✓ **2. 100 N, because the Moon's gravity is about one-sixth of Earth's.**
✗ 3. 600 N, because a person's weight remains unchanged on the Moon.
✗ 4. 300 N, because the Moon's gravity is about one-half of Earth's.

Q.28 If the height of an object is doubled while its mass remains constant, its gravitational potential energy will be:

Ans
✗ 1. unchanged
✗ 2. decreased to one-fourth
✗ 3. halved
✓ **4. doubled**

Q.29 A pump can fill a tank in 3 hours. Due to a leak in the tank, it takes 4.5 hours to fill the tank. In how much time can the leak empty the full tank if no other entry or exit routes are open?

Ans
✗ 1. 7 hours
✓ **2. 9 hours**
✗ 3. 8 hours
✗ 4. 6 hours

Q.30 SANZ is related to YUTT in a certain way based on the English alphabetical order. In the same way, MTHM is related to SNNG. To which of the following is LJRE related to following the same logic?

Ans
✗ 1. QEYZ
✗ 2. REXZ
✗ 3. QDYY
✓ **4. RDXY**

Q.31 If 2 is subtracted from each odd digit and 2 is added to each even digit in the number 235234796423, what will be the sum of the digits that are third from the left and third from the right?

Ans
✓ **1. 9**
✗ 2. 6
✗ 3. 8
✗ 4. 7

Q.32 Pipes A and B can fill an entire tank in 8 hours and 12 hours, respectively. The water tank is one-fourth full. If both the pipes are opened together, then how long will it take to fill the remaining part of the tank?

Ans
✗ 1. 3 hours 26 minutes
✗ 2. 3 hours 6 minutes
✗ 3. 3 hours 16 minutes
✓ **4. 3 hours 36 minutes**

Q.33 If a rectangular field is measured to be 120 meters long and 75 meters wide, what is its area in SI units?

Ans
✗ 1. 19500 square meters
✗ 2. 15000 square meters
✗ 3. 1800 square meters
✓ **4. 9000 square meters**

Q.34 Refer to the following letter series and answer the question that follows. (Counting to be done from left to right only.)

(Left) Q K Q N X K G G V M L A W T W K N G V (Right)

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

Ans
✗ 1. None
✗ 2. Two
✗ 3. Three
✓ **4. One**

Q.35 What should come in place of the question mark (?) in the given series based on the English alphabetical order?

MDB PHE SLH VPK ?

Ans
✓ **1. YTN**
✗ 2. ZTM
✗ 3. XSM
✗ 4. ZUO

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.36 The average of five numbers is 30. If four of the numbers are 25, 35, 28 and 32, then what is the fifth number?

Ans
✗ 1. 35
✗ 2. 28
✓ 3. 30
✗ 4. 32

Q.37 An engineering firm is tasked with creating a set of technical drawings for a large-scale project. The client specifies that all components must fit on a single sheet without reducing the drawing scale, and the total drawing area required is approximately 1 square meter. Based on standard drawing sheet sizes, which sheet should the firm select to best meet these requirements?

Ans
✓ 1. A0 size sheet
✗ 2. A2 size sheet
✗ 3. A3 size sheet
✗ 4. A1 size sheet

Q.38 A question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and select the most appropriate answer.

Question:
Among five trees N, O, R, S, and T, each having a different height, which tree is the tallest?

Statements:
(I) T is taller than R. N is taller than T.
(II) R is shorter than O but taller than S.

Ans
✓ 1. Both statements I and II together are NOT sufficient to answer the question
✗ 2. Data in Statement I alone is sufficient to answer the question while data in statement II is not
✗ 3. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
✗ 4. Data in Statement II alone is sufficient to answer the question while data in statement I is not

Q.39 A laboratory thermometer has a range from -10 degrees Celsius to 110 degrees Celsius and 120 equal divisions. What is the smallest value that this thermometer can read?

Ans
✗ 1. 10 degrees Celsius
✓ 2. 1 degree Celsius
✗ 3. 0.5 degrees Celsius
✗ 4. 2 degrees Celsius

Q.40 A, B, C, D, X, Y and Z are sitting around a circular table facing the centre of the table.
Only two people sit between Y and C when counted from the left of C. D sits third to the left of B. A sits to the immediate right of B.
A sits second to the left of Y. Z is not an immediate neighbor of D.
Who sits third to the right of X?

Ans
✓ 1. A
✗ 2. C
✗ 3. Y
✗ 4. D

Q.41 Which intervention most effectively reduces ground-level pollutant concentrations during a winter temperature inversion?

Ans
✗ 1. Reducing local wind speed to minimize horizontal dispersion
✗ 2. Increasing surface temperatures near emission sources
✗ 3. Elevating emission sources above inversion layers
✓ 4. Enhancing vertical air mixing through artificial turbulence

Q.42 Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

GXM 5, JVN 11, MTO 24, PRP 51, ?

Ans
✗ 1. SPQ 107
✓ 2. SPQ 106
✗ 3. TPQ 106
✗ 4. TPQ 107

Q.43 If the mean of the following data is 45, then what is the value of x?

Class	10-20	20-30	30-40	40-50	50-60
Frequency	23	30	31	45	X

Ans
✓ 1. 160
✗ 2. 188
✗ 3. 180
✗ 4. 162

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.44 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
✗ 1. PJ-QK
✗ 2. HB-IC
✗ 3. FZ-GA
✓ 4. RL-SN

Q.45 Read the given statement(s) and conclusions carefully. Assuming that the information given in the statement(s) is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).

Statements:
All chocolates are paneers.
No paneer is a milk.

Conclusions:
(I) No chocolate is a milk.
(II) Some milks are paneers.

Ans
✗ 1. Both conclusions (I) and (II) follow.
✗ 2. Neither conclusion (I) nor (II) follows.
✗ 3. Only conclusion (II) follows.
✓ 4. Only conclusion (I) follows.

Q.46 Sohan covers a total distance of 760 km to reach his home, traveling partly by train and partly by car. He takes 8 hours when he travels 160 km by train and the rest by car. If he travels 240 km by train and the remaining distance by car, his journey takes 12 minutes longer. Find the difference between the speeds of the train and the car.

Ans
✗ 1. 23 km/h
✗ 2. 21 km/h
✓ 3. 20 km/h
✗ 4. 27 km/h

Q.47 Which scenario best demonstrates proactive workplace safety behavior?

Ans
✓ 1. Identifying and correcting hazards before accidents occur
✗ 2. Discussing only past safety problems in meetings
✗ 3. Reporting hazards after incidents happen
✗ 4. Waiting for a supervisor to notice hazards

Q.48 Which combination best describes the main environmental challenges associated with plastic waste management?

Ans
✓ 1. Persistence in the environment and microplastic formation
✗ 2. Thermal pollution and effective composting
✗ 3. Neutralization and easy recycling
✗ 4. Rapid biodegradation and chemical leaching

Q.49 A boy uses a wheelbarrow to carry sand. The wheel acts as the pivot, the sand is placed in the tray, and the boy lifts the handles. In this arrangement, the sand represents _____.

Ans
✗ 1. Effort
✗ 2. Fulcrum
✓ 3. Load
✗ 4. Arm

Q.50 The mean of 11 numbers is 10.9. If the mean of the first 6 numbers is 10.5 and the mean of the last 6 numbers is 11.4, then find the 6th number.

Ans
✗ 1. 10
✗ 2. 10.5
✓ 3. 11.5
✗ 4. 11

Q.51 Srinu starts from his home and drives 2 km towards the south, then takes a right turn and drives 5 km. He then takes a right turn and drives 6 km before taking a right turn again and driving 4 km further. Srinu finally takes a right turn and drives 4 km before stopping at his office. In which direction should Srinu drive to reach his home again? (All turns are 90-degree turns only unless specified.)

Ans
✓ 1. East
✗ 2. West
✗ 3. North
✗ 4. South

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.52 When a cutting plane line passes through a hole and a rib, which feature should be sectioned in the resulting view according to standard conventions?

Ans
✓ 1. The hole is sectioned but the rib is shown unsectioned
✗ 2. Both the hole and the rib are shown unsectioned
✗ 3. Both the hole and the rib are shown sectioned
✗ 4. The rib is sectioned but the hole is left unsectioned

Q.53 If 3x – 2y + 3z = 8, 4x – 3y + 2z = 4 and 2x + y – z = 1, then find x, y and z, respectively.

Ans
✓ 1. 1, 2 and 3
✗ 2. 2, 1 and 3
✗ 3. 3, 1 and 2
✗ 4. 2, 3 and 1

Q.54 Which statement best describes the side view in engineering drawing?

Ans
✗ 1. It shows the object as seen clearly from the front
✓ 2. It shows the object as seen from left or right side
✗ 3. It shows a combination of all views of the object
✗ 4. It shows the object as seen from above or below

Q.55 Which of the following statements best describes a cuboid as used in engineering drawing?

Ans
✗ 1. A cuboid has all sides and angles equal, making it similar to a cube.
✗ 2. A cuboid is a solid where all faces are parallelograms but not necessarily rectangles.
✓ 3. A cuboid is a solid with six rectangular faces, and opposite faces are equal.
✗ 4. A cuboid has all faces as squares of equal size.

Q.56 What is the primary purpose of a Local Area Network (LAN)?

Ans
✓ 1. To connect computers within a small geographical area
✗ 2. To connect global networks
✗ 3. To connect social media accounts
✗ 4. To link wireless devices only

Q.57 A group of numbers/symbols is coded using letter codes as per the codes given below and the conditions that follow. The correct combination of codes following the conditions is your answer.
Note: If none of the conditions follow, then the codes for the respective number/symbol are to be followed directly as given in the table.

Number/symbol	3	@	8	4	$	&	2	%	#	1	+	9	7	5
Code	U	G	B	K	M	F	X	R	E	Q	S	C	V	T

Conditions –
(i) If the first element is a symbol and the last element an odd number, the codes for these two (the first and the last elements) are to be interchanged.
(ii) If the first element is an odd number and the last an even number, the first and the last elements are to be coded as ©
(iii) If both second and third elements are perfect squares, the third element is to be coded as the code for the second element.

What will be the code for the following group?
& 8 $ 9 5

Ans
✗ 1. FCBMT
✗ 2. FBMCT
✓ 3. TBMCF
✗ 4. TCMBF

Q.58 What will come in the place of '?' in the following equation, if '+' and '-' are interchanged and 'x' and '÷' are interchanged?
5 ÷ 3 + 15 × 5 - 3 = ?

Ans
✓ 1. 15
✗ 2. 9
✗ 3. 18
✗ 4. 12

Q.59 Why is a room thermometer generally mounted vertically on a wall?

Ans
✗ 1. It prevents the liquid from freezing inside the thermometer.
✗ 2. It helps the thermometer measure body temperature faster.
✓ 3. It ensures accurate reading by keeping the bulb exposed to room air.
✗ 4. It protects the thermometer from breaking easily.

Q.60 An engineer is updating a schematic for a control panel and needs to indicate a normally closed push button. Which approach best ensures the symbol is universally understood among engineers referring to standard engineering drawings?

Ans
✗ 1. Substitute the normally closed push button symbol with a general switch symbol
✗ 2. Describe the normally closed push button in words within the schematic diagram clearly
✗ 3. Draw a hand made representation of the push button with a note explaining function
✓ 4. Use the standardized symbol for a normally closed push button as per conventions

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.61 What will come in place of the question mark (?) in the following equation if '+' and '−' are interchanged and '×' and '÷' are interchanged?
42 × 6 ÷ 7 − 35 + 19 = ?

Ans
✗ 1. 69
✓ 2. 65
✗ 3. 67
✗ 4. 63

Q.62 The first shopkeeper allows two successive discounts of 3% and 7%, while a second shopkeeper allows two successive discounts of 2% and 8%. A third shopkeeper allows 10% discount on the same item. From which shopkeeper should a customer buy if the marked price is the same at the three shops?

Ans
✗ 1. Buy from the first shopkeeper
✗ 2. Buy from the first or the second shopkeeper as both are the same.
✗ 3. Buy from the second shopkeeper
✓ 4. Buy from the third shopkeeper

Q.63 A ladder is leaning against a wall and makes an angle of 60° with the ground. If the length of the ladder is 24 m, find the distance of the foot of the ladder from the wall.

Ans
✗ 1. 9 m
✓ 2. 12 m
✗ 3. 15 m
✗ 4. 18 m

Q.64 In a certain code language, 'SOIL' is coded as '1547' and 'COIL' is coded as '7124'. What is the code for 'C' in the given code language?

Ans
✗ 1. 7
✓ 2. 2
✗ 3. 1
✗ 4. 4

Q.65 A cyclist travels 120 km in 3 hours, rests for 1 hour, and then travels another 80 km in 2 hours. To determine the cyclist's average speed for the entire journey, which of the following quantities should be used?

Ans
✗ 1. Change in velocity divided by total time taken
✗ 2. Total displacement divided by total time taken
✓ 3. Total distance travelled divided by the total time taken
✗ 4. Distance travelled in a particular direction divided by time

Q.66 A plane parallel to the base divides a cone of height 40 cm into two parts. If the volume of the upper smaller cone formed is 1/64 of the volume of the original cone, calculate the height of the plane from the base of the cone.

Ans
✗ 1. 10 cm
✓ 2. 30 cm
✗ 3. 20 cm
✗ 4. 40 cm

Q.67 Which color is universally associated with emergency exit signs in industrial workplaces under international standards?

Ans
✗ 1. Red background with white text or symbols
✗ 2. Yellow background with black text or symbols
✓ 3. Green background with white text or symbols
✗ 4. Blue background with white text or symbols

Q.68 A question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Among 5 sticks, B, U, N, M and D, each having a different height, which stick is the shortest?
(I) D is shorter than U. M is shorter than B.
(II) M is taller than D.

Ans
✗ 1. Data in statement I alone is sufficient to answer the question while data in statement II is not
✗ 2. Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
✓ 3. Both statements I and II together are NOT sufficient to answer the question
✗ 4. Data in statement II alone is sufficient to answer the question while data in statement I is not

Q.69 The price of sugar is increased by 20%. Manoj can increase his expenditure on sugar by only 15% from his income. In order to balance his expenditure, by what percentage should he reduce the quantity of sugar consumed?

Ans
✗ 1. $5\frac{1}{3}\%$
✓ 2. $4\frac{1}{6}\%$
✗ 3. 5%
✗ 4. 6.5%

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.70 A dealer buys a table for ₹2,750. He first marks it up by 28%, then allows a 12% discount to a customer. If the customer also pays 5% GST on the selling price, find the profit percentage (excluding GST) made by the dealer.

Ans
✗ 1. 13.81%
✓ 2. 12.64%
✗ 3. 15.12%
✗ 4. 10.36%

Q.71 Which of the following pairs of numbers is co-prime?

Ans
✗ 1. (21, 33)
✗ 2. (14, 28)
✓ 3. (17, 54)
✗ 4. (28, 49)

Q.72 A cyclist rides 60 meters north, then 80 meters south, and finally 70 meters north. What is the total distance the cyclist has traveled?

Ans
✗ 1. 60 meters
✗ 2. 10 meters
✗ 3. 150 meters
✓ 4. 210 meters

Q.73 12 is related to 1730 following a certain logic. Following the same logic, 13 is related to 2199. To which of the given options is 11 related, following the same logic?
(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 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.)

Ans
✗ 1. 1443
✗ 2. 1543
✗ 3. 1433
✓ 4. 1333

Q.74 Read the given statement(s) and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).

Statements:
Some rugs are fans.
No fan is a car.

Conclusion (I) : Some rugs are cars.
Conclusion (II) : Some fans are rugs.

Ans
✗ 1. Neither conclusion (I) nor (II) follows
✗ 2. Only conclusion (I) follows
✗ 3. Both conclusions (I) and (II) follow
✓ 4. Only conclusion (II) follows

Q.75 Which of the following best describes the function of a speedometer in a vehicle?

Ans
✓ 1. It displays the current speed at which the vehicle is moving.
✗ 2. It measures the total distance the vehicle has traveled.
✗ 3. It shows the rate at which the vehicle's speed changes.
✗ 4. It calculates the average speed over a journey.

Q.76 Find the compound interest on ₹5,70,000 for 1.5 years at 10% per annum compounded half-yearly.

Ans
✗ 1. ₹92,846.25
✗ 2. ₹88,846.25
✓ 3. ₹89,846.25
✗ 4. ₹89,946.25

Q.77 Seven boxes S, T, U, V, W, X, and Y are kept one over the other but not necessarily in the same order. U is kept exactly third from the top. Only one box is kept between U and T. W is kept immediately above T. Only three boxes are kept between X and S. V is kept on one of the positions below Y. Only two boxes are kept between U and S. Which box is kept second from the top?

Ans
✗ 1. T
✗ 2. U
✓ 3. X
✗ 4. V

Q.78 What is the primary color used in warning signs to alert workers of potential hazards?

Ans
✗ 1. Green with white symbol or text
✗ 2. Blue with white symbol or text
✗ 3. Red with white symbol or text
✓ 4. Yellow with black symbol or text

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.79 In a certain code language,
A + B means 'A is the mother of B',
A − B means 'A is the brother of B',
A × B means 'A is the wife of B' and
A % B means 'A is the father of B'.

How is Satish related to Mayank if 'Satish + Deep × Piyush − Hitesh % Mayank'?

Ans
✗ 1. Mother's brother's wife's sister
✗ 2. Father's brother's wife's sister
✗ 3. Mother's brother's wife's mother
✓ 4. Father's brother's wife's mother

Q.80 A 42-litre solution has sugar and water in the ratio 2 : 5. If, due to evaporation, the volume is reduced by 35%, and only water evaporates, what is the new ratio of sugar to water?

Ans
✗ 1. 31 : 50
✗ 2. 40 : 41
✗ 3. 51 : 42
✓ 4. 40 : 51

Q.81 A crane lifts a 200 kg load to a height of 15 meters in 10 seconds. Assuming acceleration due to gravity is 10 m/s² and energy loss is negligible, what is the power output of the crane during this operation?

Ans
✓ 1. 3000 W
✗ 2. 2000 W
✗ 3. 1000 W
✗ 4. 1500 W

Q.82 Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

ZOT - TLP
NIL - HFH

Ans
✓ 1. BCD - VZZ
✗ 2. BOC - VZT
✗ 3. ABD - VZZ
✗ 4. VZZ - BCD

Q.83 Seven boxes, P, Q, S, T, U, V, and W, are kept one over the other, but not necessarily in the same order. There are exactly two boxes between T and P. Only Q is kept above U. No box is kept below P. S is kept somewhere below W but above V. Based on the given information, which box is kept third above V?

Ans
✓ 1. W
✗ 2. P
✗ 3. S
✗ 4. T

Q.84 Which one of the following statements correctly describes a characteristic of WANs?

Ans
✗ 1. WANs are limited to connecting devices within a radius of 1 to 2 km.
✗ 2. WANs typically use only wireless media to connect distant LANs.
✓ 3. WANs can be built by connecting multiple LANs via wired or wireless links.
✗ 4. WANs are always public networks managed solely by Internet Service Providers (ISPs).

Q.85 What does the term 'HAZOP' stand for in occupational safety?

Ans
✗ 1. Handling and Organizing Safety
✗ 2. Hazardous Operation Standard
✗ 3. Hazardous Operations Safety
✓ 4. Hazard and Operability Study

Q.86 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
✗ 1. DG – EH
✗ 2. SJ – TK
✓ 3. IT – KV
✗ 4. KE – LF

Q.87 What should come in place of '?' in the given series?
11, 22, 44, 88, 176, ?

Ans
✗ 1. 358
✓ 2. 352
✗ 3. 356
✗ 4. 342

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.88 A solid right circular cone is 7 cm high, and the radius of its base is 22.2 cm. It is melted and recast into a right circular cone with radius of its base 3.7 cm. Then the height (in cm) of the cone is _____.

Ans
✗ 1. 185
✗ 2. 267
✗ 3. 159
✓ 4. 252

Q.89 An article is bought for ₹300 and its price is increased by 5.5%. The resulting price is then reduced by 8%. Find the final selling price.

Ans
✗ 1. ₹296.46
✗ 2. ₹284.45
✓ 3. ₹291.18
✗ 4. ₹288.24

Q.90 A technician needs to select a fuse wire for a room heater. Which property should be considered most important for safety based on the heating effect of electric current?

Ans
✓ 1. The fuse wire must have a low melting point to break the circuit during excess current.
✗ 2. The fuse wire must have a high melting point for durability.
✗ 3. The fuse wire must have a shiny surface for efficient cooling.
✗ 4. The fuse wire must have high resistance and be thick to prevent melting.

Q.91 Which type of personal protective equipment is most suitable for tasks involving airborne chemical particles in confined spaces?

Ans
✓ 1. Respiratory protection devices such as half-face masks
✗ 2. Body protection with flame-retardant suits
✗ 3. Hand protection using chemical-resistant gloves
✗ 4. Head protection with industrial-grade hard hats

Q.92 The salary of a person is increased by 10%, 20% and 25% successively in three consecutive years. Find the overall percentage increase in the salary at the end of the third year.

Ans
✓ 1. 65%
✗ 2. 60%
✗ 3. 30%
✗ 4. 50%

Q.93 Two sets of numbers are given below. In each set of numbers, certain mathematical operation(s) on the first number result(s) in the second number. Similarly, certain mathematical operation(s) on the second number result(s) in the third number and so on. Which of the given options follows the same set of operations as in the given 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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

6 – 16 – 23 – 32; 7 – 19 – 26 – 35

Ans
✗ 1. 11 – 31 – 38 – 29
✗ 2. 4 – 14 – 21 – 30
✗ 3. 8 – 22 – 15 – 24
✓ 4. 12 – 34 – 41 – 50

Q.94 Which of the following statements best describes a triangle as used in engineering drawing?

Ans
✗ 1. A triangle must always have all sides of equal length.
✗ 2. A triangle is a polygon having three curved sides.
✗ 3. A triangle is a polygon with four straight sides and four angles.
✓ 4. A triangle is a polygon with three straight sides and three angles.

Q.95 What does CPU stand for in computing?

Ans
✓ 1. Central Processing Unit
✗ 2. Computer Processing Unit
✗ 3. Control Processing Unit
✗ 4. Core Processing Unit

Q.96 Which factor increases the amount of heat produced in a wire when an electric current flows through it for a fixed time?

Ans
✗ 1. Making the wire thicker
✓ 2. Increasing the resistance of the wire
✗ 3. Reducing the current in the wire
✗ 4. Decreasing the length of the wire

Get India's No 1 Vocab Preparation App for FREE : Blackbook : English Vocabulary
GET IT ON Google Play

Q.97 Which statement best describes the front view in an engineering drawing?

Ans
✗ 1. It shows only one dimension of the object
✗ 2. It shows the object's depth and height as seen from the side
✗ 3. It shows only the object's bottom or right side
✓ **4. It shows the object's height and width as seen from the front**

Q.98 Why does restricting certain chemical refrigerants effectively reduce damage to the ozone layer?

Ans
✗ 1. Refrigerants emit greenhouse gases that warm the stratosphere.
✗ 2. Refrigerants increase oxygen production, supporting ozone recovery.
✓ **3. Refrigerants release substances that catalyze ozone breakdown.**
✗ 4. Refrigerants contain particles that absorb harmful UV light.

Q.99 What should come in place of the question mark (?) in the given series?

1 2 7 20 61 ?

Ans
✗ 1. 185
✗ 2. 181
✓ **3. 182**
✗ 4. 183

Q.100 Let C be a circle, and AB and DE be two chords on C such that AB = BE. In the quadrilateral ABED, let AE and BD intersect at F, ∠DBE = 55°and ∠BAE = 40°. Find ∠FED.

Ans
✗ 1. 55°
✗ 2. 110°
✗ 3. 60°
✓ **4. 45°**

Section : Part B (Mechanic Radio & TV)

Q.101 A technician wants to build an OR gate function using only NAND gates during a lab exercise. Which arrangement should be used to achieve this?

Ans
✗ 1. Cascade three NAND gates in series without inverting the inputs
✗ 2. Feed both inputs directly to a single NAND gate
✓ **3. Connect two NAND gates to form inverters on each input, then connect their outputs to a third NAND gate**
✗ 4. Arrange the NAND gates in a ring without using inverters

Q.102 In an AM receiver, which block selects the desired station or desired radio frequency?

Ans
✓ **1. Tuner**
✗ 2. Power Supply
✗ 3. Audio Amplifier
✗ 4. Speaker

Q.103 In a semiconductor material, the valence electrons are _____ compared to in an insulator.

Ans
✗ 1. freely moving
✓ **2. less tightly bound**
✗ 3. not present
✗ 4. tightly bound

Q.104 Which of the following is NOT a stage in an op-amp?

Ans
✓ **1. Power transformer**
✗ 2. Level shifter
✗ 3. Differential amplifier
✗ 4. Output stage

Q.105 Before running a circuit simulation, which component must be added to establish the 0 V reference node for nodal analysis?

Ans
✗ 1. Operational Amplifier Terminal
✓ **2. Ideal Ground Symbol (GND)**
✗ 3. AC Voltage Source
✗ 4. Virtual Multimeter Probe

Q.106 A NOT gate is connected between a door sensor and a buzzer. The buzzer sounds when the door is closed instead of when it is open. What is the reason?

Ans
✓ **1. NOT gate inverted sensor output logic**
✗ 2. Supply voltage increased
✗ 3. Sensor polarity reversed
✗ 4. Buzzer resistance changed

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.107 How many minimum 2-input NAND gates are required to implement a 2-input OR gate?

Ans
✗ 1. Two NAND gates
✗ 2. Five NAND gates
✗ 3. Four NAND gates
✓ **4. Three NAND gates**

Q.108 Why is a flux required in the process of soldering copper conductors?

Ans
✗ 1. To increase the strength of the alloy
✗ 2. To reduce the melting point of the solder
✗ 3. To prevent mechanical failure of the joint
✓ **4. To protect against de-oxidisation during soldering**

Q.109 A trainee connects multiple JK flip-flops in cascade, with each flip-flop configured in toggle mode (J = K = 1). Only the first flip-flop gets the clock signal. Other flip-flop clock inputs are driven by previous flip-flop Q outputs. What practical function does this arrangement perform in the circuit?

Ans
✗ 1. It increases the amplitude of the input clock signal at each stage
✗ 2. It stabilizes the supply voltage across the circuit components
✓ **3. It counts the number of clock pulses by acting as a ripple counter**
✗ 4. It removes noise from the input clock signal to produce a clean waveform

Q.110 In a packaging line, which situation best illustrates the use of an inductive proximity switch?

Ans
✗ 1. Measuring package weight during conveyor movement
✗ 2. Detecting the position of plastic bottle caps on a filling line
✓ **3. Detecting the presence of metal seals before bottle capping**
✗ 4. Reading printed barcode labels during packaging operations

Q.111 Which specific microwave frequency band, operating between 2 to 4 GHz, is internationally allocated for airport surveillance radar, weather monitoring, and mobile satellite services due to its balance of moderate bandwidth and low weather attenuation?

Ans
✗ 1. Q-band
✗ 2. Ka-band
✗ 3. X-band
✓ **4. S-band**

Q.112 What function does the grid perform in a triode vacuum tube?

Ans
✗ 1. It provides electrical insulation
✗ 2. It collects electrons for output
✓ **3. It controls the flow of electrons between cathode and anode**
✗ 4. It emits electrons for conduction

Q.113 Which electronic component is used in digital circuits to store a single bit of data?

Ans
✗ 1. Multiplexer
✓ **2. Flip-flop**
✗ 3. De-Multiplexer
✗ 4. Decoder

Q.114 While drawing an irregular machine profile in engineering drawing, which instrument is most suitable for joining multiple non-circular points smoothly?

Ans
✓ **1. French curve**
✗ 2. Compass
✗ 3. Divider
✗ 4. Protractor

Q.115 Which property of liquid crystals allows them to control light passage in an LCD display?

Ans
✗ 1. They absorb all incoming light
✗ 2. They emit light when current passes through
✗ 3. They generate static electricity under pressure
✓ **4. Their molecules can change orientation when an electric field is applied**

Q.116 Why is argon commonly used as the gas in gas-filled tubes intended for triggering and switching?

Ans
✓ **1. It has a low ionization potential and provides stable operation**
✗ 2. Its atomic weight enhances amplification
✗ 3. Its high thermal conductivity helps dissipate heat
✗ 4. It glows brightly under all conditions

Blackbook

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.117 An AND gate has two inputs, A and B, and one output Y. If A = 1, and B is given the input signal which continuously alternates between 0 and 1. How will Y behave?

Ans
✗ 1. Y will always remain 1.
✓ **2. Y will always follow signal connected at B.**
✗ 3. Y will always remain undefined.
✗ 4. Y will always remain 0.

Q.118 Which statement correctly describes the output DC voltage polarity of an LVDT during core movement?

Ans
✓ **1. DC voltage becomes positive in one direction from the center and negative in the opposite direction.**
✗ 2. DC voltage polarity remains unchanged for movement in either direction from the center.
✗ 3. DC voltage remains negative for movement in both directions from the center.
✗ 4. DC voltage remains positive for movement in both directions from the center.

Q.119 The dissipation factor (DF) of a ceramic capacitor is a measure of its:

Ans
✗ 1. Breakdown voltage only
✗ 2. Maximum voltage rating
✓ **3. Energy loss in the dielectric**
✗ 4. Physical dimensions

Q.120 Which of the following materials is used to manufacture the core of an optical fiber?

Ans
✗ 1. Bakelite resin
✓ **2. Silica glass**
✗ 3. Mild steel
✗ 4. Aluminum alloy

Q.121 A technical drawing specifies a point labeled as the 'intersection of two perpendicular bisectors' in a triangle. What is this point called in geometrical nomenclature?

Ans
✗ 1. Orthocenter
✓ **2. Circumcenter**
✗ 3. Centroid
✗ 4. Incenter

Q.122 A zero crossing detector using an operational amplifier is basically a/an:

Ans
✗ 1. Oscillator
✗ 2. Differentiator
✓ **3. Comparator**
✗ 4. Integrator

Q.123 What is the characteristic equation for NOR based SR flip flop in terms of its current state (Q), Set input (S), and Reset input (R)?

Ans
✓ **1. Q(next) = S + Q(current)R'**
✗ 2. Q(next) = Q(current) + S + R
✗ 3. Q(next) = S + RQ(current)
✗ 4. Q(next) = S + R'

Q.124 If 6 meters of wire cost ₹180, what will be the cost of 9 meters of wire at the same rate?

Ans
✗ 1. 120 rupees
✓ **2. 270 rupees**
✗ 3. 150 rupees
✗ 4. 210 rupees

Q.125 A room heater is rated at 1500 W and operates for 2 hours. How much electrical energy does it consume (in kWh)?

Ans
✗ 1. 0.75 kWh
✓ **2. 3 kWh**
✗ 3. 3000 kWh
✗ 4. 1.5 kWh

Q.126 Which feature distinguishes a smart TV from a non-smart LED-backlit LCD TV?

Ans
✗ 1. A non-smart TV always has better picture quality
✗ 2. A smart TV has no built-in apps ever
✓ **3. A smart TV can connect to the internet for streaming**
✗ 4. A smart TV never uses LED technology

Q.127 Why does an installer typically create a downward drip loop in the coaxial cable just before it enters the hole in the building's outer wall during a DTH system installation?

Ans
✗ 1. To leave spare cable for future TV relocation.
✗ 2. To reduce RF resistance and signal impedance.
✗ 3. To filter interference from nearby cellular towers.
✓ **4. To prevent rainwater from entering through the cable path.**

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.128 What primary role does positive feedback play in an oscillator module's operation?

Ans
✓ **1. It ensures sustained oscillations by reinforcing the signal**
✗ 2. It increases the gain linearly
✗ 3. It reduces noise in the circuit
✗ 4. It stabilizes current flow

Q.129 Which method involves dipping multiple components at once into a bath of molten solder for efficient production?

Ans
✗ 1. Trigger-operated soldering gun
✗ 2. Resistance soldering unit
✓ **3. Dip soldering machine**
✗ 4. Pencil-type soldering iron

Q.130 An engineer seeking to measure both AC and DC using a moving iron instrument would generally prefer the _____ moving iron meter over the _____ because of its better operating characteristics and wider practical use.

Ans
✓ **1. repulsion type, attraction type**
✗ 2. attraction type, repulsion type
✗ 3. attraction type, PMMC type
✗ 4. repulsion type, hot-wire type

Q.131 If a constant DC voltage is given to the input of an integrator using OP-AMP, the output will be a:

Ans
✗ 1. Sine wave
✓ **2. Ramp wave**
✗ 3. Pulse wave
✗ 4. Square wave

Q.132 In a full-wave rectifier circuit, what happens to the output waveform if one rectifier diode becomes open-circuited?

Ans
✗ 1. Output remains constant DC
✗ 2. Output frequency doubles
✓ **3. Output becomes similar to half-wave rectification**
✗ 4. Output changes to pure AC

Q.133 How is Direct-to-Home (DTH) satellite communication better than traditional cable television systems?

Ans
✗ 1. No receiving equipment required
✗ 2. Operates without antenna transponders
✗ 3. Lower picture quality than cable
✓ **4. Access in remote areas without cable infrastructure**

Q.134 To safely measure the resistance of a component using a multimeter, a technician must first _____ the circuit's power supply and then connect the meter probes in _____ across the component.

Ans
✓ **1. turn off; parallel**
✗ 2. turn on; parallel
✗ 3. turn on; series
✗ 4. turn off; series

Q.135 During a presentation, the projected image is out of focus and appears blurry. Which front panel control allows the user to resolve this issue most directly?

Ans
✗ 1. Keystone correction button
✓ **2. Focus ring**
✗ 3. Power button
✗ 4. Zoom lever

Q.136 A fitter has cut a metal workpiece oversize and needs to remove excess material quickly before final finishing. Which type of file should be selected first?

Ans
✗ 1. Single cut file
✗ 2. Rasp cut file
✓ **3. Bastard cut file**
✗ 4. Smooth cut file

Q.137 What should be worn to minimize the risk of electric shock while handling electrical wires?

Ans
✗ 1. Leather gloves
✓ **2. Insulated gloves**
✗ 3. Cotton gloves
✗ 4. Safety goggles

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary**
GET IT ON Google Play

Q.138 In circuit simulation software, under which component library category are devices such as bipolar junction transistors and operational amplifiers typically found?

Ans
✗ 1. Passive Devices / Linear Elements
✗ 2. Power Distribution Grids / Ground Rails
✓ **3. Active Components / Semiconductor Group**
✗ 4. Connector Hardware / Enclosures

Q.139 In a classroom demonstration, students observe that removing their 3D glasses makes the TV image appear blurry or doubled. Based on your understanding of 3D TV operation, what is the primary reason for this visual effect?

Ans
✓ **1. Each eye receives overlapping images intended for 3D separation**
✗ 2. The screen's backlight technology is incompatible with 2D viewing
✗ 3. The TV refreshes images too quickly for the naked eye
✗ 4. The TV displays a lower resolution image without glasses

---

Q.140 Why should optical fiber waste be disposed of in a separate, marked container?

Ans
✗ 1. To improve signal quality
✓ **2. To prevent injuries from sharp glass pieces**
✗ 3. To speed up fiber installation
✗ 4. To reduce installation costs

Q.141 While drawing a production sketch, a student needs to set a 60-degree line and also keep the straightedge direction unchanged during sliding. Which of the following drafting machine features provides both conditions simultaneously?

Ans
✗ 1. Fixed blade holder with bevelled working edge
✗ 2. Removable scale strip with centre mark
✓ **3. Adjustable protractor head with parallel blades**
✗ 4. Parallel arm bar with board margin line

Q.142 Identify the number that is not a perfect square.

Ans
✗ 1. 36
✗ 2. 25
✗ 3. 16
✓ **4. 20**

Q.143 What is the correct sequence for operating a portable fire extinguisher in case of a small fire?

Ans
✗ 1. Pull → Squeeze → Sweep → Aim
✗ 2. Squeeze → Aim → Pull → Sweep
✗ 3. Aim → Pull → Sweep → Squeeze
✓ **4. Pull → Aim → Squeeze → Sweep**

Q.144 A thermocouple is used in a process where rapid temperature fluctuations occur. Which approach gives the most accurate readings under these conditions?

Ans
✓ **1. Reduce junction thermal mass and use thin thermocouple wires**
✗ 2. Add thermal insulation around the junction for stable output
✗ 3. Use a high thermal capacity reference junction for smooth readings
✗ 4. Increase junction mass and use thicker wires for stable operation

---

Q.145 Which optical fiber property best maintains signal strength and data integrity for high-speed, extended-reach networks?

Ans
✓ **1. Low attenuation**
✗ 2. High scattering loss
✗ 3. Large core diameter
✗ 4. Lightweight

Q.146 During UPS installation, why is it necessary to isolate critical and non-critical loads on separate output circuits?

Ans
✗ 1. To extend the overall battery life during routine operation
✓ **2. To prioritize backup power for essential equipment during an outage**
✗ 3. To reduce total installation time for the UPS system
✗ 4. To increase the speed of battery charging under high load

---

Q.147 Why are coupling capacitors used in amplifier modules?

Ans
✗ 1. To increase bandwidth
✗ 2. To reduce circuit noise
✗ 3. To amplify the input signal
✓ **4. To block DC and allow AC signals to pass**

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.148 Which phenomenon causes a thermocouple to generate voltage when two different metals are kept at different temperatures?

Ans
✗ 1. Hall effect
✗ 2. Peltier effect
✓ **3. Seebeck effect**
✗ 4. Thomson effect

Q.149 What does LED stand for in electronic devices?

Ans
✓ **1. Light Emitting Diode**
✗ 2. Light Electronic Display
✗ 3. Laser Emitting Device
✗ 4. Low Energy Display

Q.150 You are modifying a standard TV remote to add keypad backlighting. Which part would most likely need electrical modification?

Ans
✗ 1. Battery compartment to fit more cells
✗ 2. IR LED to increase transmission brightness
✓ **3. Main PCB to add LED drive circuitry**
✗ 4. Rubber keypad to increase thickness

Q.151 A workshop employs skilled and unskilled workers in the ratio of 5 : 2. If the total workforce is 49, how many skilled workers are employed?

Ans
✗ 1. 14
✗ 2. 21
✗ 3. 28
✓ **4. 35**

Q.152 A biomedical device uses an inverting amplifier to process ECG signals. Which issue can arise if the op-amp's slew rate is too low?

Ans
✗ 1. Greater power consumption
✓ **2. Distorted output during rapid signal changes**
✗ 3. Higher amplifier gain
✗ 4. Increased input noise

Q.153 A designer needs a capacitor for coupling AC signals between the amplifier stages while blocking DC. Why might an electrolytic capacitor be a poor choice if the circuit sometimes reverses polarity?

Ans
✗ 1. Electrolytic capacitors are more expensive than alternatives
✗ 2. Electrolytic capacitors have high leakage current
✗ 3. Electrolytic capacitors are too large for most circuits
✓ **4. Electrolytic capacitors are damaged by reversed polarity**

Q.154 During testing of a 2-input logic gate built only with 2-input NAND gates, a technician observes that the output is HIGH only when both inputs are LOW. Which gate has been successfully implemented?

Ans
✗ 1. 2-input OR gate
✗ 2. 2-input AND gate
✓ **3. 2-input NOR gate**
✗ 4. 2-input EX-OR gate

Q.155 Which of the following is used to perform logical negation in digital electronics?

Ans
✓ **1. NOT gate**
✗ 2. EX-OR gate
✗ 3. OR gate
✗ 4. AND gate

Q.156 Where is the input signal applied in a non-inverting op-amp configuration?

Ans
✗ 1. To the ground terminal
✓ **2. To the non-inverting (+) terminal**
✗ 3. To the inverting (-) terminal
✗ 4. To both terminals (non-inverting terminal (+) and inverting terminal (-)) simultaneously

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary**
GET IT ON Google Play

Q.157 In a 555 astable multivibrator, if R1 = R2 = R and C = C, the time period is:

Symbols:

T = Time period of output waveform
R = Common resistance value
R1 = Resistor between V_{CC} and discharge pin
R2 = Resistor between discharge pin and capacitor
C = Timing capacitor

Ans
✗ 1. 0.693 RC
✓ **2. 2.079 RC**
✗ 3. RC
✗ 4. 1.386 RC

Q.158 How can you ensure the clearest speech in a large, noisy hall?

Ans
✗ 1. Use of a speaker with maximum bass volume
✗ 2. Use of speakers placed outside the hall
✓ **3. Use of many ceiling speakers placed uniformly**
✗ 4. Use of only one giant, loud speaker placed in the corner

---

Q.159 When does an offline UPS supply power to connected equipment?

Ans
✗ 1. At all times
✗ 2. Only during normal voltage supply
✗ 3. Only during peak hours
✓ **4. Only during main supply failure**

Q.160 An engineer is installing a hybrid DVR and needs to connect a legacy analog camera, a 4K monitor, and a network router. Which combination of rear-panel connectors is required to connect these devices?

Ans
✓ **1. RJ-45 socket, HDMI port, and BNC connectors**
✗ 2. USB port, DisplayPort, and F-type connectors
✗ 3. SATA interface, DVI port, and S-Video sockets
✗ 4. RS-485 terminal, VGA port, and RCA sockets

Q.161 In a Switched Mode Power Supply (SMPS), what is the main advantage over a manual voltage stabilizer?

Ans
✓ **1. Higher efficiency and compact size**
✗ 2. Lower output current ripple always
✗ 3. Handles extreme overvoltage better
✗ 4. Always less expensive

Q.162 If a resistor has a green, blue, and orange color code, what is its resistance value?

Ans
✗ 1. 5,600 ohms
✗ 2. 560 ohms
✓ **3. 56,000 ohms**
✗ 4. 560,000 ohms

Q.163 What does LED stand for in LED TV?

Ans
✗ 1. Liquid Emitting Display
✓ **2. Light Emitting Diode**
✗ 3. Linear Emission Device
✗ 4. Light Enhanced Display

Q.164 Which of the following is the most suitable location for installing a CCTV camera to provide the best security coverage in a building?

Ans
✗ 1. In the garbage storage area for the building
✗ 2. Only in the parking lots
✗ 3. Only on the terrace
✓ **4. At the main entrance of the building**

Q.165 A fitter needs to cut a thin metal strip using a hacksaw. Which blade should be selected to prevent the teeth from snagging or breaking during cutting?

Ans
✗ 1. Blade with alternate-set teeth only
✗ 2. Blade with widely spaced teeth
✓ **3. Blade with fine teeth**
✗ 4. Blade with coarse teeth

Blackbook

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play

Q.166 What is the primary purpose of testing a voltage regulator module in electronic circuits?

Ans
✓ **1. To verify that the output voltage remains stable under varying loads**
✗ 2. To measure the input voltage to the module under no load
✗ 3. To determine the heat generated by the module during operation
✗ 4. To check the physical size of the module for enclosure fitting

---

Q.167 A trainee preparing a workshop drawing writes the sizes of a drilled hole on the view, while the supervisor asks for the line definition used for this purpose. Which option gives the correct definition?

Ans
✗ 1. A line that shows axes, centres, and symmetry of the object
✗ 2. A line that shows hidden edges and internal surfaces of the object
✗ 3. A line that shows visible edges and surface boundaries of the object
✓ **4. A line that shows measurements, limits, and size values of the object**

Q.168 In a Cathode Ray Tube (CRT), the component responsible for generating and accelerating the electron beam is the _____, while the component that deflects the beam to produce patterns on the screen is the _____.

Ans
✗ 1. deflection plates, phosphor screen
✗ 2. deflection plates, electron gun
✓ **3. electron gun, deflection plates**
✗ 4. phosphor screen, deflection plates

Q.169 Which of the following is NOT a correct feature of a Hybrid DVR (HVR)?

Ans
✗ 1. It serves as a transitional system when upgrading an older CCTV setup.
✗ 2. It allows users to view both analog and IP camera feeds on a single screen.
✓ **3. It automatically converts legacy analog cameras into wireless IP cameras.**
✗ 4. It can accept video feeds from both coaxial and Ethernet cables.

Q.170 What is the role of polarized glasses in passive 3D TV viewing?

Ans
✗ 1. They increase overall brightness of the display
✗ 2. They synchronize the TV's frame rate with human eyes
✓ **3. They filter images so each eye sees only its intended image**
✗ 4. They enhance the color saturation of images

Q.171 A school plans to protect its new SMPS-powered lab from voltage instability using a manual voltage stabilizer. What operational challenge may arise during non-working hours?

Ans
✗ 1. Manual stabilizer automatically switches to automatic mode after hours
✗ 2. Manual stabilizer only draws power during night hours
✓ **3. No one will be available to adjust voltage if supply fluctuates**
✗ 4. Manual stabilizer efficiency improves during non-working periods

---

Q.172 Two identical machines are used in a workshop. Machine A receives regular inspection and servicing, while Machine B is repaired only after a fault occurs. After one year, Machine A experiences fewer breakdowns and lower repair costs. Which statement best explains this difference?

Ans
✗ 1. Machine B reduced servicing costs through breakdown maintenance
✓ **2. Machine A followed a preventive maintenance approach**
✗ 3. Machine A required more emergency repairs
✗ 4. Machine B received more effective maintenance

Q.173 The Amplitude control on the front panel of a signal generator adjusts the _____.

Ans
✓ **1. Peak-to-peak voltage of the output signal**
✗ 2. Number of cycles per second
✗ 3. Output impedance
✗ 4. Type of waveform

Q.174 A manufacturer receives complaints about uneven brightness in their LCD screens when viewed from different angles. Which design factor should be addressed to correct this problem?

Ans
✗ 1. Select enhanced driver ICs
✗ 2. Employ thicker glass substrates
✗ 3. Increase pixel refresh rate
✓ **4. Use advanced alignment layers for liquid crystals**

Q.175 Why is it important to keep RF coils away from ferromagnetic materials during assembly?

Ans
✗ 1. Ferromagnetic materials reduce resistance
✗ 2. Ferromagnetic materials shield the coil from noise
✗ 3. Ferromagnetic materials help cool the coil
✓ **4. Ferromagnetic materials can distort the magnetic field and change coil performance**

Get India's No 1 Vocab Preparation App for FREE : **Blackbook : English Vocabulary** GET IT ON Google Play