



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARDS
सीईएन - 05/25 - जेई, डीएमएस, सीएमए - CEN - 05/25 - JE, DMS, CMA



Test Date	02/07/2026
Test Time	9:00 AM - 11:00 AM
Subject / Exam Group	RRB JE Stage 2 Electronics and Allied Engineering

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

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

Section : General Abilities

Q.1 The primary method of managing biodegradable domestic waste after collection is _____.

- Ans
- ☒ 1. sending for recycling
 - ☒ 2. conversion into compost
 - ☐ 3. burnt in open air
 - ☐ 4. throwing into sewers

Q.2 Which new warship was commissioned by the Indian Navy in November, 2025, to strengthen anti-submarine and coastal defence capabilities?

- Ans
- ☒ 1. INS Mahe
 - ☐ 2. INS Vikrant
 - ☐ 3. INS Arnala
 - ☐ 4. INS Ikshak

Q.3 Which of the following satellites was launched on November 2, 2025, to enhance the Indian Navy's secure communication network and maritime surveillance capabilities?

- Ans
- ☐ 1. GSAT-6A
 - ☐ 2. Cartosat-3
 - ☒ 3. CMS-03 (GSAT-7R)
 - ☐ 4. RISAT-2B

Q.4 Which of the following indicators is NOT typically used to measure sustainable development?

- Ans
- ☒ 1. Gross Domestic Product (GDP) growth rate
 - ☐ 2. Biocapacity
 - ☐ 3. Human Development Index (HDI)
 - ☐ 4. Ecological Footprint

Q.5 Which of the following statements best describes the behavior of magnetic field lines around a straight current-carrying conductor?

- Ans
- ☐ 1. They radiate straight outward from the wire.
 - ☐ 2. They are parallel straight lines along the wire.
 - ☒ 3. They form concentric circles centered on the conductor.
 - ☐ 4. They change direction randomly along the wire.

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Q.6	The Kol Rebellion (1831–32) mainly affected which plateau region?
Ans	✖ 1. Deccan Plateau ✔ 2. Chotanagpur Plateau ✖ 3. Meghalaya Plateau ✖ 4. Malwa Plateau
Q.7	The atmospheric component that remains largely unreactive is _____.
Ans	✖ 1. Oxygen ✔ 2. Argon ✖ 3. Carbon dioxide ✖ 4. Methane
Q.8	If 10 grams of salt are dissolved in 100 mL of water, which component is the solute?
Ans	✔ 1. Salt only ✖ 2. Both salt and water ✖ 3. Water only ✖ 4. Neither
Q.9	According to the Article 75 of the Indian Constitution, the total number of ministers (including the Prime Minister) in the Council of Ministers shall NOT exceed what percentage of the total members of the House of the People, i.e., Lok Sabha?
Ans	✔ 1. 15% ✖ 2. 10% ✖ 3. 20% ✖ 4. 25%
Q.10	A construction worker needs to lift a heavy metal beam using a lever but has a limited length of plank. Which adjustment would allow the worker to lift the beam with the least effort if the position of the fulcrum can be changed but the plank length remains constant?
Ans	✖ 1. Keep the fulcrum fixed at any point ✖ 2. Place the fulcrum at the center of the plank ✖ 3. Move the fulcrum closer to the worker ✔ 4. Move the fulcrum closer to the beam
Q.11	The term 'smog' is a combination of _____.
Ans	✖ 1. Fog and clouds ✔ 2. Smoke and fog ✖ 3. Smog and mist ✖ 4. Smoke and haze
Q.12	According to Thomson's model, how are electrons arranged in an atom?
Ans	✔ 1. Embedded in a positively charged sphere like seeds in a watermelon ✖ 2. Randomly placed inside the nucleus ✖ 3. Orbiting around neutrons in elliptical paths ✖ 4. Moving in fixed orbits around the nucleus
Q.13	A field exposed to excessive pesticide use shows a sharp decline in earthworm population. The resulting effect on soil is:
Ans	✖ 1. Increased water retention ✔ 2. Reduced soil fertility ✖ 3. Improved aeration ✖ 4. Enhanced decomposition

Q.14 A student pushes a heavy box that is already moving across a rough floor. If the force applied by the student is exactly equal to the frictional force opposing the motion, what will happen to the box?

- Ans**
- ✓ 1. The box will move at a constant speed
 - ✗ 2. The box will gradually come to rest
 - ✗ 3. The box will move at increasing speed
 - ✗ 4. The box will accelerate forward

Q.15 When was the 11th National Handloom Day celebrated across India under the coordination of the Ministry of Textiles?

- Ans**
- ✗ 1. October 7, 2025
 - ✗ 2. November 7, 2025
 - ✗ 3. September 7, 2025
 - ✓ 4. August 7, 2025

Q.16 Which pair of sectors is commonly addressed together in State Action Plan on Climate Change (SAPCC) adaptation planning?

- Ans**
- ✓ 1. Water resources and health systems
 - ✗ 2. Heavy industry and entertainment
 - ✗ 3. Information technology and space research
 - ✗ 4. Textile design and fashion marketing

Q.17 Which function returns the smallest value?

- Ans**
- ✗ 1. MAX()
 - ✗ 2. AVERAGE
 - ✗ 3. COUNT()
 - ✓ 4. MIN()

Q.18 Which Quick Style type is applied only to selected words or individual characters within a paragraph in MS Word 2010?

- Ans**
- ✗ 1. Linked styles
 - ✓ 2. Character styles
 - ✗ 3. Page styles
 - ✗ 4. Paragraph styles

Q.19 Which of the following is/are the primary reasons to fall in the trap of Email fraud or phishing?

- A) Paying attention to lucrative offers.
B) Not checking on links or attachments from unknown senders
C) Providing official information via email
D) Paying attention to the company logo sent in the email

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

Q.20 Which of the following options must be DISABLED before manually setting the date and time in Windows?

- Ans**
- ✗ 1. Enable multiple clocks
 - ✓ 2. Set time automatically
 - ✗ 3. Set time zone globally
 - ✗ 4. Night Light

Q.21	Which type of computer virus attaches itself to executable files and gets activated when the file is run?
Ans	☐ 1. Worm ☒ 2. File Infector Virus ☐ 3. Macro Virus ☐ 4. Boot Sector Virus
Q.22	Which of the following Articles states about the right of individual to form associations or unions or co-operative societies?
Ans	☐ 1. Article 19 (1) (a) ☐ 2. Article 19 (1) (d) ☐ 3. Article 19 (1) (b) ☒ 4. Article 19 (1) (c)
Q.23	Which of the following best describes the velocity-time graph for an object moving with uniform velocity?
Ans	☐ 1. A curved line above the time axis ☒ 2. A straight horizontal line parallel to the time axis ☐ 3. A straight line sloping upwards from the time axis ☐ 4. A line starting from the origin and sloping upwards
Q.24	A factory plans to install a powerful electromagnet for lifting metal scraps. To maximize the magnetic field strength around the coil, which of the following combinations would be most effective?
Ans	☐ 1. Using a steel core, decreasing coil turns, and lowering current ☐ 2. Using an air core, decreasing coil turns, and keeping current constant ☐ 3. Using a copper core, increasing coil turns, and lowering current ☒ 4. Using a soft iron core, increasing coil turns, and increasing current through the coil
Q.25	How can we locate a file with a known extension but an unknown name in a large directory?
Ans	☐ 1. Using the dir command ☒ 2. Using the Search box in File Explorer with *.ext ☐ 3. Through File Explorer ☐ 4. Checking the Recycle Bin
Q.26	You want to automatically advance slides with narration and animations during a presentation. Which MS PowerPoint feature should you use to achieve this?
Ans	☒ 1. Rehearse Timings ☐ 2. Slide Sorter ☐ 3. Action Buttons ☐ 4. Presenter View
Q.27	Which of the following statements best describes how the power of accommodation enables the human eye to focus on both near and distant objects?
Ans	☐ 1. The cornea provides all the focusing power required for clear vision ☐ 2. The iris controls the amount of light entering and helps to focus ☐ 3. The retina moves forward and backward to adjust the focus ☒ 4. The eye lens changes its focal length by altering its shape through ciliary muscle action

Q.28	A student accidentally spills some hydrochloric acid on a table. Which substance should be used to neutralise the acid safely?
Ans	☐ 1. Lemon juice ☒ 2. Baking soda solution ☐ 3. Vinegar ☐ 4. Sugar solution
Q.29	Which of the following is a primary mission under India's National Action Plan on Climate Change (NAPCC)?
Ans	☐ 1. National Nutrition Mission ☐ 2. National Highway Development Project ☐ 3. National Rural Livelihood Mission ☒ 4. National Solar Mission
Q.30	Biomedical waste handlers in a hospital are at risk of occupational hazards. The most effective way to protect them from exposure to infectious materials is:
Ans	☒ 1. Use of protective equipment and safe handling ☐ 2. Segregation of waste into color-coded bins ☐ 3. Regular medical check-ups ☐ 4. Vaccination against common infections
Q.31	The Mappila Uprisings of the 19 th century occurred mainly in which region of India?
Ans	☐ 1. Konkan region of Maharashtra ☐ 2. Coromandel Coast of Tamil Nadu ☐ 3. Sunderbans region of West Bengal ☒ 4. Malabar region of Kerala
Q.32	In a real-life scenario, a chemist discovers a compound with the formula $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_2\text{OH}$. What is the correct IUPAC name for this compound?
Ans	☐ 1. 2-methylhexanol ☐ 2. 3-methylhexanol ☒ 3. 3-methylpentan-1-ol ☐ 4. 4-methylpentanol
Q.33	If cell A1 = 10 and B1 = 20, what will `=A1+B1` return?
Ans	☒ 1. 30 ☐ 2. 200 ☐ 3. Error ☐ 4. 1020
Q.34	Which British colonial building in Mumbai, completed in 1888, showcases a blend of Victorian Gothic and Indian architectural elements?
Ans	☒ 1. Chhatrapati Shivaji Maharaj Terminus ☐ 2. Gateway of India ☐ 3. Bombay Town Hall ☐ 4. Rajabai Clock Tower

Q.35 Consider the following statements regarding chemical reactions and choose the correct option.

Statement I: Every reaction in which two or more reactants combine to form a single product is classified as a combination reaction regardless of heat change.

Statement II: The reaction $\text{CaO(s)} + \text{H}_2\text{O(l)} \rightarrow \text{Ca(OH)}_2\text{(aq)} + \text{heat}$ is both a combination reaction and an exothermic reaction.

- Ans**
- ☐ 1. Only Statement I is correct
 - ☐ 2. Both statements are incorrect
 - ☒ 3. Both statements are correct
 - ☐ 4. Only Statement II is correct

Q.36 Who won the maximum number of medals at the 38th National Games of India?

- Ans**
- ☒ 1. Dhinidhi Desinghu
 - ☐ 2. Neeraj Chopra
 - ☐ 3. Manu Bhaker
 - ☐ 4. Bajrang Punia

Q.37 Which of the following rivers forms a delta along the eastern coastal plains?

- Ans**
- ☐ 1. Narmada
 - ☒ 2. Godavari
 - ☐ 3. Ganga
 - ☐ 4. Tapi

Q.38 On which date is National Handloom Day observed in India?

- Ans**
- ☐ 1. 5 September
 - ☐ 2. 18 August
 - ☒ 3. 7 August
 - ☐ 4. 2 October

Q.39 The pollutant group commonly associated with oil spills in oceans is _____.

- Ans**
- ☐ 1. agricultural pesticides
 - ☐ 2. chemical fertilizers
 - ☐ 3. synthetic detergents
 - ☒ 4. petroleum products

Q.40 Which experimental discovery contradicted Thomson's model of the atom and led to its rejection?

- Ans**
- ☐ 1. Measurement of atomic radius using X-ray diffraction
 - ☒ 2. Alpha particle scattering showing deflection at large angles
 - ☐ 3. Observation of line spectra of hydrogen by Bohr
 - ☐ 4. Discovery of the neutron by James Chadwick

Q.41 A farmer applies large amounts of chemical fertilizers over several years. Which consequence most likely results from this practice leading to soil pollution?

- Ans**
- ☒ 1. Accumulation of toxic substances in soil
 - ☐ 2. Faster plant growth every season
 - ☐ 3. Erosion of surface soil layers
 - ☐ 4. Increase in earthworm population

Q.42 The Atal Bhujal Yojana 2020 focused on improving water resources management of how many states?

- Ans
- ✗ 1. eight
 - ✓ 2. seven
 - ✗ 3. ten
 - ✗ 4. five

Q.43 Match the following columns.

Pardoning power	Function
1. Commutation	a. Removes both sentence and the conviction.
2. Reprieve	b. Lesser sentence than originally given, in special case
3. Respite	c. Reducing the period of sentence without changing the nature of the sentence.
4. Remission	d. Temporary stay on the execution of a sentence.
5. Pardon	e. Substitution of one form of punishment to a lighter one

- Ans
- ✓ 1. 1-e, 2-d, 3-b, 4-c, 5-a
 - ✗ 2. 1-c, 2-e, 3-b, 4-a, 5-d
 - ✗ 3. 1-a, 2-c, 3-d, 4-e, 5-b
 - ✗ 4. 1-d, 2-b, 3-e, 4-c, 5-a

Q.44 What file extension is used to save an MS PowerPoint 2021 presentation?

- Ans
- ✓ 1. .pptx
 - ✗ 2. .xlsx
 - ✗ 3. .docx
 - ✗ 4. .pdf

Q.45 What is the general formula of alkenes?

- Ans
- ✗ 1. C_nH_{2n-2}
 - ✗ 2. C_nH_{2n+2}
 - ✓ 3. C_nH_{2n}
 - ✗ 4. C_nH_n

Q.46 Which of the following statements is true about the Outbox?

- Ans
- ✓ 1. It temporarily stores emails that are queued for sending.
 - ✗ 2. It holds emails that have been successfully sent.
 - ✗ 3. It is used to receive incoming emails.
 - ✗ 4. It contains emails that are currently being drafted.

Q.47 What is the main reason sulfur dioxide irritates the upper respiratory mucous membrane?

- Ans
- ✗ 1. It combines with other pollutants and polymerizes in the lungs
 - ✗ 2. It combines with haemoglobin and effect the oxygen transport
 - ✗ 3. It oxidizes to sulphur trioxide and inhaled deep into lung
 - ✓ 4. It dissolves in moisture in upper respiratory tract and forms irritant

Q.48 The primary goal of the Pradhan Mantri Gram Sadak Yojana (PMGSY) is to:

- Ans
- ✓ 1. Provide rural connectivity through road construction
 - ✗ 2. Promote renewable energy usage
 - ✗ 3. Enhance telecommunication services in cities
 - ✗ 4. Develop urban infrastructure

Q.49 Which condition is required for a displacement reaction between a metal and salt solution?

- Ans
- ☒ 1. Reaction must be endothermic
 - ☒ 2. Metal must be higher in reactivity series
 - ☒ 3. Salt must be insoluble in water
 - ☒ 4. Metal must be same as salt constituent

Q.50 Which of the following best describes how sound travels through air?

- Ans
- ☒ 1. The air particles vibrate up and down perpendicular to the direction of the wave
 - ☒ 2. The air particles vibrate back and forth parallel to the direction of the wave
 - ☒ 3. The air particles move in circular paths as the wave passes
 - ☒ 4. The air particles remain stationary while the wave moves through

Section : Technical Abilities

Q.1 In a monostable configuration of IC 555, why is the Discharge pin (Pin 7) connected directly to the Threshold pin (Pin 6)?

- Ans
- ☒ 1. To prevent the capacitor from ever reaching 2/3 Vcc
 - ☒ 2. To ensure the capacitor is instantly discharged once the threshold is reached.
 - ☒ 3. To allow the capacitor to charge very slowly for stable output.
 - ☒ 4. To trigger the next pulse automatically.

Q.2 What are the statements that begin with # symbol called in C programming language?

- Ans
- ☒ 1. Comments
 - ☒ 2. Preprocessor Directives
 - ☒ 3. Control statements
 - ☒ 4. Function declarations

Q.3 Which cable transmits data using light signals?

- Ans
- ☒ 1. Twisted pair cable
 - ☒ 2. Coaxial cable
 - ☒ 3. USB cable
 - ☒ 4. Fiber optic cable

Q.4 In a centralized switching system, what is the Control Unit responsible for?

- Ans
- ☒ 1. Generating the ringing voltage only
 - ☒ 2. Processing dialed digits and managing call setup
 - ☒ 3. Generating the voice of the caller
 - ☒ 4. Physically moving the copper wires

Q.5 Consider the following statements about RS-232 ports and connectors.

S1: DB9 connector is associated with RS-232
S2: RS-232 uses RJ45 connector for standard serial communication
S3: RS-232 communication is point-to-point

Which statements are TRUE?

- Ans
- ☒ 1. Only S1 and S3
 - ☒ 2. Only S2 and S3
 - ☒ 3. Only S1
 - ☒ 4. Only S1 and S2

Q.6	Which of the following statements is TRUE about data transmission modes?
Ans	1. Serial transmission always requires more communication lines 2. Serial transmission sends multiple bits simultaneously 3. Parallel transmission can transmit multiple bits simultaneously 4. Parallel transmission sends one bit at a time
Q.7	Which characteristic primarily defines how accurately the vertical deflection system of a CRO displays signals of different amplitudes and frequencies?
Ans	1. Operation of the sweep circuit and retrace interval 2. Phosphor persistence on the CRT screen 3. Accelerating anode voltage in the electron gun 4. The gain and frequency response of the vertical amplifier
Q.8	During insulation testing of a long underground cable, a technician observes higher leakage current compared to a shorter cable of the same type. What is the most likely reason?
Ans	1. The increased cable length reduces the dielectric strength of the insulation. 2. Leakage current is independent of cable length for the same insulation material. 3. A longer cable always has higher insulation resistance than a shorter cable. 4. The larger insulation surface area provides more leakage paths to ground.
Q.9	In the 8085 microprocessor, what operation is performed by the instruction SUI 20H?
Ans	1. Subtracts 20H from the accumulator 2. Subtracts 20H from the accumulator with borrow 3. Adds 20H to the accumulator 4. Compares with 20H with the accumulator
Q.10	What is the output of the give C language code snippet? <pre>void f(int x) { x = x + 5; } int main() { int a = 10; f(a); printf("%d",a); return 0; }</pre>
Ans	1. 5 2. 15 3. 10 4. Garbage value
Q.11	Why is a high-sensitivity voltmeter preferred for accurate circuit measurements?
Ans	1. It minimizes loading effect by drawing very small current 2. It increases the operating frequency of the circuit 3. It reduces the response time of the instrument 4. It increases the power consumption of the measuring circuit

Q.12 A transmission line has a characteristic impedance of 50 ohm and is connected to a load of 100 ohm. The VSWR is _____.

- Ans
- ☐ 1. 0.5
 - ☐ 2. 4
 - ☐ 3. 1
 - ☒ 4. 2

Q.13 Which of the following contains only valid octal digits?

- Ans
- ☐ 1. 2, 4, 6, 9
 - ☐ 2. 3, 5, 7, 9
 - ☒ 3. 0, 3, 5, 7
 - ☐ 4. 1, 5, 7, 8

Q.14 The current flows directly into the input terminals of an ideal op-amp is _____ due to _____ input impedance.

- Ans
- ☒ 1. zero; infinite
 - ☐ 2. 1 milliAmpere; zero
 - ☐ 3. dependent on the supply voltage; zero
 - ☐ 4. 1 Ampere; moderate

Q.15 An op amp acting as a comparator typically operates in:

- Ans
- ☐ 1. Closed-loop mode with negative feedback
 - ☐ 2. Unity gain mode
 - ☐ 3. Linear region only
 - ☒ 4. Open-loop mode

Q.16 Consider the following statements about routing in computer networks.

- S1: Routers operate at the network layer
- S2: Routing determines packet forwarding paths
- S3: Static routing updates automatically
- S4: Dynamic routing protocols exchange routing information

Which of the given statements are **TRUE**?

- Ans
- ☐ 1. Only S1 and S2
 - ☐ 2. Only S2 and S3
 - ☒ 3. Only S1, S2 and S4
 - ☐ 4. Only S1 and S4

Q.17 Consider the following code snippet in C programming language.

```
int n = 5;
int m = n++;
What is the value of m after execution?
```

- Ans
- ☒ 1. 5
 - ☐ 2. 6
 - ☐ 3. 0
 - ☐ 4. 1

Q.18 Which statement is **TRUE** about if statement in the C programming language?

- Ans
- ☒ 1. A non-zero value written in the condition means True
 - ☐ 2. A value of 0 written in the condition means True
 - ☐ 3. Every if statement must have a matching else
 - ☐ 4. if statement cannot be nested

Q.19	For Astable Multivibrator using IC 555, to increase the frequency of an astable 555 circuit without changing the duty cycle ratio, what should a designer do? Assume standard terminologies and resistor names.
Ans	☐ 1. Increase the value of R_A ☐ 2. Decrease the supply voltage ☐ 3. Increase the value of Capacitor C ☒ 4. Decrease the value of C while keeping resistors RA and RB constant
Q.20	Which of the following is a false statement regarding the non-inverting amplifier using OP-AMP?
Ans	☐ 1. It offers high input impedance ☐ 2. It provides higher magnitude gain for the same resistor values when compared to the inverting amplifier ☐ 3. It is ideal for use in instrumentation and buffer circuits ☒ 4. It is limited to handling only DC signals
Q.21	The output of the phase detector in a phase-locked loop is _____.
Ans	☐ 1. A maximum constant voltage when the phase detector is in a free-running state. ☐ 2. Zero when the phase detector finds the input and oscillator phases are perfectly aligned. ☐ 3. An alternating current signal when the phase detector locks the loop. ☒ 4. A proportional error voltage when the phase detector identifies a phase difference between input and the VCO signal
Q.22	What is the purpose of the Back-off technique in transponder power amplifiers related to Satellite communication?
Ans	☐ 1. To save satellite battery life during the night ☒ 2. To reduce intermodulation distortion when multiple carriers are present ☐ 3. To increase the speed of data transmission ☐ 4. To increase the maximum output power
Q.23	Which of the following statements about the Harvard architecture used in the 8051 microcontroller is correct?
Ans	☐ 1. Uses single memory for program and data ☐ 2. Has no external memory support ☐ 3. Uses only RAM ☒ 4. Uses separate memory for program and data
Q.24	In a LAN environment, switches improve network efficiency primarily by:
Ans	☒ 1. Forwarding frames selectively using MAC addresses ☐ 2. Increasing collision occurrences and retransmitting ☐ 3. Broadcasting all frames to every device in the network ☐ 4. Converting digital signal to analog signal
Q.25	What does the remanence (B _r) indicate in a magnetic hysteresis loop?
Ans	☐ 1. It is the maximum magnetic flux density reached in the loop. ☐ 2. It is the applied field needed to reduce flux to zero. ☒ 3. It is the residual magnetic flux density after removing the applied field. ☐ 4. It is the area enclosed by the hysteresis loop.

Q.26 In 8051, consider the following instructions:
MOV PSW, #18H
MOV R3, #55H
MOV A, R3

From which register bank is R3 selected in the instruction MOV A, R3?

- Ans
- ☒ 1. Bank 3
 - ☐ 2. Bank 0
 - ☐ 3. Bank 2
 - ☐ 4. Bank 1

Q.27 In the Hexagonal cell model, where is the Base Transceiver Station (BTS) typically located to provide uniform coverage?

- Ans
- ☐ 1. Outside the cell boundary to avoid interference
 - ☐ 2. At any one of the six corners
 - ☐ 3. Along the longest edge of the cell
 - ☒ 4. Exactly at the center of the hexagon

Q.28 In the 8085 microprocessor, what happens to the Stack Pointer after execution of PUSH instruction?

- Ans
- ☐ 1. Incremented by 2
 - ☒ 2. Decrement by 2
 - ☐ 3. Unchanged
 - ☐ 4. Incremented by 1

Q.29 The LPF in a PLL determines which of the following dynamic characteristics?

- Ans
- ☐ 1. The input impedance of the phase detector.
 - ☐ 2. The free-running frequency of the VCO.
 - ☐ 3. The maximum output power of the circuit.
 - ☒ 4. Settling time and loop stability.

Q.30 If the same quantity is measured several times and the readings vary slightly each time, which type of error is most likely present?

- Ans
- ☐ 1. Calibration error
 - ☒ 2. Random error
 - ☐ 3. Systematic error
 - ☐ 4. Parallax error

Q.31 In an LCD display, what is the main purpose of the liquid crystal layer positioned between the two glass plates?

- Ans
- ☐ 1. To store electrical energy for the display circuit
 - ☒ 2. To control the transmission of light through the display
 - ☐ 3. To act as a light source for displaying characters
 - ☐ 4. To increase the operating voltage of the display segment

Q.32 Which of the following best describes packet switching in computer network?

- Ans
- ☐ 1. Entire message transmitted as one continuous signal
 - ☒ 2. Data divided into smaller packets transmitted independently
 - ☐ 3. Dedicated physical path between sender and receiver
 - ☐ 4. Fixed bandwidth allocated permanently to users

Q.33 When a NOR-based SR flip-flop with active HIGH inputs receives a momentary logic high on its S (set) input while the R (reset) input remains low, what will be the resulting state of the Q output?

- Ans**
- ☒ 1. Q becomes HIGH and remains latched HIGH
 - ☐ 2. Both outputs will become high during the pulse
 - ☐ 3. The Q output will become low after S returns to low
 - ☐ 4. The Q output will toggle between high and low repeatedly

Q.34 What allows a Radar system to detect the presence of a target?

- Ans**
- ☒ 1. Electromagnetic wave reflection
 - ☐ 2. Acoustic resonance
 - ☐ 3. Atmospheric refraction
 - ☐ 4. Chemical ionization

Q.35 Which operator is used for dynamic memory allocation in C++?

- Ans**
- ☐ 1. delete
 - ☐ 2. allocate
 - ☒ 3. new
 - ☐ 4. alloc

Q.36 Which arrangement is used in a CRT of Cathode Ray Oscilloscope (CRO) to achieve proper electrostatic focusing of the electron beam?

- Ans**
- ☐ 1. A cathode at high potential followed by only high potential accelerating anodes
 - ☐ 2. A fluorescent screen at lower potential placed after the high potential accelerating anodes
 - ☒ 3. A focusing anode at lower potential placed between two high potential accelerating anodes
 - ☐ 4. Two accelerating anodes at equal potential without a focusing anode

Q.37 Which shape is used to represent a decision in a flowchart?

- Ans**
- ☐ 1. Parallelogram
 - ☒ 2. Diamond
 - ☐ 3. Oval
 - ☐ 4. Rectangle

Q.38 In the 8085 microprocessor, what will be the value of the Program Counter after execution of the instruction RST 3?

- Ans**
- ☐ 1. 0030H
 - ☐ 2. 0024H
 - ☒ 3. 0018H
 - ☐ 4. 0003H

Q.39 A synchronous counter is a counter in which:

- Ans**
- ☐ 1. Only one flip-flop is used
 - ☒ 2. All flip-flops are triggered simultaneously
 - ☐ 3. No clock is used
 - ☐ 4. Flip-flops are triggered one by one

Q.40 A 2-input NOR gate has one input permanently connected to logic LOW (0). How does the output behave with respect to the other input?

- Ans**
- ☐ 1. Output is always LOW
 - ☐ 2. Output is always HIGH
 - ☒ 3. Output is the complement of the other input
 - ☐ 4. Output follows the other input directly

Q.41 A resistor connected to a DC supply of 20 V produces the same heating effect as an AC supply connected across the same resistor. What is the RMS value of the AC voltage?

- Ans
- ☐ 1. 10 V
 - ☐ 2. 28.28 V
 - ☒ 3. 20 V
 - ☐ 4. 14.14 V

Q.42 In the 8085 microprocessor, if SP = 3FFFH and memory contains:
3FFEh = 20H
3FFFh = 20H
4000H = 10H
4001H = 10H

After executing POP H, what will be the contents of HL?

- Ans
- ☐ 1. 2020H
 - ☐ 2. 2010H
 - ☐ 3. 1010H
 - ☒ 4. 1020H

Q.43 Which action is the most important for maintaining accurate measurements in an instrument?

- Ans
- ☒ 1. Calibrate the instrument using a standard reference
 - ☐ 2. Operating the instrument always at maximum frequency range.
 - ☐ 3. Reduce the sensitivity of the instrument
 - ☐ 4. Setting the amplifier gain of the instrument to zero

Q.44 What is the main reason high-frequency Carrier signals are used in modulation?

- Ans
- ☐ 1. To amplify the original message signal.
 - ☐ 2. To make the signal move at the speed of light.
 - ☐ 3. To eliminate the need for a receiver.
 - ☒ 4. To reduce the physical size of the required antenna.

Q.45 Signal A passes through a NOT gate and then through an AND gate where the second input is permanently set to logic 1. What is the final output expression?

- Ans
- ☐ 1. $Y = \text{Always } 0$
 - ☐ 2. $Y = A$
 - ☒ 3. $Y = \overline{A}$
 - ☐ 4. $Y = \text{Always } 1$

Q.46 Consider an abrupt p-n junction under thermal equilibrium. If the acceptor doping concentration (N_A) in the p-region is made significantly larger than the donor doping concentration (N_D) in the n-region (i.e., $N_A \gg N_D$), how is the depletion region physically distributed?

- Ans
- ☒ 1. It extends primarily into the lightly doped n-type region.
 - ☐ 2. It extends equally into both the p-type and n-type regions.
 - ☐ 3. It extends primarily into the heavily doped p-type region.
 - ☐ 4. It is confined strictly to the metallurgical junction with zero penetration into either region.

Q.47 In a graded-index Optical fiber, how is the refractive index distributed?

- Ans
- ☒ 1. Decreasing continuously from center to edge
 - ☐ 2. Higher in the cladding than the core
 - ☐ 3. Increasing from center to edge
 - ☐ 4. Uniformly throughout the core

Q.48 What is the BCD code for decimal digit 3?

- Ans ☒ 1. 0011
- ☐ 2. 0110
- ☐ 3. 0101
- ☐ 4. 0001

Q.49 According to Carson's Rule, the approximate bandwidth of a frequency modulation signal is _____.

- Ans ☐ 1. Infinite
- ☐ 2. Equal to the carrier frequency
- ☒ 3. Twice the sum of the frequency deviation and the highest modulating frequency
- ☐ 4. Twice the carrier frequency

Q.50 In a pulsed radar system, the _____ power is the maximum instantaneous power delivered during the pulse width, whereas the _____ power is the mean power output calculated over the total transmission cycle.

- Ans ☐ 1. Pulsed; Continuous
- ☐ 2. Effective; Gain
- ☐ 3. Average; Peak
- ☒ 4. Peak; Average

Q.51 What is the function of the INTA' signal in the 8085 microprocessor?

- Ans ☐ 1. To enable interrupts
- ☒ 2. To acknowledge an interrupt request
- ☐ 3. To disable interrupts
- ☐ 4. To reset the processor

Q.52 What is the output of the following C programming language code?

```
#include<stdio.h>
int main()
{
int x = 10;
int *p = &x;
*p = *p + 5;
printf("%d %d", x, *p);
return 0;
}
```

- Ans ☐ 1. 10 10
- ☐ 2. 15 10
- ☐ 3. 10 15
- ☒ 4. 15 15

Q.53 In the magnetic trip mechanism of an MCB, which sequence correctly describes the tripping action during a short circuit?

- Ans ☐ 1. Fault current → contact resistance increases → plunger attracted → latch released
- ☐ 2. Fault current → plunger released → magnetic field generated → contacts open
- ☐ 3. Fault current → bimetal strip bends → latch released → contacts open
- ☒ 4. Fault current → magnetic field generated → plunger attracted → latch released

Q.54 What happens to the amount of substance deposited if the time for which current flows through an electrolyte is doubled?

- Ans ☐ 1. It remains unchanged
- ☐ 2. It becomes zero
- ☐ 3. It becomes half
- ☒ 4. It also doubles

Q.55 What is the output the given C language code snippet?
#include<stdio.h>

```
int main()
{
int x[] = {10,20,30};
int *p = x;
p++;
printf("%d",*p);
return 0;
}
```

- Ans
1. Garbage value
2. 30
3. 10
4. 20

Q.56 Consider the following statements regarding modems used in computer network:

- S1: Modems are required when communication medium carries analog signals
S2: Modulation converts digital data into analog form
S3: Demodulation converts analog data into digital form
S4: Modems assign MAC addresses to computers

Which statements are TRUE?

- Ans
1. Only S1, S3 and S4
2. Only S1 and S4
3. Only S1, S2 and S3
4. Only S1 and S2

Q.57 A 4 KB EPROM is organized with 8 data lines. How many address lines does it have?

- Ans
1. 14
2. 10
3. 12
4. 8

Q.58 How many PN junctions are present in the structure of a Silicon Controlled Rectifier (SCR)?

- Ans
1. Two
2. One
3. Four
4. Three

Q.59 Which mechanical property allows a conductor to be drawn into thin wires without breaking?

- Ans
1. Ductility
2. Elasticity
3. Hardness
4. Brittleness

Q.60 What does the instruction ORA B do in 8085?

- Ans
1. Subtracts B from accumulator
2. Performs AND between accumulator and B
3. Adds B to accumulator
4. Performs logical OR between accumulator and B

Q.61 What happens to the frequency of an astable multivibrator if the value of ONLY the timing capacitor is doubled?

- Ans
- ✓ 1. The frequency is reduced by half.
 - ✗ 2. The frequency remains the same.
 - ✗ 3. The frequency increases fourfold.
 - ✗ 4. The frequency doubles.

Q.62 In a CRO time-base circuit, why is constant-current charging preferred for generating the sweep voltage?

- Ans
- ✓ 1. It ensures the capacitor voltage rises uniformly over time, forming a linear sweep
 - ✗ 2. It causes the capacitor voltage to rise exponentially with time, distorting the sweep
 - ✗ 3. It makes the retrace interval longer than the sweep interval
 - ✗ 4. It relies on the transistor's collector current to set the linearity

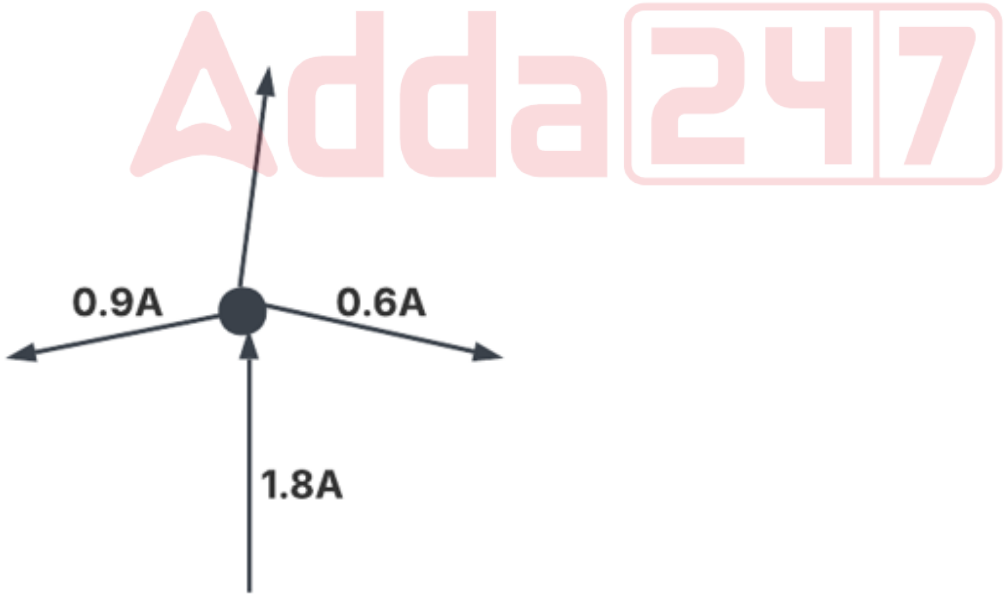
Q.63 A motor draws a starting current much higher than its running current. What should be considered when selecting a relay?

- Ans
- ✓ 1. Relay contact rating must exceed the motor's peak starting current
 - ✗ 2. Relay contact rating should match only the motor running current
 - ✗ 3. Relay selection depends solely on the coil voltage specification.
 - ✗ 4. Relay selection should focus only on minimum coil voltage

Q.64 A magnetic material has a hysteresis loop area of 0.4 J for each cycle. If the material is subjected to a frequency of 40 Hz, what is the total hysteresis loss per second?

- Ans
- ✓ 1. 16 W
 - ✗ 2. 20 W
 - ✗ 3. 12 W
 - ✗ 4. 10 W

Q.65 A DC node has 1.8 A entering it. Two branches carry 0.6 A and 0.9 A away from the node. Assuming the remaining branch current is also leaving the node, what is its value?



- Ans
- ✗ 1. 1.2 A
 - ✓ 2. 0.3 A
 - ✗ 3. 0.5 A
 - ✗ 4. 0.9 A

Q.66 Why should electrical connections be regularly tightened in high-current circuits?

- Ans
- ✗ 1. Tight connections ensure lower circuit voltage
 - ✗ 2. It prevents accidental current reversal
 - ✓ 3. Loose connections cause localized heating and fire risk
 - ✗ 4. It avoids electromagnetic interference

Q.67 A designer is selecting an LED driver for an outdoor display exposed to dust and rain. Which specification should be examined first to determine whether the driver can withstand these environmental conditions?

- Ans
- ✗ 1. Dimming compatibility
 - ✗ 2. Power factor rating
 - ✓ 3. Ingress Protection (IP) rating
 - ✗ 4. Output current tolerance

Q.68 In a 4-to-2 priority encoder, if both D1 and D3 are HIGH, which input determines the output and why?

- Ans
- ✗ 1. The output is undefined due to multiple actives
 - ✗ 2. Both D1 and D3 set the output together
 - ✗ 3. D1 determines the output because it is the lower number
 - ✓ 4. D3 determines the output because it has higher priority

Q.69 A coil is placed in a uniform magnetic field. If the area of the coil is doubled while the magnetic field strength and orientation remain unchanged, how will the magnetic flux through the coil be affected assuming the initial magnetic flux is a non-zero finite value?

- Ans
- ✗ 1. The magnetic flux will remain the same
 - ✗ 2. The magnetic flux will decrease to half
 - ✗ 3. The magnetic flux will become four times
 - ✓ 4. The magnetic flux will double

Q.70 The transition of an SCR from the forward blocking state to the conduction state is called:

- Ans
- ✗ 1. Avalanche breakdown
 - ✗ 2. Commutation
 - ✗ 3. Forward recovery
 - ✓ 4. Triggering

Q.71 An engineer is designing a feedback control system using a potentiometer transducer to measure angular position. What is the primary effect if a voltmeter with low resistance is connected to measure the potentiometer output?

- Ans
- ✗ 1. It increases output signal noise regardless of wiper position
 - ✗ 2. It maximizes sensitivity and accuracy of the measuring instrument
 - ✗ 3. It reduces the mechanical lifespan of the potentiometer due to excess current
 - ✓ 4. It causes loading error, resulting in nonlinear output voltage relative to wiper position

Q.72 What does PPP stand for in Wide Area Network (WAN) communication?

- Ans
- ✗ 1. Private Port Protocol
 - ✓ 2. Point-to-Point Protocol
 - ✗ 3. Public Packet Protocol
 - ✗ 4. Packet Transfer Protocol

Q.73 Which class of IPv4 addresses supports the largest number of host addresses in a computer network?

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

Q.74 If the modulating signal is a constant DC voltage, the output of a Phase Modulator will be:

- Ans
- ☐ 1. Zero.
 - ☐ 2. A signal with increasing frequency.
 - ☒ 3. A constant frequency signal with a fixed phase shift.
 - ☐ 4. A signal with varying amplitude.

Q.75 A constant negative DC voltage is applied to the input of an inverting integrator. Assuming the op-amp starts at zero volts and remains unsaturated, the output will be:

- Ans
- ☐ 1. A square wave
 - ☒ 2. A positive-going linear ramp
 - ☐ 3. A negative-going linear ramp
 - ☐ 4. A constant DC voltage

Q.76 Assume an SCR is operating in the forward blocking state. Once a sufficient positive current pulse is applied to the gate terminal, the SCR triggers into the conduction state. What happens if the gate signal is completely removed immediately after conduction starts?

- Ans
- ☐ 1. The SCR will immediately turn off.
 - ☐ 2. The anode current will drop by exactly 50%.
 - ☐ 3. The SCR will begin to oscillate between the ON and OFF states.
 - ☒ 4. The SCR will continue to conduct until the anode current drops below the holding current.

Q.77 In the 8085 microprocessor, what does the instruction PCHL do?

- Ans
- ☒ 1. Loads the PC with HL
 - ☐ 2. Pops the PC from the stack
 - ☐ 3. Loads HL with the PC
 - ☐ 4. Pushes PC onto the stack

Q.78 Which protocol is responsible for delivering web pages over the Internet?

- Ans
- ☐ 1. SMTP
 - ☐ 2. ARP
 - ☐ 3. FTP
 - ☒ 4. HTTP

Q.79 How does the shading coil in an AC relay minimize contact chatter during operation?

- Ans
- ☐ 1. It delays the movement of the relay armature during release.
 - ☒ 2. It maintains a holding magnetic force during current zero crossing.
 - ☐ 3. It changes the relay's operating voltage rating.
 - ☐ 4. It maintains the spacing between relay contacts during operation.

Q.80 The holding current of an SCR is defined as the:

- Ans
- ☐ 1. Minimum anode current required to turn on the SCR
 - ☒ 2. Minimum anode current required to keep the SCR in conduction state
 - ☐ 3. Gate current required to turn off the SCR
 - ☐ 4. Maximum anode current the SCR can withstand

Q.81 The primary reason for the increase in resistance of metallic conductors with temperature is _____.

- Ans
- ✓ 1. Atomic collisions inside the conductor increase
 - ✗ 2. Atomic vibrations inside the conductor decrease
 - ✗ 3. Number of free electrons becomes zero
 - ✗ 4. Conducting path inside the material becomes shorter

Q.82 Why is earthing necessary for electrical equipment?

- Ans
- ✗ 1. To decrease power consumption
 - ✗ 2. To increase wire length
 - ✗ 3. To improve light brightness
 - ✓ 4. To protect people from electric shock

Q.83 In Boolean algebra, what is the value of $C + C'$?

- Ans
- ✗ 1. C
 - ✗ 2. $C \cdot C'$
 - ✓ 3. 1
 - ✗ 4. 0

Q.84 At room temperature, the region in a PN junction diode where there are no mobile electrons or holes is called _____.

- Ans
- ✗ 1. N-type region
 - ✗ 2. P-type region
 - ✓ 3. Depletion region
 - ✗ 4. Ohmic terminal interface

Q.85 A technician is troubleshooting a circuit where the fuse does not blow during an overcurrent fault. What is the most likely cause?

- Ans
- ✗ 1. The fuse is connected in parallel with the load.
 - ✗ 2. The fuse wire has low resistance
 - ✗ 3. The fuse is installed after the protective relay.
 - ✓ 4. The fuse rating is higher than the circuit's safe current.

Q.86 What is the output of the given C language code snippet?
`#include<stdio.h>`

```
void f(int n)
{
    if(n==0)
        return;
    printf("%d ",n);
    f(n-1);
}

int main()
{
    f(3);
    return 0;
}
```

- Ans
- ✗ 1. 3 2 1 0
 - ✗ 2. 1 2 3
 - ✗ 3. Infinite loop
 - ✓ 4. 3 2 1

Q.87	A single-phase AC circuit contains a resistive inductive load. The current lags behind the voltage by an angle greater than 0° and less than 90°. What is the power factor of the circuit called?
Ans	✖ 1. Zero power factor ✔ 2. Lagging power factor ✖ 3. Leading power factor ✖ 4. Unity power factor
Q.88	If the strength of the current in a straight wire is doubled, how does the magnitude of the magnetic field at a fixed distance from the wire change?
Ans	✖ 1. The field strength is halved ✔ 2. The field strength doubles ✖ 3. The field strength remains unchanged ✖ 4. The field strength quadruples
Q.89	Why does charging a lead-acid secondary cell increase the specific gravity of the electrolyte?
Ans	✔ 1. Active materials reform and increase acid concentration ✖ 2. It decreases due to formation of water from hydrogen and oxygen ✖ 3. It increases due to hydrogen gas raising electrolyte density ✖ 4. It stays the same because separators control dilution
Q.90	In an analog Stored Program Control (SPC) system, the Program manages:
Ans	✔ 1. The electronic connection of the analog matrix ✖ 2. The digital conversion of the voice signal ✖ 3. The brightness of the telephone screen ✖ 4. The internet connection of the subscriber
Q.91	Which instruction is used to return from a subroutine in 8085?
Ans	✔ 1. RET ✖ 2. RST ✖ 3. CALL ✖ 4. JMP
Q.92	Which internal component of the IC 555 is responsible for resetting the flip-flop when the voltage at Pin 6 exceeds two-thirds of Vcc supply?
Ans	✔ 1. The Upper Comparator ✖ 2. The Voltage Divider Network ✖ 3. The Lower Comparator ✖ 4. The Discharge Transistor
Q.93	You need to read a floating-point value from the user in the C programming language. Which of the following statements correctly performs this task?
Ans	✔ 1. float x; scanf("%f", &x); ✖ 2. float x; scanf("%d" , &x); ✖ 3. float x; scanf("%f", *x); ✖ 4. float x; scanf("%f" , x);

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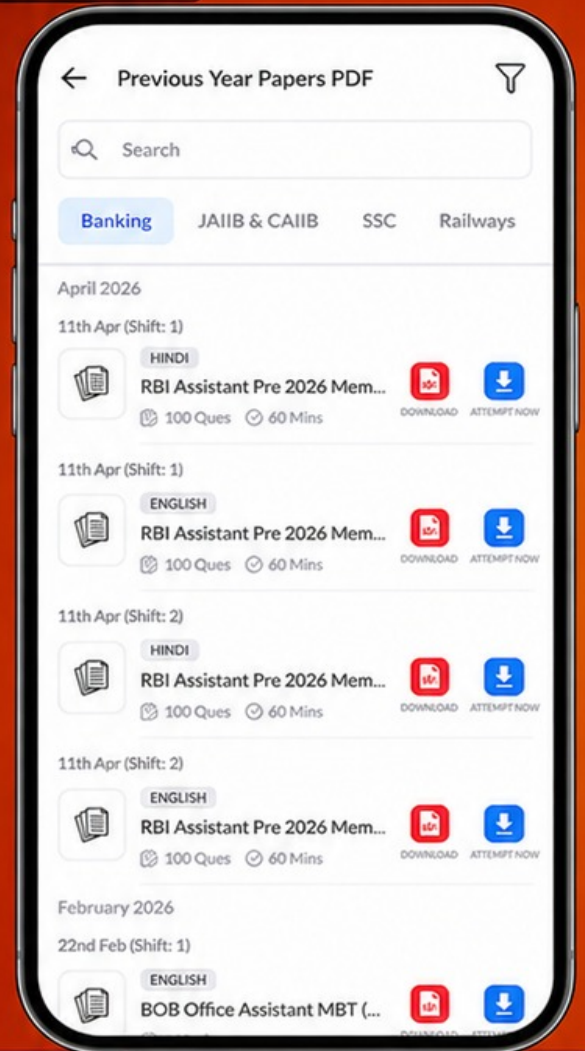
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Q.94 A user wants to transmit uncompressed digital audio and video between a computer and a display using a single cable. Which connector type is most appropriate?

- Ans
- ☐ 1. F connector
 - ☐ 2. RCA connector
 - ☐ 3. BNC connector
 - ☒ 4. HDMI connector

Q.95 What would happen if an electrical device is not earthed and a fault occurs?

- Ans
- ☐ 1. The resistance of the device will increase
 - ☒ 2. The exposed metal parts may carry dangerous voltage
 - ☐ 3. The device will automatically shut down
 - ☐ 4. The supply voltage will decrease

Q.96 If a communication system performs effectively in between 200 Hz to 3.4 kHz, what is its bandwidth?

- Ans
- ☐ 1. 3.6 kHz
 - ☐ 2. 3.4 kHz
 - ☐ 3. 200 Hz
 - ☒ 4. 3.2 kHz

Q.97 A 1 mA, 100 Ω meter movement is converted to a 100 mA ammeter using a parallel shunt resistor. If this shunt resistor suddenly becomes open-circuited while a steady line current of 80 mA is passing through the meter, what is the most likely outcome?

- Ans
- ☐ 1. The meter indication drops to zero due to loss of shunt current
 - ☐ 2. The meter continues to indicate the measured current correctly
 - ☒ 3. Excessive current may flow through the meter movement and damage it
 - ☐ 4. The meter becomes more sensitive and shows larger deflections

Q.98 Which type of network typically experiences the lowest transmission delay?

- Ans
- ☐ 1. WAN
 - ☐ 2. Satellite Network
 - ☐ 3. MAN
 - ☒ 4. LAN

Q.99 Using De Morgan's law, what is the equivalent of $\overline{(P \cdot Q \cdot R)}$?

- Ans
- ☐ 1. $P + Q + R$
 - ☐ 2. $\overline{P} \cdot \overline{Q} \cdot \overline{R}$
 - ☐ 3. $P \cdot Q \cdot R$
 - ☒ 4. $\overline{P} + \overline{Q} + \overline{R}$

Q.100 Under forward-bias conditions, what is the primary mechanism that creates forward current across a PN junction?

- Ans
- ☐ 1. The drift of majority carriers due to the enhanced internal barrier electric field.
 - ☐ 2. The millions of protons creation inside the depletion region
 - ☐ 3. The freezing of movement for free electrons across the metallurgical junction.
 - ☒ 4. Majority carriers crossing the junction to become injected minority carriers that diffuse through the neutral regions