



RRB ALP 2024 CBT 2

Assistant Loco Pilot · CEN 01/2024 · CBT 2 · Mechanic Radio & TV Trade · Part B (Mechanic Radio & TV) · Question Paper

English

All 2 Shifts (Sets) · Part B (Mechanic Radio & TV) Section · Official Answer Key

About this Compilation

This booklet contains all 2 shift papers of the RRB ALP 2024 CBT 2 (Mechanic Radio & TV) examination in English (Part B (Mechanic Radio & TV) section only), with the correct option marked as per the official answer key.

✓ Correct option (highlighted green)

16 of these 150 questions are shown in Hindi. Our saved English papers do not carry them in English, so the official Hindi version of the same question is printed instead and marked with a **HINDI** chip. Nothing here is machine translated.

How to use

- Use the **Index** page to jump directly to any set (clickable).
- Questions appear section by section in the order of the paper, numbered 1 onward.
- Diagram and wide-table questions appear at full width at the end of their section.
- The correct answer is highlighted in green with a tick.

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Index — All Sets (click to open)

Set 1

02 May 2025
9:30 AM - 12:00 PM

Set 2

06 May 2025
2:30 PM - 5:00 PM

Part B (Mechanic Radio & TV)

75 Questions • Answer Key

Q1 Part B (Mechanic Radio & TV)

Which type of circuit is used to amplify low-level signals, such as those from sensors or microphones, to a level that is sufficient to drive a load?

- A. Power amplifier
- B. Voltage amplifier ✓
- C. Operations-based Schmitt trigger
- D. Current amplifier

Q2 Part B (Mechanic Radio & TV)

If a 1 : 4 demux has an input of logic 1 and the select lines (S1, S0) are set to 01, what will be the output?

- A. Output 1 will be 1. ✓
- B. Output 2 will be 1.
- C. Output 3 will be 1.
- D. Output 0 will be 1.

Q3 Part B (Mechanic Radio & TV)

Which of the following parts of a file is the part fitted to the tang for holding the file?

- A. Tip or Point
- B. Handle ✓
- C. Edge
- D. Tang

Q4 Part B (Mechanic Radio & TV) HINDI

यदि कोई ट्रांसफॉर्मर प्रचालन के दौरान अधितापन के संकेत प्रदर्शित कर रहा हो तो क्या किया जाना चाहिए?

- A. ट्रांसफॉर्मर को ठंडा होने दें, फिर लघु पथन की जांच करें
- B. ट्रांसफॉर्मर को तत्काल वियोजित करें और विद्युत-रोधन प्रतिरोध की जांच करें ✓
- C. ट्रांसफॉर्मर की वाइंडिंग सामग्री को अधिक उत्तम सामग्री से बदलें
- D. शीतलन बढ़ाने के लिए प्रचालन वोल्टता बढ़ाएं

Q5 Part B (Mechanic Radio & TV)

Plasma TV utilises the additive colour method, in which a colour is created by combining coloured light sources in three primary colours, _____.

- A. red, green and violet
- B. red, green and blue ✓
- C. pink, green and blue
- D. red, yellow and blue

Q6 Part B (Mechanic Radio & TV)

Gaskets, seals and spacers are made using:

- A. centre punch
- B. hollow punch ✓
- C. pin punch
- D. prick punch

Q7 Part B (Mechanic Radio & TV)

Which of the following is an important safety measure during a power failure?

- A. Using candles for lighting
- B. Continuing to use equipment without verifying power status
- C. Ensuring all machines and electrical equipment are turned off ✓
- D. Ignoring alarm systems

Q8 Part B (Mechanic Radio & TV)

Which of the following Boolean expressions represents the behaviour of a 3-input OR gate?

- A. $A + B + C$ ✓
- B. $(A + B) * C$
- C. $A * B * C$
- D. $(A * B) + C$



Q9 Part B (Mechanic Radio & TV)

The pointer of the dynamo meter type power factor meter moved to the left of the centre. Which of the following does it indicate?

- A. Capacitive load and power factor lagging
- B. Inductive load and power factor lagging ✓
- C. Capacitive load and power factor leading
- D. Inductive load and power factor leading

Q10 Part B (Mechanic Radio & TV)

Identify whether the given statements related to BJT transistor testing is/are correct.

Statement I: A digital multimeter can work as a transistor tester.

Statement II: Normally, the transistor tester is used to identify the terminals of the transistor (NPN or PNP) .

- A. Both statements I and II are incorrect
- B. Only statement I is correct
- C. Both statements I and II are correct ✓
- D. Only statement II is correct

Q11 Part B (Mechanic Radio & TV)

Why is it important for every person to follow safety procedures in the workplace?

- A. To increase overall production efficiency
- B. To minimise risks and avoid accidents ✓
- C. To reduce operational costs significantly
- D. To limit the need for frequent supervision

Q12 Part B (Mechanic Radio & TV)

For what purpose are pins and clips used in engineering drawings?

- A. To transfer dimensions and dividing lines into a number of equal parts
- B. To draw horizontal lines, parallel lines and to guide/hold the set squares
- C. To fasten the drawing sheet on to the drawing board firmly so that it does not shake ✓
- D. To support the drawing paper/tracing paper for making drawings

Q13 Part B (Mechanic Radio & TV)

A circular hole of radius 3 cm is cut from a rectangular sheet of dimensions 12 cm × 10 cm. Find the remaining area.

(Take $\pi = 3.14$)

- A. 100 cm²
- B. 91.74 cm² ✓
- C. 95.86 cm²
- D. 75.74 cm²

Q14 Part B (Mechanic Radio & TV)

What is the purpose of an emergency evacuation plan?

- A. To ensure safe and orderly evacuation during emergencies ✓
- B. To avoid safety drills
- C. To increase productivity
- D. To allow workers to leave early

Q15 Part B (Mechanic Radio & TV)

The unit for specific gravity is ____.

- A. m/s²
- B. g/cm³
- C. kg/m³
- D. no unit (dimensionless) ✓

Q16 Part B (Mechanic Radio & TV)

Which of the following files is used for filing narrow grooves and angles above 10°?

- A. Knife-edge file ✓
- B. Half round file
- C. Square file
- D. Triangular file

Q17 Part B (Mechanic Radio & TV)

Which type of transformer is used in a full wave rectifier circuit with two diodes?

- A. Auto-transformer
- B. Center-tapped transformer ✓
- C. Step-up transformer
- D. Current transformer



Q18 Part B (Mechanic Radio & TV)

The ESR meter used to test electrolytic capacitors measures the ____ of the capacitor.

- A. shunt conductance
- B. series resistance ✓
- C. electric field
- D. permittivity

Q19 Part B (Mechanic Radio & TV)

A drawing instrument box is used to carry all _____ instruments.

- A. drawing ✓
- B. screening
- C. drilling
- D. casting

Q20 Part B (Mechanic Radio & TV)

Identify the element that is NOT a key constituent of the DTH system.

- A. Dish
- B. GPS ✓
- C. Set top box
- D. Coaxial cable

Q21 Part B (Mechanic Radio & TV)

Which of the following configurations, commonly used in audio amplifiers, has a high current gain and a good voltage gain?

- A. Common Emitter (CE) ✓
- B. Common Base (CB)
- C. Common Drain (CD)
- D. Common Collector (CC)

Q22 Part B (Mechanic Radio & TV)

The purpose of copper shading rings in an induction type single phase energy meter is:

- A. to produce phase difference between flux and voltage in a pressure coil ✓
- B. to produce magnetic force
- C. to produce controlling force
- D. to produce eddy current damping

Q23 Part B (Mechanic Radio & TV)

A circuit consists of three resistors; 15 ohms, 10 ohms, and 20 ohms. The 15-ohm resistor is in series with the parallel combination of the 10-ohm and 20-ohm resistors. If a 24 V battery is applied across the circuit, what is the total current flowing through the circuit?

- A. 3.1 A
- B. 0.1 A
- C. 1.1 A ✓
- D. 2.1 A

Q24 Part B (Mechanic Radio & TV)

If the current flowing through a conductor is 5 A and the resistance of the conductor is 10 ohms, what will be the voltage across the conductor, according to Ohm's Law?

- A. 15 V
- B. 50 V ✓
- C. 5 V
- D. 10 V

Q25 Part B (Mechanic Radio & TV)

Identify whether the given statements related to megger are correct.

Statement I: Megger testing is a common part of regular maintenance procedures in industries like power generation, manufacturing, construction, and utilities.
Statement II: Meggers are used to diagnose faults in electrical systems.

- A. Both statements I and II are incorrect
- B. Only statement II is correct
- C. Only statement I is correct
- D. Both statements I and II are correct ✓

Q26 Part B (Mechanic Radio & TV)

According to BIS SP 46-2003, which of the following applications is correctly represented by a chain-thin line in engineering drawings?

- A. Center lines ✓
- B. Hidden edges
- C. Dimension lines
- D. Visible edges



Q27 Part B (Mechanic Radio & TV)

Which of the following factors should be prioritised when replacing an IC socket in circuits designed for low power consumption, such as mobile devices?

- A. The socket's cost and availability
- B. The electrical contact resistance and current handling capacity ✓
- C. The size and pin count of the socket
- D. The physical durability and mechanical strength of the socket

Q28 Part B (Mechanic Radio & TV)

Identify whether the given statements related to DTH system are correct.

Statements:

- I. Distortion in sound or picture can be due to a problem in the DTH signal or a problem in the antenna itself.
- II. The coaxial cable is an integral part of both DTH and traditional cable TV systems.

- A. Both statements I and II are correct ✓
- B. Only statement II is correct
- C. Both statements I and II are incorrect
- D. Only statement I is correct

Q29 Part B (Mechanic Radio & TV)

Which of the following is a good practice when replacing an IC socket in a high-speed digital circuit?

- A. Use an IC socket with a higher current rating than the original
- B. Use a socket with larger pins for better conductivity
- C. Ensure the socket material has low inductance to avoid signal distortion ✓
- D. Choose a socket with a lower resistance rating

Q30 Part B (Mechanic Radio & TV)

Which of the following factors can be the cause of the largest errors in the accuracy of GPS positioning?

- A. Satellite position accuracy
- B. Atmospheric ionospheric delay ✓
- C. Multipath interference
- D. Receiver clock bias

Q31 Part B (Mechanic Radio & TV)

What is the primary function of the pseudorandom noise (PRN) code in GPS signals?

- A. To allow the receiver to distinguish between signals from different satellites ✓
- B. To encrypt the signal for security
- C. To correct signal errors caused by atmospheric interference
- D. To modulate the carrier frequency for signal transmission

Q32 Part B (Mechanic Radio & TV)

Which of the following hand-operated drilling machines is used for drilling small diameter holes up to 6 mm?

- A. Electric hand drill
- B. Ratchet drilling machine
- C. Breast drilling machine
- D. Bevel gear type drilling machine ✓

Q33 Part B (Mechanic Radio & TV)

What should be the current rating of an induction type watt meter, in general, if a current transformer is used for measurement of power?

- A. 2 A
- B. 10 A
- C. 30 A
- D. 5 A ✓

Q34 Part B (Mechanic Radio & TV)

In a JK Flip-Flop, if $J = 0$, $K = 0$ and the clock pulse occurs, what will happen to the output Q?

- A. The output will remain unchanged. ✓
- B. The output will be set to 1.
- C. The output will toggle.
- D. The output will be reset to 0.

Q35 Part B (Mechanic Radio & TV)

How are flip flops used in digital counters?

- A. Flip-flops store the count value in binary form and change state with each clock pulse. ✓
- B. Flip-flops convert analogue input signals to a digital count.
- C. Flip-flops perform addition operations for the counter.
- D. Flip-flops generate a clock signal for the counter.



Q36 Part B (Mechanic Radio & TV)

What is the effect of a decrease in base area region due to a rise in base width modulation on the collector current in a PNP transistor?

- A. The collector current becomes zero.
- B. The collector current increases. ✓
- C. The collector current remains the same.
- D. The collector current decreases.

Q37 Part B (Mechanic Radio & TV)

Non-functional dimensions are _____.

- A. not essential for the function of the space or component ✓
- B. essential for the function of the space or component
- C. derived from the values of the related features of a drawing
- D. directly derived from the values given on a drawing

Q38 Part B (Mechanic Radio & TV)

Manganese is used as a shunt resistor for extension of range in an Ammeter because _____.

- A. manganese is a highly resistive material
- B. manganese is a superior conductor
- C. there won't be any variation in resistance due to temperature ✓
- D. there won't be any magnetic loss

Q39 Part B (Mechanic Radio & TV)

What is the condition for a transistor to operate in the saturation region?

- A. The base-emitter junction is reverse-biased and the collector-emitter junction is forward-biased.
- B. The base-emitter junction is forward-biased and the collector-emitter junction is reverse-biased.
- C. The base-emitter junction is reverse-biased.
- D. The base-emitter junction is forward-biased and the collector-emitter junction is also forward-biased. ✓

Q40 Part B (Mechanic Radio & TV)

Which of the following types of pliers is used to shape loops in wires and to form curves in light metal strips?

- A. Flat nose pliers
- B. Round nose pliers ✓
- C. Slip-joint pliers
- D. End cutting pliers

Q41 Part B (Mechanic Radio & TV)

How can the range of an ammeter be extended?

- A. By using a step-up transformer
- B. By increasing the applied voltage
- C. By connecting a shunt resistor in parallel with the ammeter ✓
- D. By connecting a resistor in series with the ammeter

Q42 Part B (Mechanic Radio & TV)

What should you do to ensure your personal safety at work?

- A. Wear personal protective equipment. ✓
- B. Work in a hurry without checking equipment.
- C. Ignore warning signs and instructions.
- D. Take risks to finish tasks quickly.

Q43 Part B (Mechanic Radio & TV)

For a metal based thin film resistor, the measured value of resistance ____ with ____ in temperature.

- A. increases; decrease
- B. decreases; increase
- C. increases; increase ✓
- D. remains constant; decrease

Q44 Part B (Mechanic Radio & TV)

To implement an OR gate using only NAND gates, how many NAND gates are required?

- A. 1
- B. 3 ✓
- C. 2
- D. 4

Q45 Part B (Mechanic Radio & TV)

When using a multimeter to measure current, which of the following is correct?

- A. The multimeter is connected directly to the power source.
- B. The multimeter is connected in series with the load. ✓
- C. The multimeter is connected only across resistive components.
- D. The multimeter is connected in parallel with the load.



Q46 Part B (Mechanic Radio & TV)

What is a key advantage of using MOSFETs in electronic circuits compared to other types of transistors?

- A. High frequency response
- B. High input impedance and low power consumption ✓
- C. Ability to handle higher voltages and currents than BJTs
- D. Ability to amplify both AC and DC signals

Q47 Part B (Mechanic Radio & TV)

Which of the following components is primarily responsible for transmitting signals from the ground station to the satellite in a satellite communication system?

- A. Transponder
- B. Geostationary Satellite
- C. Uplink Antenna ✓
- D. Downlink Antenna

Q48 Part B (Mechanic Radio & TV)

Which of the following organisations is responsible for enforcing workplace safety regulations in India?

- A. World Health Organization (WHO)
- B. Food and Drug Administration (FDA)
- C. Directorate General of Factory Advice Service and Labour Institutes (DGFASLI) ✓
- D. Environmental Protection Agency (EPA)

Q49 Part B (Mechanic Radio & TV)

Why is a high-impedance input preferred in a frequency meter?

- A. To allow better voltage regulation
- B. To increase the power consumption of the meter
- C. To reduce display brightness fluctuations
- D. To prevent voltage drop across the circuit being measured ✓

Q50 Part B (Mechanic Radio & TV)

When selecting a sheet size for an original drawing, what should be the primary consideration?

- A. The standard size of the drawing office.
- B. The clarity and resolution required. ✓
- C. The orientation of the drawing (horizontal or vertical).
- D. The size of the reproduction.

Q51 Part B (Mechanic Radio & TV)

In a velocity-time graph, the negative slope represents ____.

- A. retardation ✓
- B. displacement
- C. acceleration
- D. distance

Q52 Part B (Mechanic Radio & TV)

How can one avoid a parallax error while taking a reading from a moving iron type voltmeter?

- A. By seeing the needle at an angle of 90°
- B. By seeing the image of the pointer on the mirror
- C. By seeing straight on the needle ✓
- D. By seeing the needle at an angle of 45°

Q53 Part B (Mechanic Radio & TV)

What is the advantage of using a transistor as a switch in a power electronic circuit?

- A. High current gain
- B. High power gain
- C. High voltage gain
- D. High switching frequency and low switching losses ✓

Q54 Part B (Mechanic Radio & TV)

What is the advantage of giving heat treatment to a material?

- A. To decrease the melting point of the material
- B. To increase the weight of the material
- C. To change it from one element to another element
- D. To make surgical knives of sharp edges ✓

Q55 Part B (Mechanic Radio & TV)

What is the sum output of a Full Adder when the inputs $A = 1$, $B = 1$, and $C_{in} = 0$?

- A. 1
- B. 2
- C. 0 ✓
- D. 3



Q56 Part B (Mechanic Radio & TV)

When measuring the resistance of a resistor using an ohmmeter, what does a reading of zero resistance indicate?

- A. The resistor is functioning normally.
- B. The resistor is open-circuited.
- C. The resistor is short-circuited.**
- D. The ohmmeter is malfunctioning.

Q57 Part B (Mechanic Radio & TV)

What type of oscillator uses a capacitive voltage divider as the feedback network?

- A. Crystal oscillator
- B. Colpitts oscillator**
- C. RC oscillator
- D. Hartley oscillator

Q58 Part B (Mechanic Radio & TV)

What is the Boolean expression for the carry-out (Cout) output of a Full Adder?

- A. $Cout = (A \cdot B) \oplus Cin$
- B. $Cout = A \oplus B \oplus Cin$
- C. $Cout = (A \cdot B) + (B \cdot Cin) + (Cin \cdot A)$**
- D. $Cout = (A \cdot B) \cdot Cin$

Q59 Part B (Mechanic Radio & TV) HINDI

IC सॉकेट को बदलते समय, PCB में नया सॉकेट डालने से पहले क्या करना चाहिए?

- A. परिपथ में धारा आपूर्ति को बढ़ाएँ
- B. सुसंगतता (compatibility) सुनिश्चित करने के लिए आस-पास के सभी घटकों को बदलें
- C. सुनिश्चित करें कि सॉकेट का रंग मूल (original) से सुमेलित हो
- D. भौतिक संरेखण की जाँच करें और सुनिश्चित करें कि कोई पिन मुड़ा हुआ न हो**

Q60 Part B (Mechanic Radio & TV)

Which of the following vices consists of a handle and a small collet chuck at one end?

- A. Hand vice
- B. Pin vice**
- C. Pipe vice
- D. Toolmaker's vice

Q61 Part B (Mechanic Radio & TV)

What is the output waveform of a half-wave rectifier considering input as a sinusoidal AC signal?

- A. Square wave
- B. Pulsating DC wave**
- C. Triangular wave
- D. Perfect sine wave

Q62 Part B (Mechanic Radio & TV)

Arrange the following steps in the correct order to draw an equilateral triangle with each side of 35 mm.

1. Join CA and CB.
2. Draw a line and mark AB 35 mm as the side of the triangle.
3. With radius AB and center A and B, draw arcs cutting at C.
4. ABC is the required triangle.

- A. 2, 3, 1, 4**
- B. 1, 2, 4, 3
- C. 2, 1, 3, 4
- D. 3, 2, 1, 4

Q63 Part B (Mechanic Radio & TV)

In a lead-acid battery, what is the chemical composition of the material used for the positive plate during discharge?

- A. Sulphuric acid (H_2SO_4)
- B. Lead (Pb)
- C. Lead dioxide (PbO_2)**
- D. Lead sulfate ($PbSO_4$)

Q64 Part B (Mechanic Radio & TV)

What is the primary reason for electrical injuries when a person comes in contact with electrical equipment?

- A. Electrical equipment is not properly grounded.
- B. Current flows through the body causing harm.**
- C. Devices are used for too long.
- D. Electrical devices are too powerful.

Q65 Part B (Mechanic Radio & TV)

Which of the following is NOT the correct truth table output for an OR gate?

- A. 1 if either input is 1
- B. 1 if both inputs are 1
- C. 0 if both inputs are 0
- D. 0 if either of input is 1**



Q66 Part B (Mechanic Radio & TV)

What is the primary action that occurs in the base region of an NPN transistor when a small positive voltage is applied to the base with respect to the emitter?

- A. The collector current is reduced.
- B. Holes are created in the base region.
- C. Electrons from the emitter are attracted to the base region. ✓
- D. The base-emitter junction is reverse-biased.

Q67 Part B (Mechanic Radio & TV)

Minimum gate required to implement XOR gate using NOR gate only are:

- A. 5 ✓
- B. 3
- C. 4
- D. 2

Q68 Part B (Mechanic Radio & TV)

What is the significance of beta (β) in a transistor?

- A. Current gain in common base configuration
- B. Power gain in common base configuration
- C. Power gain in common emitter configuration
- D. Current gain in common emitter configuration ✓

Q69 Part B (Mechanic Radio & TV)

Which of the following is a switching error in electrical measuring instruments?

- A. Error due to wrong calculation of subdivisions
- B. Wrong connection of the meter ✓
- C. Error due to heat
- D. Error due to vibration

Q73 Part B (Mechanic Radio & TV)

How many minimum number of NAND gates will be required to implement the Boolean expression $F = A.\bar{B} + C$ using only NAND gate?

- A. 3
- B. 4 ✓
- C. 5
- D. 6

Q70 Part B (Mechanic Radio & TV)

The loading effect of a voltmeter is determined by _____.

- A. the input resistance of the voltmeter ✓
- B. the weight of the voltmeter
- C. the frequency of the circuit
- D. the size of the voltmeter display

Q71 Part B (Mechanic Radio & TV)

Identify the correct statement related to a radio receiver.

- A. It is desired to have a radio receiver of low quality factor and high noise figure.
- B. It is desired to have a radio receiver of low quality factor and low noise figure.
- C. It is desired to have a radio receiver of high quality factor and high noise figure.
- D. It is desired to have a radio receiver of high quality factor and low noise figure. ✓

Q72 Part B (Mechanic Radio & TV)

A/an _____ is connected in series with the voltmeter to increase the range of the voltmeter.

- A. inductor
- B. capacitor
- C. resistor ✓
- D. inductor and capacitor in series



Q74 Part B (Mechanic Radio & TV)

$\cos \theta$

A. $\frac{3}{5}$

B. $\frac{4}{5}$ ✓

C. $\frac{5}{4}$

D. $\frac{3}{4}$

Q75 Part B (Mechanic Radio & TV)

$\left(\frac{3}{8}\right) + \left(\frac{5}{12}\right)$

A. $\frac{17}{24}$

B. $\frac{19}{24}$ ✓

C. $\frac{8}{20}$

D. $\frac{7}{12}$



Part B (Mechanic Radio & TV)

75 Questions • Answer Key

Q1 Part B (Mechanic Radio & TV) HINDI

उच्च आवृत्ति के अनुप्रयोग के लिए RF कुंडली को वाइंडिंग करते समय, कुंडली फेरों के बीच पराश्रयी धारिता (parasitic capacitance) के प्रभाव को न्यूनतम करने के लिए क्या महत्वपूर्ण विचार है?

- A. टर्न-टु-टर्न धारिता (turn-to-turn capacitance) को कम करने के लिए कुंडली के व्यास को बढ़ाएं
- B. फेरों को अलग करने के लिए विद्युत-रोधी लेपन (insulated coating) युक्त तार का उपयोग करें ☒
- C. कुंडली के पृष्ठीय क्षेत्रफल को कम करने के लिए मोटे तार का उपयोग करें
- D. कुंडली के निष्पादन को बेहतर बनाने के लिए फेरों की संख्या बढ़ाएं

Q2 Part B (Mechanic Radio & TV) HINDI

प्रिसिजन अप्रोच रडार (PAR) प्रणाली में, दिगंश (azimuth) और उन्नयन चैनलों का क्या महत्व है?

- A. दिगंश चैनल विमान की पार्श्व स्थिति को मापता है, और उन्नयन चैनल रनवे के सापेक्ष ऊर्ध्वाधर स्थिति को मापता है। ☒
- B. दिगंश चैनल विमान की वायुगति के बारे में डेटा प्रदान करता है, तथा उन्नयन चैनल अवरोहण दर को मापता है।
- C. दिगंश और उन्नयन चैनलों का उपयोग केवल मौसम का पता लगाने के लिए किया जाता है, न कि विमान नेविगेशन के लिए।
- D. दिगंश चैनल विमान की ऊर्ध्वाधर स्थिति को मापता है, और उन्नयन चैनल रनवे के सापेक्ष विमान की क्षैतिज स्थिति को मापता है।

Q3 Part B (Mechanic Radio & TV)

Who is authorised to conduct road tests on workshop vehicles?

- A. Only trained and certified personnel ☒
- B. Visitors to the workshop
- C. Any employee
- D. The company accountant

Q4 Part B (Mechanic Radio & TV)

Why should the highest voltage range be selected first when measuring an unknown voltage?

- A. To save the battery power
- B. To increase the measurement accuracy
- C. To improve the response time of the display
- D. To protect the multimeter from damage ☒

Q5 Part B (Mechanic Radio & TV) HINDI

GPRS सिस्टम में, निम्नलिखित में से कौन-सा घटक डेटा पैकेट को सही मोबाइल स्टेशन पर रूट करने के लिए उत्तरदायी है?

- A. मोबाइल स्टेशन (MS)
- B. बेस स्टेशन सबसिस्टम (BSS)
- C. गेटवे GPRS सपोर्ट नोड (GGSN)
- D. सर्विंग GPRS सपोर्ट नोड (SGSN) ☒

Q6 Part B (Mechanic Radio & TV)

What is the correct way to connect a multimeter when measuring current in a circuit?

- A. In series with the circuit ☒
- B. Across the power supply terminals
- C. Across a resistor
- D. In parallel with the circuit

Q7 Part B (Mechanic Radio & TV)

Which of the following is the main property of the OR gate?

- A. It produces a high output only when all inputs are low.
- B. It produces a low output only when all inputs are high.
- C. It produces a high output when at least one input is high. ☒
- D. It produces a low output when at least one input is low.

Q8 Part B (Mechanic Radio & TV)

What is the advantage of using a transistor as a switch in a digital circuit?

- A. High voltage gain
- B. High current gain
- C. Low sensitivity
- D. High switching speed ☒

Q9 Part B (Mechanic Radio & TV)

Which of the following is a common calibration method for electrical measuring instruments?

- A. Approximation method
- B. Estimation method
- C. Null method ☒
- D. Guesswork method



Q10 Part B (Mechanic Radio & TV)

What happens when both the J and K inputs of a JK Flip-Flop are HIGH (1)?

- ☒ A. The output toggles.
- ☐ B. The output is set to 1.
- ☐ C. The output is reset to 0.
- ☐ D. The output remains the same.

Q11 Part B (Mechanic Radio & TV)

Match the following types of lines with their correct descriptions according to their orientation and characteristics.

Description	Type of Line
A. A line that is neither parallel to a horizontal plane nor perpendicular to it.	1. Horizontal line
B. A line that is perpendicular to horizontal lines.	2. Vertical line
C. A line that changes its direction continuously.	3. Inclined line
D. A line that is parallel to a horizontal plane.	4. Curved line

- ☐ A. A - 1, B - 2, C - 3, D - 4
- ☐ B. A - 2, B - 3, C - 4, D - 1
- ☒ C. A - 3, B - 2, C - 4, D - 1
- ☐ D. A - 2, B - 1, C - 4, D - 3

Q12 Part B (Mechanic Radio & TV) HINDI

टेलीविज़न रिसीवर के साउंड सिस्टम में उपयोग किए जाने वाले पावर एम्पलीफायरों में _____ और _____ इसके महत्वपूर्ण पैरामीटर हैं।

- ☐ A. वोल्टता लब्धि; क्षरण धारा
- ☐ B. DC क्लैम्पिंग; DC धारा लब्धि
- ☒ C. पावर दक्षता; दक्षतांक
- ☐ D. ऊष्मा अंतरण; DC लब्धि

Q13 Part B (Mechanic Radio & TV)

Which of the following colours is commonly used for caution signs?

- ☐ A. Blue
- ☒ B. Yellow
- ☐ C. Red
- ☐ D. Green

Q14 Part B (Mechanic Radio & TV)

Identify the block that is NOT a part of the radio receiver.

- ☐ A. Local oscillator
- ☐ B. RF amplifier
- ☒ C. All-pass filter
- ☐ D. AGC

Q15 Part B (Mechanic Radio & TV) HINDI

ट्रांजिस्टर प्रवर्धक परिपथ पर आवधिक अनुरक्षण करते समय निम्नलिखित में से कौन-सा एक महत्वपूर्ण कारक विचारणीय है?

- ☒ A. अभिनतीकरण नेटवर्क (biasing network) का स्थायित्व
- ☐ B. परिपथ पट्ट (circuit board) का भौतिक स्वरूप
- ☐ C. ट्रांजिस्टर का शक्ति सीमांक
- ☐ D. ट्रांजिस्टर आवरण का रंग

Q16 Part B (Mechanic Radio & TV)

The SI unit of temperature is/are _____.

- ☐ A. both kelvin and celsius
- ☐ B. celsius
- ☒ C. kelvin
- ☐ D. fahrenheit

Q17 Part B (Mechanic Radio & TV)

Which of the following is the correct implementation of the Boolean equation $F = (A \cdot B) + (C \cdot D)$ using only AND and OR gates?

- ☐ A. One AND gate and two OR gates
- ☐ B. Two OR gates followed by one AND gate
- ☒ C. Two AND gates followed by one OR gate
- ☐ D. One AND gate followed by one OR gate



Q18 Part B (Mechanic Radio & TV)

What is the purpose of using a transistor in a relay driver circuit?

- A. To filter out noise
- B. To amplify the input signal
- C. To switch on the relay coil ✓
- D. To provide high input impedance in ON state

Q19 Part B (Mechanic Radio & TV) HINDI

GSM मोबाइल संचार के लिए यूरोप में आमतौर पर किस आवृत्ति बैंड का उपयोग किया जाता है?

- A. 900 MHz ✓
- B. 800 MHz
- C. 3600 MHz
- D. 2100 MHz

Q20 Part B (Mechanic Radio & TV)

What is the primary disadvantage of using a digital frequency counter in high-frequency measurements?

- A. Increased power consumption
- B. Inability to measure AC voltages
- C. Limited resolution at very high frequencies due to counting limitations ✓
- D. High sensitivity to temperature variations

Q21 Part B (Mechanic Radio & TV)

In a logic circuit, two inputs A and B are applied to an AND gate, and the output of the AND gate is connected to the input of a NOT gate. If the inputs A and B are both at logic 0, what will be the output of the entire circuit?

- A. Undefined
- B. 0
- C. 1 ✓
- D. 2

Q22 Part B (Mechanic Radio & TV)

Which of the following types of chisels is used for separating metals after chain drilling?

- A. Cross-cut chisel
- B. Flat chisel
- C. Web chisel ✓
- D. Diamond point chisel

Q23 Part B (Mechanic Radio & TV)

Find the lateral surface area of a cube with side length 5 cm.

- A. 125 cm²
- B. 150 cm²
- C. 200 cm²
- D. 100 cm² ✓

Q24 Part B (Mechanic Radio & TV) HINDI

रेडार प्रणालियों में, रव व्यतिकरण (noise interference) को कम करके डिटेक्शन रेंज (detection range) में सुधार करने के लिए निम्नलिखित में से कौन-सी विधि मुख्य रूप से उपयोग की जाती है?

- A. आयाम मॉड्यूलन (Amplitude Modulation)
- B. आवृत्ति मॉड्यूलन (Frequency Modulation)
- C. काल विभाजन बहुसंकेतन (Time Division Multiplexing)
- D. स्पंद संपीड़न (Pulse Compression) ✓

Q25 Part B (Mechanic Radio & TV)

When passing stationary vehicles, keep a watch on _____ who may come out suddenly from the front of the stationary vehicle. While overtaking, it should be done on the _____ side. Always keep a good _____ between your vehicle and others.

- A. cyclists; left; interval
- B. vehicles; right; gap
- C. drivers; left; space
- D. pedestrians; right; distance ✓

Q26 Part B (Mechanic Radio & TV) HINDI

किसी विशिष्ट आवृत्ति के लिए RF कॉइल को वाइंडिंग करते समय बहुत अधिक टर्न का उपयोग करने का क्या प्रभाव होता है?

- A. Q फैक्टर और बैंडविड्थ में वृद्धि
- B. कुंडली और परिपथ के बीच बेहतर मिलान
- C. प्रेरकत्व और आवृत्ति अनुक्रिया में कमी
- D. प्रेरकत्व में वृद्धि और परिपथ का संभावित विस्वरण ✓

Q27 Part B (Mechanic Radio & TV)

What are the two main outputs of a half adder?

- A. Sum and Carry ✓
- B. Carry and Borrow
- C. Sum and Difference
- D. Sum and Quotient



Q28 Part B (Mechanic Radio & TV)

Which of the following statements is NOT correct for using scribes?

- A. Scribe points are very sharp, so they are to be handled very carefully.
- B. While scribing lines, the scribe is used like a pencil.
- C. Do not put the scribe in your pocket.
- D. Place a cork on the point when in use to prevent accidents. ✓

Q29 Part B (Mechanic Radio & TV)

Which of the following information is necessary to construct a rectangle?

- A. Length of two adjacent sides ✓
- B. Length of one side and the area of the rectangle
- C. Only the length of one side
- D. Only the length of the diagonal

Q30 Part B (Mechanic Radio & TV)

Which type of semiconductor has an excess of holes?

- A. p-type semiconductor ✓
- B. n-type semiconductor
- C. Intrinsic semiconductor
- D. Pure conductor

Q31 Part B (Mechanic Radio & TV) HINDI

हाइब्रिड टेलीविजन रिसीवर में प्रयुक्त आईसी (IC) _____।

- A. सभी अर्थात ध्वनि आईएफ सीमक-एम्पलीफायर, FM संसूचक और ऑडियो पूर्व-एम्पलीफायर का कार्य करने में सक्षम हैं ✓
- B. केवल FM संसूचक का कार्य करने में सक्षम हैं
- C. केवल ध्वनि आईएफ सीमक-एम्पलीफायर का कार्य करने में सक्षम हैं
- D. केवल ऑडियो पूर्व-एम्पलीफायर का कार्य करने में सक्षम हैं

Q32 Part B (Mechanic Radio & TV)

What is the effect of increasing the base current on the collector current in a transistor amplifier?

- A. The collector current increases. ✓
- B. The collector current becomes zero.
- C. The collector current decreases.
- D. The collector current remains constant.

Q33 Part B (Mechanic Radio & TV)

What is the advantage of using a differential amplifier in a voltage amplifier circuit?

- A. It decreases the power consumption of the amplifier.
- B. It increases the common-mode rejection ratio (CMRR) of the amplifier. ✓
- C. It increases the gain of the amplifier.
- D. It increases the noise sensitivity of the amplifier.

Q34 Part B (Mechanic Radio & TV) HINDI

DTH का उपयोग करने वाले उपभोक्ताओं को सीधे टेलीविजन सेवाओं के लिए लंबी दूरी के प्रसारण हेतु विश्वसनीय और उच्च गुणवत्ता वाले संकेत प्रदान करने के लिए उपयोग की जाने वाली संचार प्रौद्योगिकी की पहचान कीजिए।

- A. उपग्रह संचार ✓
- B. दृष्टि रेखा संचार
- C. रडार संचार
- D. ब्लूटूथ संचार

Q35 Part B (Mechanic Radio & TV)

Convert 8.5% into a decimal.

- A. 0.85
- B. 8.5
- C. 0.085 ✓
- D. 85

Q36 Part B (Mechanic Radio & TV)

Which of the following statements is INCORRECT about end standard?

- A. It measures the distance between two parallel flat surfaces.
- B. Faces are subject to wear.
- C. It is slower but more accurate.
- D. It is used to measure the distance between two engraved lines. ✓

Q37 Part B (Mechanic Radio & TV) HINDI

स्विच, प्लग, सॉकेट और विशेष रूप से हेडफोन के लीड में शॉर्ट और टूटे हुए तारों (shorts and broken wires) को खोजने के लिए _____ बहुत सुविधाजनक है।

- A. सिग्नल अंतः क्षेत्र (Signal Injector) ✓
- B. समाक्ष केबल (Coaxial cable)
- C. दोलित्र (Oscillator)
- D. CRO



Q38 Part B (Mechanic Radio & TV) HINDI

विद्युत-रोधी परीक्षक सामान्यतः सामग्री की _____ का परीक्षण और मापन करने के लिए _____ वोल्टता का उपयोग करता है।

- A. सांद्रता ; अति निम्न
- B. प्रतिरोध ; अति उच्च ✓
- C. सांद्रता ; अति उच्च
- D. प्रतिरोध ; अति निम्न

Q39 Part B (Mechanic Radio & TV)

In a series circuit, three resistors of 10 ohms, 20 ohms, and R ohms are connected in series with a 12 V battery. What is the value of resistance R if current flowing in the circuit is 0.2 A?

- A. 10 ohms
- B. 20 ohms
- C. 30 ohms ✓
- D. 40 ohms

Q40 Part B (Mechanic Radio & TV)

What happens to the conductivity of a semiconductor when it is heated?

- A. Conductivity decreases
- B. Conductivity becomes zero
- C. Conductivity remains constant
- D. Conductivity increases ✓

Q41 Part B (Mechanic Radio & TV)

Where should the probes be connected when measuring voltage in a circuit?

- A. In series with the circuit
- B. Across the circuit breaker only
- C. In parallel with the circuit ✓
- D. Across the fuse only

Q42 Part B (Mechanic Radio & TV)

If a potential transformer has a turns ratio of 100 : 1 and the primary voltage is 11 kV, what will be the secondary voltage?

- A. 110 V ✓
- B. 11 V
- C. 1.1 V
- D. 1,100 V

Q43 Part B (Mechanic Radio & TV) HINDI

निम्नलिखित में से कौन-सा पैरामीटर दोलित्र (oscillator) में क्रिस्टल परीक्षण से संबंधित नहीं है?

- A. अनुनाद
- B. रेनॉल्ड संख्या ✓
- C. बैंड चौड़ाई
- D. हार्मोनिक आवृत्ति

Q44 Part B (Mechanic Radio & TV)

Why is an electrodynamicometer-type power factor meter preferred in AC circuits?

- A. It can measure both single-phase and three-phase power factors. ✓
- B. It does not require voltage connections.
- C. It can measure DC power factor accurately.
- D. It has a faster response time.

Q45 Part B (Mechanic Radio & TV)

What is the primary function of a NOT gate in a digital circuit?

- A. To combine multiple input signals
- B. To amplify the input signal
- C. To invert the input signal ✓
- D. To delay the input signal

Q46 Part B (Mechanic Radio & TV)

A voltmeter with a resistance of 10,000 ohms is connected across a circuit that has a voltage of 50 V. What is the current flowing through the voltmeter?

- A. 2 mA
- B. 1 mA
- C. 5 mA ✓
- D. 4 mA

Q47 Part B (Mechanic Radio & TV)

What is the typical temperature range of a mercury-based clinical thermometer?

- A. 0°C to 100°C
- B. 35°C to 42°C ✓
- C. 0°C to 50°C
- D. -10°C to 110°C



Q48 Part B (Mechanic Radio & TV)

Which of the following statements about title block is/are true?

Statement 1: The title block is situated in the bottom right-hand corner of the drawing sheet.

Statement 2: The contents of the title block are standardised and cannot be modified to suit individual company needs.

- A. Both statements are false
- B. Statement 1 is false, but statement 2 is true
- C. Statement 1 is true, but statement 2 is false ✓
- D. Both statements are true

Q49 Part B (Mechanic Radio & TV)

How can a NOT gate be implemented using a 2-input NOR gate?

- A. By connecting both inputs of the NOR gate to the same input signal ✓
- B. By connecting two NOR gates in parallel
- C. It is not possible to create a NOT gate using a NOR gate.
- D. By connecting two NOR gates in series

Q50 Part B (Mechanic Radio & TV)

Which of the following metals has the lowest melting point?

- A. Mercury ✓
- B. Iron
- C. Lead
- D. Gold

Q51 Part B (Mechanic Radio & TV)

A voltage amplifier has a gain of 20 and an input resistance of 1 kΩ. If the input signal is 0.1 V, what is the output voltage and the current drawn from the input signal source?

- A. Output voltage = 2 V, Input current = 3 mA
- B. Output voltage = 2 V, Input current = 1 mA
- C. Output voltage = 5 V, Input current = 0.1 mA
- D. Output voltage = 2 V, Input current = 0.1 mA ✓

Q52 Part B (Mechanic Radio & TV)

Which of the following terms in the 5S concept refers to making a habit of maintaining the established procedures?

- A. Shine
- B. Set
- C. Sort
- D. Sustain ✓

Q53 Part B (Mechanic Radio & TV)

A 100-mm prick punch with a 7-mm diameter body could have a 2.5-mm diameter point ground to an angle of _____.

- A. 90°
- B. 30° ✓
- C. 120°
- D. 45°

Q54 Part B (Mechanic Radio & TV)

Which of the following Boolean expressions represents the behaviour of a 3-input AND gate?

- A. $A + B + C$
- B. $A * B * C$ ✓
- C. $(A * B) + C$
- D. $(A + B) * C$

Q55 Part B (Mechanic Radio & TV)

Which of the following calipers are used for marking lines, parallel to inside and outside edges and for locating the centre of round bars?

- A. Spring joint calipers
- B. Leg and point calipers ✓
- C. Simple calipers
- D. Firm joint calipers



Q56 Part B (Mechanic Radio & TV) HINDI

पहचानें कि परीक्षण जिग (test jig) से संबंधित दिए गए कथन सही हैं या नहीं।

कथन:

I. कुछ सेकंड से अधिक समय लेने वाले परीक्षणों के लिए, परीक्षक डिज़ाइन में एक क्लैप जोड़ने से आपके बोर्ड के परीक्षण के दौरान अन्य काम करने के लिए आपके हाथों को फ्री करके प्रक्रिया में काफी तेजी आ सकती है।
II: परीक्षण जिग में पीज़ो बज़र (piezo buzzer) और LED लाइट का उपयोग किया जा सकता है।

- A. केवल कथन II सही है
- B. कथन I और II दोनों गलत हैं
- C. केवल कथन I सही है
- D. कथन I और II दोनों सही हैं

Q57 Part B (Mechanic Radio & TV)

What does 'traceability' in calibration mean?

- A. The calibration process is linked to an internationally recognised standard
- B. The ability to track past measurements
- C. The instrument's accuracy depends on user experience
- D. The ability to repeat measurements consistently

Q58 Part B (Mechanic Radio & TV)

What is the purpose of negative feedback in a voltage amplifier?

- A. To increase the gain of the amplifier
- B. To increase the noise sensitivity of the amplifier
- C. To decrease the gain of the amplifier
- D. To decrease the bandwidth of the amplifier

Q59 Part B (Mechanic Radio & TV)

What happens when both the Set (S) and Reset (R) inputs of an RS Flip-Flop are 0?

- A. The output remains unchanged.
- B. The output is reset to 0.
- C. The flip-flop is in an invalid state.
- D. The output is set to 1.

Q60 Part B (Mechanic Radio & TV)

Which of the following 'V' blocks will have one 'V' groove and two grooves (slots) on either side for clamping in two positions?

- A. Double level single groove 'V' block
- B. Matched pair 'V' block
- C. Single level double groove 'V' block
- D. Single level single groove 'V' block

Q61 Part B (Mechanic Radio & TV)

What precaution should be taken when measuring resistance in a circuit with capacitors?

- A. Reverse the test leads multiple times.
- B. Use the highest resistance range.
- C. Measure resistance in AC mode.
- D. Discharge the capacitors before testing.

Q62 Part B (Mechanic Radio & TV)

Which of the following is the primary reason why copper is widely used as a conductor in electrical wiring?

- A. Copper has low resistance and high conductivity.
- B. Copper has a low melting point.
- C. Copper is abundant and inexpensive.
- D. Copper has high resistance to electricity.

Q63 Part B (Mechanic Radio & TV)

What is the SI unit of 'volume'?

- A. Litres
- B. Cubic centimetre
- C. Cubic metre
- D. Millilitres

Q64 Part B (Mechanic Radio & TV)

If the length of a resistor is doubled, what happens to its resistance, assuming all other factors remain constant?

- A. The resistance is doubled.
- B. The resistance remains the same.
- C. The resistance is halved.
- D. The resistance quadruples.



Q65 Part B (Mechanic Radio & TV)

When creating 10 mm single-stroke capital letters in vertical style, what does the 10 mm distance between horizontal parallel lines represent?

- A. Letter width
- B. Letter height** ✓
- C. Stroke thickness
- D. Interline spacing

Q66 Part B (Mechanic Radio & TV)

Which of the following configurations is commonly used in Darlington amplifier circuits due to its high current gain and low input impedance?

- A. Common Emitter with a Common Base stage (CE-CB)** ✓
- B. Common Base (CB)
- C. Common Collector (CC)
- D. Common Emitter (CE)

Q67 Part B (Mechanic Radio & TV)

An AND gate is used in a digital circuit to enable a certain function. Under what condition will the function be enabled?

- A. When all the inputs are low
- B. When any one of the inputs is high
- C. When all the inputs are high** ✓
- D. When any one of the inputs is low

Q68 Part B (Mechanic Radio & TV)

Which type of line is used to represent hidden edges or surfaces in a technical drawing, as per BIS SP 46-2003?

- A. Continuous thin line
- B. Continuous thick line
- C. Dashed thin line** ✓
- D. Chain thin line

Q69 Part B (Mechanic Radio & TV)

For your safety at work, which of the following should be ensured?

1. All the required protective clothing and equipment are used.
2. Training and instruction necessary for performing tasks safely have been received.

- A. Only statement 1
- B. Neither statement 1 nor 2
- C. Only statement 2
- D. Both statements 1 and 2** ✓

Q70 Part B (Mechanic Radio & TV)

Which of the following types of errors can be minimised by proper instrument calibration?

- A. Random error
- B. Gross error
- C. Systematic error** ✓
- D. Observational error

Q71 Part B (Mechanic Radio & TV)

The wave set of hacksaw teeth set has a pitch of _____.

- A. 2.0 mm
- B. 0.5 mm
- C. 0.8 mm** ✓
- D. 1.0 mm

Q72 Part B (Mechanic Radio & TV)

What is the significance of the cut-off region in the output characteristic of a transistor?

- A. It indicates the region where the transistor is fully turned off.** ✓
- B. It indicates the minimum collector-emitter voltage.
- C. It indicates the maximum collector current.
- D. It indicates the region where the transistor is fully turned on.

Q73 Part B (Mechanic Radio & TV)

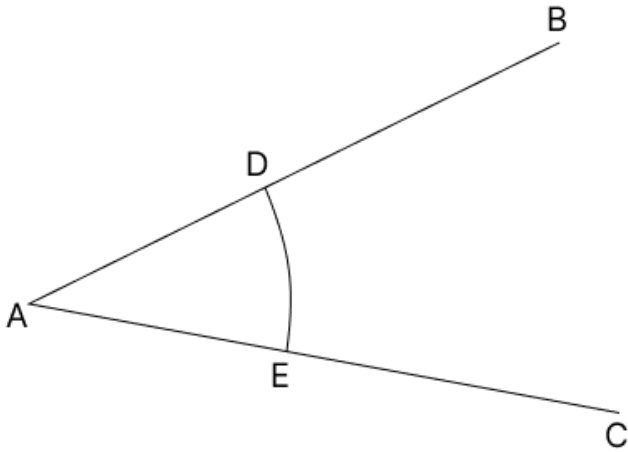
What is the minimum age for employment in factories or mines or other hazardous employment, according to Article 24 of the Indian Constitution?

- A. 14 years** ✓
- B. 12 years
- C. 16 years
- D. 18 years



Q74 Part B (Mechanic Radio & TV)

In the process of bisecting angle BAC in the given figure, why do we draw arcs from points D and E?



- A. To find midpoint AB
- B. To mark equal lengths
- C. To intersect line AC
- D. To intersect above A



Q75 Part B (Mechanic Radio & TV)

Which logic gate configuration can be used to implement the Boolean function $F = \overline{A \cdot (B + C)}$?

- A. NOT gate, followed by one AND gate and one OR gate
- B. One AND gate, followed by a NOT gate
- C. One AND gate, followed by a NOT gate and one OR gate
- D. One OR gate, followed by one AND gate and one NOT gate

