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सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



## RRB ALP 2025 CBT 2

Assistant Loco Pilot · CEN 01/2025 · CBT 2 · Wireman Trade · Part B (Wireman) · Question Paper

English

All 2 Shifts (Sets) · Part B (Wireman) Section · Official Answer Key

### About this Compilation

This booklet contains all 2 shift papers of the RRB ALP 2025 CBT 2 (Wireman) examination in English (Part B (Wireman) section only), with the correct option marked as per the official answer key.

✓ Correct option (highlighted green)

### 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

28 Jul 2026

9:30 AM - 12:00 PM

Set 2

28 Jul 2026

2:30 PM - 5:00 PM

## Part B (Wireman)

75 Questions • Answer Key

## Q1 Part B (Wireman)

The price of a tool increased from ₹400 to ₹500. Calculate the percentage increase based on the original price.

- A. 20%
- B. 30%
- C. 25%
- D. 35%



## Q2 Part B (Wireman)

In a climate-controlled laboratory where aesthetics and minimal electromagnetic interference are priorities, which wiring system is most appropriate?

- A. Casing-capping wiring with plastic covers
- B. Batten wiring with wooden battens
- C. Cleat wiring with ceramic cleats
- D. Concealed conduit wiring with non-magnetic pipes



## Q3 Part B (Wireman)

Why is Relay Ladder Logic (RLL) represented in a graphical form similar to relay control circuits in programmable logic controllers (PLCs)?

- A. To increase the memory capacity of programmable logic controllers
- B. To reduce the operating voltage required by PLC hardware
- C. To make PLC programming easier for technicians familiar with relay logic troubleshooting
- D. To replace all electrical wiring connections inside industrial machines



## Q4 Part B (Wireman)

A control panel design requires cable markers to be both flame-retardant and resistant to abrasion. Which material is best suited for this requirement?

- A. Vinyl electrical tapes
- B. Polyolefin heat-shrink sleeves
- C. Self-adhesive paper labels
- D. Clip-on plastic tags



## Q5 Part B (Wireman)

Find the circumference of a circle having radius 7 cm. Use  $\pi=22/7$ .

- A. 66 cm
- B. 22 cm
- C. 88 cm
- D. 44 cm



## Q6 Part B (Wireman)

Before measuring current with an analog multimeter, how should the meter be connected in a circuit?

- A. Across the power supply
- B. To earth ground
- C. In parallel with the load
- D. In series with the load



## Q7 Part B (Wireman)

Which type of lamp is suitable for street lighting due to its high efficiency and long life?

- A. Fluorescent lamp
- B. Mercury vapor lamp
- C. Incandescent lamp
- D. Sodium vapor lamp



## Q8 Part B (Wireman)

If three light bulbs are connected in a series circuit and one bulb burns out (opens), what happens to the remaining bulbs?

- A. The other bulbs stop glowing
- B. The other bulbs continue glowing normally
- C. The other bulbs glow brighter
- D. The other bulbs glow dimmer



**Q9 Part B (Wireman)**

According to the laws of electrolysis, what happens to the mass of substance deposited at an electrode if the quantity of electricity passed through the electrolyte is increased?

- A. The mass deposited remains constant
- B. The mass deposited increases ✓
- C. The mass deposited decreases
- D. The mass deposited changes unpredictably

**Q10 Part B (Wireman)**

Which step is most crucial for enabling the collection of electric current in a silicon-based solar cell?

- A. Doping wafers with impurities
- B. Sandwiching doped and undoped wafers
- C. Attaching metallic strips to the extreme layers ✓
- D. Cutting silicon into thin wafers

**Q11 Part B (Wireman)**

Which condition must be met for a DC shunt generator to successfully charge a battery bank?

- A. The generator field resistance must be minimum.
- B. The generator terminal voltage must be equal to the battery voltage.
- C. The armature resistance must be maximum.
- D. The generator terminal voltage must be higher than the battery voltage. ✓

**Q12 Part B (Wireman)**

In which situation is DC transmission preferred over AC transmission in power networks?

- A. For distribution in city networks
- B. For local substation connections
- C. For rural short transmission lines
- D. For very long-distance underwater cables ✓

**Q13 Part B (Wireman)**

A factory is being constructed in an area with frequent electrical storms. The engineers must design an earthing system. Which factor is critical to prioritize in their design to ensure safety and equipment protection?

- A. Using a single GI pipe for earthing
- B. Using the thickest possible earthing cable
- C. Increasing the number of earthing rods ✓
- D. Placing earthing rods close together

**Q14 Part B (Wireman)**

If a lighting circuit is designed for 230 V supply and one lamp is rated for 110 V, what will happen if the lamp is connected directly in parallel with other 230 V lamps?

- A. The 110 V lamp will operate at normal brightness
- B. The 110 V lamp will be operate much brighter than others and continue to do so.
- C. The 110 V lamp will fail quickly due to overvoltage ✓
- D. The 110 V lamp will be dimmer than others

**Q15 Part B (Wireman)**

What is the purpose of using symbolic representation in engineering drawing?

- A. To communicate information using standardized symbols ✓
- B. To introduce unnecessary complexity into drawings
- C. To decorate drawings using additional geometric shapes
- D. To improve the decorative appearance of drawings

**Q16 Part B (Wireman)**

The property of a material by which it regains its original shape and size after removal of the deforming force is called:

- A. Brittleness
- B. Elasticity ✓
- C. Plasticity
- D. Hardness

**Q17 Part B (Wireman)**

A universal motor is brought into the workshop with the complaint of excessive sparking at the commutator under load. Which is the most likely cause to check first?

- A. Damaged field winding
- B. Worn out carbon brushes ✓
- C. Shorted commutator bar
- D. Faulty armature windings

**Q18 Part B (Wireman)**

A technician needs to select a wire for connecting a 230V control circuit inside a panel. Which specification is most important for this application?

- A. Voltage rating and insulation quality ✓
- B. Color code for identification
- C. Current carrying capacity alone
- D. Flexibility for ease of routing



**Q19 Part B (Wireman)**

What does the BIS code 2330 primarily indicate?

- A. It indicates a nickel steel with high nickel content** ✓
- B. It identifies a free cutting steel grade type
- C. It represents a plain carbon steel grade material
- D. It denotes a chromium steel used in engineering

**Q20 Part B (Wireman)**

Which type of substation would be strategically installed on a high-voltage transmission line to improve network reliability by isolating faults without changing voltage levels?

- A. Step-down transformer substation
- B. Switching substation** ✓
- C. Step-up transformer substation
- D. Traction substation

**Q21 Part B (Wireman)**

An industrial electrician uses an insulation resistance tester on a three-core cable. The measured resistance between core and earth is 900 megaohms. What does this value indicate about the cable's insulation condition?

- A. The cable is unsuitable for industrial environments due to low strength.
- B. The insulation is in good condition and safe for operation.** ✓
- C. The cable has severe moisture ingress and needs drying.
- D. The insulation has broken down and needs immediate replacement.

**Q22 Part B (Wireman)**

A three-phase synchronous motor is connected to an AC supply. If the field excitation is decreased below the value required for unity power factor operation, what is the expected effect on the motor power factor?

- A. The power factor becomes leading
- B. The power factor becomes lagging** ✓
- C. The power factor remains unity
- D. The motor power factor becomes zero

**Q23 Part B (Wireman)**

Which type of centrally monitored fire detection and alarm system is used in large commercial public buildings for fire safety?

- A. Conventional heat detector alarm system
- B. Standalone residential smoke detector units
- C. Manual fire alarm call point system only
- D. Addressable fire detection and alarm system** ✓

**Q24 Part B (Wireman)**

In a series DC circuit, what happens if one component fails or becomes open-circuit?

- A. Current bypasses the failed component
- B. The entire circuit stops working** ✓
- C. Current flows only through working components
- D. Current flows in reverse direction

**Q25 Part B (Wireman)**

An electrician is planning the wiring for a two-room house. Each room requires one ceiling light and two socket outlets. Which of the following wiring layouts provides the most efficient use of wire while maintaining safety?

- A. Using a single radial circuit for all loads
- B. Combining sockets and lights on one ring circuit
- C. Using a ring circuit for sockets and a radial circuit for lights** ✓
- D. Using two separate ring circuits for each room

**Q26 Part B (Wireman)**

What is the function of the charging controller in an AC charging system for electric vehicles?

- A. To control the speed of the electric vehicle
- B. To manage charging communication of vehicles** ✓
- C. To provide direct power to the vehicle's motor
- D. To select the type of charging cable used

**Q27 Part B (Wireman)**

A thread gauge is best suited for which of the following tasks in an ITI fitting shop?

- A. Cleaning the debris off a thread
- B. Checking the pitch of a thread** ✓
- C. Tightening the nut of a bolt
- D. Measuring the diameter of a rod



**Q28 Part B (Wireman)**

In a delta-connected three-phase system, what is the relationship between line voltage and phase voltage?

- A. Line voltage is zero
- B. Line voltage is twice phase voltage
- C. Line voltage equals phase voltage ✓
- D. Line voltage is less than phase voltage

**Q29 Part B (Wireman)**

Which device is commonly used as a source of electromotive force in a simple electric circuit?

- A. Electric battery ✓
- B. Fixed resistor
- C. Electric motor
- D. Incandescent lamp

**Q30 Part B (Wireman)**

Which safety feature in domestic appliances helps prevent electric shock by providing a path for leakage current to the ground?

- A. Neutral wire
- B. Fuse
- C. Insulation
- D. Earthing connection ✓

**Q31 Part B (Wireman)**

A DC shunt motor is running at full load. Which action will increase its speed beyond its rated value?

- A. Increasing armature resistance
- B. Increasing load on the motor
- C. Decreasing field winding current ✓
- D. Decreasing supply voltage

**Q32 Part B (Wireman)**

Why are external resistances connected to the rotor circuit of a slip ring induction motor during starting?

- A. To significantly increase the starting torque ✓
- B. To intentionally decrease the supply voltage
- C. To proportionally reduce the stator frequency
- D. To completely eliminate the iron core losses

**Q33 Part B (Wireman)**

Which of the following parameters must be tested according to quality standards before commissioning a solar power plant?

- A. Module cleaning schedule
- B. Insulation resistance measurement ✓
- C. Cable color coding
- D. Grid voltage setting

**Q34 Part B (Wireman)**

If the resistance of an earth electrode is measured to be 6 ohms, what should be done according to IEE regulations?

- A. Improve the earthing by adding more rods or pouring water ✓
- B. Increase the supply voltage to the circuit
- C. Use a thinner earth wire
- D. Leave the installation as it is

**Q35 Part B (Wireman)**

Solar cells are also known as the building blocks of which devices?

- A. Electrical wires
- B. Transformers
- C. Photovoltaic modules ✓
- D. Batteries

**Q36 Part B (Wireman)**

What is the purpose of the Cable Sheath Continuity Test in underground cables?

- A. To measure the cable insulation resistance
- B. To check the cable conductor resistance
- C. To determine the total cable length
- D. To check if the metallic sheath or armor is continuous ✓

**Q37 Part B (Wireman)**

Which symbol is used in engineering drawing to show a spot face?

- A. A plain rectangle with no center marks
- B. A circle with a horizontal line under it
- C. A plain circle with no internal marks ✓
- D. A small circle with an internal cross



**Q38 Part B (Wireman)**

A domestic MCCB is marked 25A, 6 kA, 230V AC. Which fault current will this MCCB safely interrupt?

- A. Any overload up to 25 A
- B. Any current at 230 V AC
- C. Any fault current up to 6,000 A ✓
- D. Any short-circuit above 25A

**Q39 Part B (Wireman)**

A voltmeter is connected across an open switch in a DC circuit. One side of the switch is connected to the supply voltage, while the other side is connected to the opposite terminal of the supply through a load. Assuming an ideal voltmeter and no current flow, what voltage will the meter read?

- A. The voltmeter will show a fluctuating value
- B. The voltmeter will read zero volts
- C. The voltmeter will read the full supply voltage ✓
- D. The voltmeter will read half the supply voltage

**Q40 Part B (Wireman)**

Choose the correct sequence of steps needed when calculating the inclination angle for a solar power plant installation.

- A. Set panel angle, determine latitude, account for seasonal changes, assess shading
- B. Determine latitude, assess shading, account for seasonal changes, set panel angle ✓
- C. Account for seasonal changes, set panel angle, assess shading, determine latitude
- D. Assess shading, set panel angle, determine latitude, account for seasonal changes

**Q41 Part B (Wireman)**

What role do designated storage areas play in factory safety and cleanliness?

- A. They reduce the need for routine cleaning activities
- B. They improve the speed of machine operations daily
- C. They help prevent clutter and maintain workplace order ✓
- D. They monitor employee tasks and work performance

**Q42 Part B (Wireman)**

A theater lighting designer must ensure that each part of the stage receives the same amount of illumination from overhead lights. If the distance between the lights and the stage is doubled, which action will maintain equal illumination across all areas, according to the laws of illumination?

- A. Use half the number of lights but keep the same intensity
- B. Increase the luminous intensity of each light source by a factor of four ✓
- C. Increase the angle of incidence of the lights
- D. Double the luminous intensity of each light source

**Q43 Part B (Wireman)**

What is a primary advantage of the Bureau of Indian Standards (BIS) codification system for steels?

- A. It provides information limited to historical steel records
- B. It relates steel grades to important material properties ✓
- C. It relies mainly on visual methods for steel identification
- D. It is accepted uniformly by every country worldwide

**Q44 Part B (Wireman)**

In an industrial wiring project, you must select an enclosure for outdoor use exposed to rain. Which IP code meets this requirement most appropriately?

- A. IP55 ✓
- B. IP20
- C. IP41
- D. IP30

**Q45 Part B (Wireman)**

While selecting an institute for training a licensed wireman, which factor should be prioritized to ensure eligibility for the wireman permit?

- A. Opting for the lowest tuition fee
- B. Selecting the institute closest to home
- C. Choosing the shortest training program available
- D. Selecting an accredited institute recognized by the government authority ✓



**Q46 Part B (Wireman)**

Why is it important to estimate the voltage drop when determining cable size in industrial installations?

- A. To select the insulation color
- B. To reduce installation cost only
- C. To determine maximum current rating
- D. To ensure equipment receives sufficient voltage ✓

**Q47 Part B (Wireman)**

Which wiring system is technically unsuitable for permanent commercial electrical installations due to its temporary mechanical support arrangement and low durability?

- A. Conduit wiring system
- B. Casing and capping wiring system
- C. Cleat wiring system ✓
- D. Trunking wiring system

**Q48 Part B (Wireman)**

In context to a cumulatively compounded DC generator, which one statement stated below defines the purpose of the series field winding?

- A. It reduces the mechanical friction of the rotor shaft during high-speed operation.
- B. It provides the initial residual magnetism required to start the voltage buildup process.
- C. It compensates for internal voltage drops by increasing the magnetic flux as the load current increases. ✓
- D. It converts the alternating current induced in the armature into direct current at the terminals.

**Q49 Part B (Wireman)**

While repairing overhead transmission lines, which type of wire joint is most suitable for joining two stranded conductors with high current carrying requirements?

- A. Britannia joint
- B. Knotted tap joint
- C. Western Union joint
- D. Married joint ✓

**Q50 Part B (Wireman)**

Which of the following scenarios demonstrates a real-life consequence of ignoring longitude effects in solar power plant design?

- A. Solar panels neglect weather monitoring input
- B. Solar panels are installed at incorrect latitude
- C. Solar panels use unsuitable materials for region
- D. Solar panels receive suboptimal sunlight due to misaligned tracking schedules ✓

**Q51 Part B (Wireman)**

In a Delta-star connected three-phase transformer, the phase shift between primary and secondary voltages is \_\_\_\_\_.

- A.  $60^\circ$
- B.  $30^\circ$  ✓
- C.  $0^\circ$
- D.  $90^\circ$

**Q52 Part B (Wireman)**

A technician receives a residential electrical installation plan and must prepare a material and cost estimate for both lighting and heating circuits. Which process should be followed according to standard electrical estimation practice?

- A. Exclude minor accessories from the estimate to simplify cost calculation.
- B. Estimate costs using approximate quantities for commonly used materials only.
- C. Prepare separate material lists and calculate the total cost for each circuit individually. ✓
- D. Prepare a single combined material list and estimate the total cost together.

**Q53 Part B (Wireman)**

An industrial PLC control panel requires compliance with electromagnetic compatibility (EMC) standards. Which design change best enhances EMC performance?

- A. Installing metallic cable glands and proper grounding for all entry cables ✓
- B. Increasing the insulation grade of all panel cables
- C. Minimizing the variation in cable insulation color
- D. Using plastic cable glands for all wiring entries



**Q54 Part B (Wireman)**

Which part of a twist drill removes chips from the hole during drilling?

- A. The shank
- B. The flutes
- C. The point
- D. The web



**Q55 Part B (Wireman)**

If an ELCB in a domestic installation trips occasionally without any apparent fault, what could be a probable reason?

- A. Increase in total load beyond ELCB rating
- B. Phase and neutral lines are reversed
- C. Sudden voltage surges from the supply
- D. Small leakage currents from cumulative appliance insulation deterioration



**Q56 Part B (Wireman)**

Which of the following methods is used to detect an oil leak in an underground oil filled cable joint without excavation?

- A. Monitor pressure drop in the oil system
- B. Use a thermal imaging camera
- C. Visually inspect the joint enclosure
- D. Listen for unusual cable sounds



**Q57 Part B (Wireman)**

Why is hazard communication critical in construction environments?

- A. It allows workers to perform tasks without protective equipment
- B. It helps workers understand hazards and safety precautions
- C. It focuses mainly on reporting workplace accidents and incidents
- D. It removes all potential hazards from the construction site



**Q58 Part B (Wireman)**

Which component in a wiring diagram is specifically used to protect against overcurrent?

- A. Pushbutton symbol
- B. Fuse symbol
- C. Lamp symbol
- D. Relay symbol



**Q59 Part B (Wireman)**

Why is the control circuit typically wired separately from the power circuit in electrical schematic drawings?

- A. To combine power and control circuits
- B. To increase the current carrying capacity
- C. To facilitate easy maintenance and identification
- D. To reduce the cost of conductors



**Q60 Part B (Wireman)**

When an electric vehicle is connected to a charging station, which process ensures that only authorized users can access charging services securely and efficiently?

- A. Collecting charging-related data through EVSE-CMS
- B. Managing billing information through EVSE-CMS
- C. Grid monitoring through EVSE-CMS
- D. User authorization through EVSE-CMS



**Q61 Part B (Wireman)**

During the open circuit test, transformer core loss depends on \_\_\_\_\_.

- A. Winding resistance only
- B. Secondary load current
- C. Leakage reactance
- D. Maximum core flux density



**Q62 Part B (Wireman)**

While planning lighting for a machine assembly area, an engineer calculates the required number of luminaires. If the area is 60 square meters and the recommended illumination level is 300 lux, what is the total luminous flux required for the area?

- A. 12000 lumens
- B. 21000 lumens
- C. 9000 lumens
- D. 18000 lumens



**Q63 Part B (Wireman)**

Select the relay type that compares currents at two points to detect faults within a protected zone.

- A. Distance relay
- B. Differential relay
- C. Instantaneous overcurrent relay
- D. Inverse time overcurrent relay



**Q64 Part B (Wireman)**

If a universal motor runs smoothly at low speed but emits a high-pitched noise at high speed, what is the probable cause?

- ☒ A. Incorrect brush angle
- ☐ B. Loose lamination stack
- ☐ C. Open field winding
- ☐ D. Faulty centrifugal switch

**Q65 Part B (Wireman)**

Choose the correct sequence for erecting an overhead transmission line.

1. Foundation work
2. Tower erection
3. Conductor stringing
4. Insulator installation

- ☐ A. Foundation work, Conductor stringing, Tower erection, Insulator installation
- ☒ B. Foundation work, Tower erection, Insulator installation, Conductor stringing
- ☐ C. Tower erection, Foundation work, Conductor stringing, Insulator installation
- ☐ D. Insulator installation, Foundation work, Tower erection, Conductor stringing

**Q66 Part B (Wireman)**

Which statement best describes an isolating switch?

- ☐ A. It is an automatic electronic switch
- ☐ B. It is a programmable digital switch
- ☒ C. It is a manually operated mechanical switch
- ☐ D. It is a remote-controlled hydraulic switch

**Q67 Part B (Wireman)**

Which property of a resistor determines how much it opposes the flow of electric current in a DC circuit?

- ☐ A. Color code
- ☒ B. Resistance value
- ☐ C. Physical size
- ☐ D. Power rating

**Q68 Part B (Wireman)**

Which of the following equipment provides surge protection in substations?

- ☐ A. Main busbar
- ☒ B. Lightning arrester
- ☐ C. Overcurrent relay
- ☐ D. Line isolator

**Q69 Part B (Wireman)**

Which of the following is NOT a characteristic of a block diagram?

- ☐ A. It highlights the functional relationships between the main system components
- ☐ B. It displays the overall system functions without showing complex connection paths
- ☒ C. It includes the detailed internal construction details of individual components
- ☐ D. It utilizes simple geometric blocks to represent individual critical subsystems

**Q70 Part B (Wireman)**

If copper wire is replaced with aluminum wire in a joint, which electrical property is most significantly affected?

- ☒ A. Electrical resistance of the joint
- ☐ B. Magnetic susceptibility of the joint
- ☐ C. Magnetic permeability of the wire
- ☐ D. Insulation strength of the conductor

**Q71 Part B (Wireman)**

What does it mean when the galvanometer in a Wheatstone bridge shows zero deflection?

- ☐ A. The power supply is disconnected completely
- ☐ B. The bridge contains a short-circuited path
- ☐ C. Exactly three out of four resistances are identical
- ☒ D. The bridge has reached a balanced condition

**Q72 Part B (Wireman)**

Which generator type is least suitable for constant voltage applications?

- ☒ A. Series DC Generator
- ☐ B. Separately Excited DC Generator
- ☐ C. Compound DC Generator
- ☐ D. Shunt DC Generator



**Q73** Part B (Wireman)

Which component in a lead acid cell is specifically made by repeated charging and discharging?

- A. Container
- B. Separators
- C. Electrolyte
- D. Plante plates



**Q74** Part B (Wireman)

For fitting operations on thin sheet metal, which cutting tool offers the best control and precision?

- A. Standard hacksaw
- B. Hand snips
- C. Cold chisel
- D. Flat hand file



**Q75** Part B (Wireman)

If the current in a coil lags the voltage by  $60^\circ$ , what is the circuit's power factor?

- A. 0.5 leading
- B.  $\frac{\sqrt{3}}{2}$  leading
- C.  $\frac{\sqrt{3}}{2}$  lagging
- D. 0.5 lagging



## Part B (Wireman)

75 Questions • Answer Key

## Q1 Part B (Wireman)

Which part of a Vacuum Circuit Breaker (VCB) helps to maintain insulation and protects the breaker from external environmental influences?

- A. Vacuum interrupter unit
- B. Trip coil assembly
- C. Insulating casing ☒
- D. Drive rod assembly

## Q2 Part B (Wireman)

A circuit contains three resistors connected in series with resistances of  $2\ \Omega$ ,  $3\ \Omega$ , and  $5\ \Omega$  across a  $20\ \text{V}$  DC power supply. According to Kirchhoff's Voltage Law, what is the voltage drop across the  $3\ \Omega$  resistor?

- A.  $6\ \text{V}$  ☒
- B.  $8\ \text{V}$
- C.  $2\ \text{V}$
- D.  $10\ \text{V}$

## Q3 Part B (Wireman)

If 5 workers, working at the same rate, complete a job in 12 days, how many days will 10 workers take to complete the same job?

- A. 6 days ☒
- B. 5 days
- C. 12 days
- D. 10 days

## Q4 Part B (Wireman)

Why is it necessary to monitor isolation resistance in fuel cell electric vehicles?

- A. To improve the acceleration performance
- B. To increase the driving range of the vehicle
- C. To reduce the emission levels of the vehicle
- D. To prevent potential electric shock to users and maintenance personnel ☒

## Q5 Part B (Wireman)

What should a Process Hazard Analysis methodology be based on?

- A. The production schedule and operating time requirements
- B. The size of the workforce involved in the process
- C. The complexity of the process and associated hazards ☒
- D. A random selection of hazards and process conditions

## Q6 Part B (Wireman)

A control circuit uses a timer relay to switch ON a load after a set delay. If the load energizes immediately when the circuit is powered, what is most likely wrong?

- A. The timer relay is bypassed or its contacts are shorted ☒
- B. The load is faulty and not responding
- C. The control transformer is incorrectly rated
- D. The timer setting is longer than required

## Q7 Part B (Wireman)

Which part of a wattmeter connects in parallel with the load to measure voltage?

- A. Fixed coil
- B. Current coil
- C. Potential coil ☒
- D. Shunt capacitor

## Q8 Part B (Wireman)

A transformer is designed to operate with maximum efficiency near full-load conditions and is installed in a grid substation. It is classified as a/an:

- A. Isolation transformer
- B. Instrument transformer
- C. Distribution transformer
- D. Power transformer ☒



**Q9 Part B (Wireman)**

What will happen if the secondary winding of a current transformer remains open while the transformer is energized?

- A. It will ensure accurate current measurement by reducing the current at the secondary
- B. It will induce high voltage at secondary winding and cause equipment damage ✓
- C. It will prevent overheating of the conductors of the supply lines
- D. It will protect the power system from the short circuited faults

**Q10 Part B (Wireman)**

Why a cumulative compound DC motor is considered for heavy-duty machines with varying loads, such as rolling mills?

- A. It offers the fastest speed changes
- B. It always runs at maximum efficiency
- C. It prevents any speed drop under load
- D. It combines good starting torque and stable speed ✓

**Q11 Part B (Wireman)**

If 5 identical components weigh 20 kg, what is the weight of one component?

- A. 2 kg
- B. 5 kg
- C. 10 kg
- D. 4 kg ✓

**Q12 Part B (Wireman)**

What is the function of dilute sulfuric acid electrolyte in a lead-acid battery?

- A. Serves as the active material of the negative electrode plate
- B. Acts as the separator and prevents direct contact between the electrodes
- C. Functions as an insulator and prevents electrical conduction between the electrodes
- D. Acts as the electrolyte and allows ionic conduction between the electrodes ✓

**Q13 Part B (Wireman)**

Which geometric shape is most commonly used for title blocks and object outlines in engineering drawings?

- A. Pentagon
- B. Hexagon
- C. Rectangle ✓
- D. Triangle

**Q14 Part B (Wireman)**

Which component in a solar DC domestic system prevents overcharging of the battery?

- A. Charge controller ✓
- B. Solar panel
- C. Inverter
- D. Battery

**Q15 Part B (Wireman)**

Which safety measure should be followed when replacing a CFL or LED lamp connected to a DC power supply?

- A. Wear gloves while replacing the lamp
- B. Replace the lamp as quickly as possible
- C. Use a wet cloth to hold the lamp
- D. Turn off the power supply before handling the lamp ✓

**Q16 Part B (Wireman)**

Which standard grading is typically used for cables in a domestic three-phase supply system?

- A. Extra-high voltage cable insulation
- B. Grade III insulation cable
- C. Bare conductor without insulation
- D. Grade I insulation cable ✓

**Q17 Part B (Wireman)**

When drawing a complex assembly with hidden details, which instrument is crucial for accurately representing hidden lines?

- A. Protractor
- B. Scale
- C. Mini-drafter ✓
- D. Eraser



**Q18 Part B (Wireman)**

What is the effect on the synchronous speed of a three-phase induction motor when the supply frequency is increased while keeping the number of poles constant?

- A. The synchronous speed remains unchanged
- B. The synchronous speed decreases
- C. The synchronous speed reverses direction
- D. The synchronous speed increases ✓

**Q19 Part B (Wireman)**

Which type of wire is recommended for heavy current carrying in main distribution boards?

- A. Single core wire ✓
- B. Twin flexible wire
- C. Flexible wire
- D. Multi-strand bell wire

**Q20 Part B (Wireman)**

Which of the following describes the purpose of portable earthing during electrical maintenance?

- A. It provides a temporary path for fault current to flow safely to ground. ✓
- B. It prevents earth leakage from electrical panels.
- C. It is used to test insulation resistance of conductors.
- D. It disconnects equipment from the supply for repairs.

**Q21 Part B (Wireman)**

During precision assembly, which caliper type is least likely to introduce parallax error?

- A. Spring caliper with pointed measuring legs
- B. Transfer caliper for internal measurements
- C. Steel rule used with inside calipers
- D. Vernier caliper with clear scale markings ✓

**Q22 Part B (Wireman)**

A distributed winding is being designed for a stator core with 48 slots and 8 poles for a three-phase system. What will be the slots per pole per phase?

- A. 6
- B. 2 ✓
- C. 4
- D. 3

**Q23 Part B (Wireman)**

A theater manager is selecting lamps for stage lighting, aiming to minimize both heat generation and maintenance costs. Considering lamp disadvantages, which type of lamp should NOT be used to achieve these goals?

- A. LED lamp
- B. Halogen lamp
- C. Incandescent lamp ✓
- D. Fluorescent lamp

**Q24 Part B (Wireman)**

What is the purpose of using earth connection in electrical appliances?

- A. To improve the overall performance of appliances
- B. To decrease the electrical energy consumed daily
- C. To enhance safety against electric shock hazards ✓
- D. To reduce the manufacturing cost of appliances

**Q25 Part B (Wireman)**

A mercury tilt switch is mainly operated by \_\_\_\_\_.

- A. Magnetic force
- B. Gravity action ✓
- C. Temperature change
- D. Air pressure

**Q26 Part B (Wireman)**

A motor stator requires six coils to be wound using concentric winding. If the smallest coil has 10 turns, and each subsequent layer increases by 2 turns, how many turns will the largest coil have?

- A. 20 turns ✓
- B. 14 turns
- C. 16 turns
- D. 22 turns

**Q27 Part B (Wireman)**

A fan circuit's regulator has multiple resistance steps. What happens electrically when the knob is turned to a higher setting?

- A. Circuit resistance increases, decreasing fan current
- B. Circuit resistance decreases, increasing voltage at fan ✓
- C. Fan motor receives less voltage, slowing speed
- D. Fan is disconnected from supply temporarily



**Q28 Part B (Wireman)**

An industrial plant in a region with frequent electrical storms wants to protect both its equipment and personnel from electrical faults. Which approach addresses safety and equipment protection based on the distinction between grounding and earthing?

- A. Connecting all equipment directly to ground without separate grounding for electronics
- B. Connecting equipment frames to the earth to divert fault currents and using a separate grounding system for sensitive electronics ✓
- C. Isolating equipment from both ground and earth to avoid surges
- D. Using only grounding to protect personnel without earth connection for equipment

**Q29 Part B (Wireman)**

Which safety device is designed to detect cable electrical leakage and disconnect the circuit?

- A. Earth leakage circuit breaker ✓
- B. Relay
- C. Fuse
- D. Miniature circuit breaker

**Q30 Part B (Wireman)**

Which of the following is NOT a purpose of using dividers in fitting operations?

- A. Transferring distances from a rule
- B. Measuring the thickness of plates ✓
- C. Marking circles on a surface
- D. Dividing a line into equal parts

**Q31 Part B (Wireman)**

What is the purpose of a pre-molded joint in underground cables?

- A. To terminate the cable at equipment
- B. To regulate the cable voltage
- C. To securely connect two or more cables ✓
- D. To insulate the cable ends

**Q32 Part B (Wireman)**

Which function is performed by turning the selector switch on a digital multimeter?

- A. Adjusting display brightness
- B. Choosing measurement type ✓
- C. Resetting the instrument
- D. Storing readings

**Q33 Part B (Wireman)**

How many terminals are available for connection in a single-pole, two-way switch?

- A. Three terminals ✓
- B. Four terminals
- C. Five terminals
- D. Two terminals

**Q34 Part B (Wireman)**

Which type of cell can be recharged by passing electric current in the reverse direction?

- A. Dry cell
- B. Secondary cell ✓
- C. Primary cell
- D. Fuel cell

**Q35 Part B (Wireman)**

Which of the following steps helps prevent void formation during epoxy resin casting in underground cable joints?

- A. Slowly pour resin while tapping the joint body ✓
- B. Mix resin near the joint after sealing
- C. Pour resin quickly to finish before hardening
- D. Seal the joint body before pouring resin

**Q36 Part B (Wireman)**

An electrical panel needs connections that resist corrosion in a coastal environment. Which wire type is best suited?

- A. Aluminum wire
- B. PVC insulated copper wire
- C. Bare copper wire
- D. Tinned copper wire ✓



**Q37 Part B (Wireman)**

A panel has wires labeled with cable markers like 1A, 1B, 2A, 2B. What does this labeling system most likely indicate?

- A. The labels show only the wire size and insulation type.
- B. Each wire is paired according to circuit numbers and phase identifiers. ✓
- C. It indicates the manufacturer and batch number of the wire.
- D. It is a color code for distinguishing between wire colors.

**Q38 Part B (Wireman)**

An industrial workshop requires 300 lux of uniform illumination on workbenches. The area to be illuminated is 120 square meters. If the utilization factor is 0.7 and the maintenance factor is 0.8, what should be the total luminous flux provided by the lighting installation?

- A. 54000 lumens
- B. 42800 lumens
- C. 37500 lumens
- D. 64286 lumens ✓

**Q39 Part B (Wireman)**

Which component in the wind power generating station ensures that the wind turbine faces the wind direction for maximum efficiency?

- A. Tower
- B. Yaw mechanism ✓
- C. Brake system
- D. Gearbox

**Q40 Part B (Wireman)**

Which parameter must be regulated by a charge controller to prevent battery overcharging in a solar plant?

- A. Voltage applied to battery terminals ✓
- B. Tilt angle of the solar panel
- C. Solar irradiance level
- D. AC output frequency of inverter

**Q41 Part B (Wireman)**

Four resistors of  $5\ \Omega$  each are connected in series. What is the equivalent resistance of the circuit?

- A.  $20\ \Omega$  ✓
- B.  $10\ \Omega$
- C.  $5\ \Omega$
- D.  $15\ \Omega$

**Q42 Part B (Wireman)**

A technician receives a mild shock when touching a faulty machine but does not lose consciousness. What is the most likely effect of the electric current in this scenario?

- A. Immediate cardiac arrest leading to complete unconsciousness
- B. Sudden respiratory paralysis resulting in a prolonged coma
- C. Widespread internal tissue destruction and severe skin burns
- D. Involuntary muscle contraction and a sharp tingling sensation ✓

**Q43 Part B (Wireman)**

Which symbol is commonly used in wiring diagrams to represent a single-pole switch?

- A. A continuous zigzag layout featuring multiple sharp alternating bends
- B. A plain rectangle layout featuring two horizontal internal detail lines
- C. A small circle layout featuring a centered dot and no attached lines
- D. A straight line layout featuring a center break and a diagonal lever ✓

**Q44 Part B (Wireman)**

Which part of a die ensures the alignment of the die with the workpiece during threading?

- A. The central hole
- B. The adjusting screw
- C. The lead-in chamfer ✓
- D. The split slot



**Q45 Part B (Wireman)**

In a control panel, why is it necessary to select a contactor with a higher making capacity than the running current of the connected load?

- A. To reduce the overall cost of the control panel
- B. To ensure the contactor has a higher voltage rating
- C. To withstand inrush currents during circuit switching ✓
- D. To provide overload protection for the main circuit

**Q46 Part B (Wireman)**

What best describes a short circuit in an electrical system?

- A. A connection with unusually high resistance
- B. A connection where no current flows due to a break
- C. An unintended path with zero or very low resistance ✓
- D. An intended path with normal resistance

**Q47 Part B (Wireman)**

Which factors determine the synchronous speed of the rotating magnetic field in a three-phase induction motor?

- A. Rotor resistance and load torque
- B. Stator voltage and power factor
- C. Supply frequency and number of poles ✓
- D. Rotor current and motor slip

**Q48 Part B (Wireman)**

A raceway is used in electrical and control panel installations. What is the primary purpose of using a raceway in wiring systems?

- A. To convert AC supply into DC supply for control circuits
- B. To carry and organize wires neatly between components ✓
- C. To reduce the resistance of conductors during operation
- D. To increase the voltage capacity of electrical wires

**Q49 Part B (Wireman)**

A rod of length 2 m is cut into  $\frac{1}{4}$ m pieces. How many pieces are obtained?

- A. 10
- B. 6
- C. 8 ✓
- D. 4

**Q50 Part B (Wireman)**

According to Indian Electricity (IE) safety practices, what is the first mandatory action before performing maintenance on a commercial electrical wiring installation?

- A. Increase the supply voltage to check load condition
- B. Connect all exposed conductors together before inspection
- C. Tighten all terminal connections in the distribution board
- D. Isolate and switch OFF the main electrical supply ✓

**Q51 Part B (Wireman)**

Which type of commercial wiring system uses low-resistance copper conductors of suitable current-carrying capacity to distribute electrical power to lighting circuits and socket outlets?

- A. Communication wiring
- B. Power wiring ✓
- C. Entertainment wiring
- D. Control wiring

**Q52 Part B (Wireman)**

What is a critical step before distributing PPE to workers in a new manufacturing plant?

- A. Schedule regular inspections and maintenance of all PPE
- B. Purchase sufficient quantities of PPE for all workers
- C. Assess workplace hazards and select appropriate PPE ✓
- D. Provide orientation on workplace rules and procedures

**Q53 Part B (Wireman)**

What will be the impact on solar panel performance if a high-latitude installation uses the same tilt angle as an equatorial installation?

- A. Solar panels capture less sunlight in winter months ✓
- B. Solar panels overheat throughout the year
- C. Solar panels degrade rapidly in high temperatures
- D. Solar panels experience frequent wiring faults



**Q54 Part B (Wireman)**

What is the effect of using a conductor with insufficient current-carrying capacity in a low-voltage (LV) distribution system?

- A. It improves system efficiency by reducing conductor resistance
- B. It increases the transmission capacity of the feeder
- C. It causes overheating, voltage drop, and increased power losses ✓
- D. It maintains stable voltage regardless of load conditions

**Q55 Part B (Wireman)**

An industrial panel uses a cartridge fuse rated at 250V, 32A. If a technician replaces it with a 16A fuse of the same voltage rating, what is the likely outcome during normal operation at 28A?

- A. The fuse will blow even during normal load conditions. ✓
- B. The fuse will allow equipment to run at a higher current safely.
- C. The fuse will offer improved protection from overloads without any drawback.
- D. The fuse voltage rating will cause insulation breakdown in the circuit.

**Q56 Part B (Wireman)**

Which type of MCB tripping curve is most appropriate for protecting standard domestic lighting circuits?

- A. Type A MCB
- B. Type B MCB ✓
- C. Type D MCB
- D. Type C MCB

**Q57 Part B (Wireman)**

A technician is using the Murray loop test to locate a ground fault in a two-core cable. Which essential component must be connected to complete the test setup?

- A. A known resistance bridge circuit ✓
- B. A digital voltmeter
- C. A clamp meter or tong tester
- D. An earth leakage relay

**Q58 Part B (Wireman)**

A drawing specifies a hole with 12.00 +0.02/-0.00 mm. What is the minimum permissible diameter of the hole?

- A. 12.01 mm
- B. 12.00 mm ✓
- C. 12.02 mm
- D. 12.20 mm

**Q59 Part B (Wireman)**

Which factor is important when selecting a location for a distribution board in domestic wiring?

- A. Proximity to the load centre. ✓
- B. Brand of the distribution board.
- C. Type of wiring used.
- D. Number of rooms in the building.

**Q60 Part B (Wireman)**

If a lightly loaded DC shunt generator experiences a continuous increase in its external load, how will its efficiency behave?

- A. Efficiency will increase at a constant rate with load.
- B. Efficiency will remain constant at all load levels.
- C. Efficiency will decrease steadily as load increases.
- D. Efficiency will initially increase then decrease after a certain point. ✓

**Q61 Part B (Wireman)**

A house has a three-phase supply, but only single-phase loads are connected. How should the distribution board be configured?

- A. Install a single-phase distribution board
- B. Use only one phase for all circuits
- C. Connect all loads to a single phase busbar
- D. Distribute single-phase loads evenly across all three phases ✓

**Q62 Part B (Wireman)**

When testing a three-phase motor feeder, the insulation resistance readings between phase conductors are as follows: L1-L2: 60 MΩ, L2-L3: 58 MΩ, L1-L3: 61 MΩ. What does this indicate about the wiring?

- A. The feeder has an open circuit in one of the phases
- B. There is an inter-turn short circuit in the motor windings
- C. Immediate replacement of the cable is required
- D. The insulation between phase conductors is satisfactory ✓



**Q63 Part B (Wireman)**

During the short circuit test of a single-phase transformer, the wattmeter reading indicates which type of loss in a transformer?

A. Copper loss at rated-current operating condition ✓

B. Dielectric loss inside transformer insulation oil

C. Hysteresis loss under no-load operating condition

D. Core eddy current loss at rated magnetic flux

**Q64 Part B (Wireman)**

Which of the following best describes the primary function of control wiring in appliance circuits?

A. To provide direct power supply to appliances

B. To ground the electrical system for safety

C. To connect only protective devices

D. To transmit commands between control devices and lighting ✓

**Q65 Part B (Wireman)**

What is the power factor of a purely resistive AC circuit?

A. It is less than 1

B. It is equal to 0

C. It is greater than 1

D. It is equal to 1 ✓

**Q66 Part B (Wireman)**

A project manager is preparing a cost estimate for a new wiring installation. The estimate accounts for materials, labor, overhead, and profit. Which method best ensures the project stays financially secure if unexpected price increases or additional work occur?

A. Including an appropriate contingency allowance in the estimate ✓

B. Excluding the contingency from the estimate

C. Relying solely on historical cost data

D. Ignoring potential risks in the estimate

**Q67 Part B (Wireman)**

If a differential compound generator is used in variable load applications, what will be the effect on terminal voltage?

A. Terminal voltage remains unchanged with increasing load

B. Terminal voltage decreases with increase in load current ✓

C. Terminal voltage fluctuates randomly

D. Terminal voltage increases with increasing load

**Q68 Part B (Wireman)**

Which device is commonly used to measure voltage in a circuit with a digital display?

A. Digital voltmeter ✓

B. Digital ohmmeter

C. Digital ammeter

D. Digital wattmeter

**Q69 Part B (Wireman)**

In an electric vehicle, which approach ensures both physical and visual safety when accessing high voltage components during maintenance?

A. Marking high voltage areas with non-standard symbols

B. Using enclosures without any color coding

C. Applying only color coding without physical barriers

D. Using enclosures with electrical protection barriers and standardized high voltage color coding ✓

**Q70 Part B (Wireman)**

Which part of an electric iron controls the temperature by switching the current on or off?

A. Heating coil

B. Soleplate

C. Thermostat ✓

D. Indicator lamp

**Q71 Part B (Wireman)**

A technician needs to maximize the lifespan of a lead-acid battery used in a solar backup system. Which charging and discharging practice should they strictly avoid to prevent weakening of the battery's plate structure?

A. Charging the battery at a moderate rate over long periods

B. Discharging the battery under light loads

C. Maintaining the battery at constant voltage during use

D. Charging and discharging the battery rapidly ✓



**Q72** Part B (Wireman)

Which of the following statements describes a difference between incandescent lamps and fluorescent lamps used in illumination?

- A. Incandescent lamps are mainly used for decorative lighting, while fluorescent lamps are only for commercial use.
- B. Incandescent lamps are always tube-shaped, while fluorescent lamps are always round-shaped.
- C. Incandescent lamps produce light by heating a filament, while fluorescent lamps use a gas discharge process. ☒
- D. Incandescent lamps are found only in table lamps, while fluorescent lamps are used only in ceiling fixtures.

**Q73** Part B (Wireman)

Which action causes the failure of voltage buildup in a self-excited DC generator?

- A. Maintaining proper residual magnetism
- B. Connecting the load after voltage builds up
- C. Running the generator at rated speed
- D. Increasing the field resistance beyond the critical resistance ☒

**Q74** Part B (Wireman)

Which of the following is an example of equipment that uses mercury cells?

- A. Kitchen ovens
- B. Televisions
- C. Ceiling fans
- D. Calculators ☒

**Q75** Part B (Wireman)

For a pure sinusoidal AC voltage, the RMS value is obtained by multiplying the peak value by \_\_\_\_\_.

- A. 1
- B.  $\sqrt{2}$
- C.  $\frac{1}{\sqrt{2}}$  ☒
- D.  $\frac{1}{2}$

