



रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD  
सी ई एन नं. - 03/2024 / CEN No. - 03/2024



Test Date	22/04/2025
Test Time	9:00 AM - 11:00 AM
Subject	RRB JE Stage 2 Electrical 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	Which type of RAM is faster and DOES NOT require refreshing?
Ans	<div><div><input checked="" type="checkbox"/></div>1. SRAM</div> <div><div><input type="checkbox"/></div>2. Flash Memory</div> <div><div><input type="checkbox"/></div>3. ROM</div> <div><div><input type="checkbox"/></div>4. DRAM</div>
Q.2	The kinetic energy of an object is derived using which of the following equations of motion?
Ans	<div><div><input type="checkbox"/></div>1. <math>s = ut + \frac{1}{2}at^2</math></div> <div><div><input type="checkbox"/></div>2. <math>a = (v - u) / t</math></div> <div><div><input checked="" type="checkbox"/></div>3. <math>v^2 - u^2 = 2as</math></div> <div><div><input type="checkbox"/></div>4. <math>v = u + at</math></div>
Q.3	Which of the following was NOT an artisan guild during the Mauryan period?
Ans	<div><div><input type="checkbox"/></div>1. Potters</div> <div><div><input type="checkbox"/></div>2. Carpenters</div> <div><div><input type="checkbox"/></div>3. Bankers and Merchants</div> <div><div><input checked="" type="checkbox"/></div>4. Astrologers</div>
Q.4	Which operating system is known for its open-source nature and community-driven development for desktops and laptops?
Ans	<div><div><input type="checkbox"/></div>1. iOS</div> <div><div><input checked="" type="checkbox"/></div>2. Linux</div> <div><div><input type="checkbox"/></div>3. Windows</div> <div><div><input type="checkbox"/></div>4. macOS</div>
Q.5	The main reason for which we are dependent on air is our _____.
Ans	<div><div><input checked="" type="checkbox"/></div>1. respiration</div> <div><div><input type="checkbox"/></div>2. excretion</div> <div><div><input type="checkbox"/></div>3. digestion</div> <div><div><input type="checkbox"/></div>4. osmoregulation</div>

Q.6	Which of the following elements has an atomic number of 8?
Ans	<div><div><div>✖</div><div>1. Nitrogen</div></div><div><div>✔</div><div>2. Oxygen</div></div><div><div>✖</div><div>3. Carbon</div></div><div><div>✖</div><div>4. Hydrogen</div></div></div>
Q.7	What does LAN stand for?
Ans	<div><div><div>✔</div><div>1. Local Area Network</div></div><div><div>✖</div><div>2. Limited Access Node</div></div><div><div>✖</div><div>3. Linked Access Network</div></div><div><div>✖</div><div>4. Large Area Network</div></div></div>
Q.8	A sound wave with a low frequency will have _____.
Ans	<div><div><div>✔</div><div>1. a low pitch</div></div><div><div>✖</div><div>2. a high pitch</div></div><div><div>✖</div><div>3. a short wavelength</div></div><div><div>✖</div><div>4. a low amplitude</div></div></div>
Q.9	Which German optical technology firm inaugurated its first Global Capability Centre in Bengaluru in November 2024, with plans to double its workforce within three years?
Ans	<div><div><div>✖</div><div>1. Schneider Kreuznach</div></div><div><div>✖</div><div>2. Leica</div></div><div><div>✖</div><div>3. Jenoptik</div></div><div><div>✔</div><div>4. Carl Zeiss AG</div></div></div>
Q.10	Who among the following developed the notation system for Hindustani classical music?
Ans	<div><div><div>✔</div><div>1. Pandit Vishnu Narayan Bhaskhande</div></div><div><div>✖</div><div>2. Ustad Amjad Ali Khan</div></div><div><div>✖</div><div>3. Ustad Bismillah Khan</div></div><div><div>✖</div><div>4. Pandit Ravi Shankar</div></div></div>
Q.11	Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?
Ans	<div><div><div>✖</div><div>1. Mithali Raj</div></div><div><div>✔</div><div>2. Smriti Mandhana</div></div><div><div>✖</div><div>3. Harmanpreet Kaur</div></div><div><div>✖</div><div>4. Jhulan Goswami</div></div></div>
Q.12	A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?
Ans	<div><div><div>✔</div><div>1. 5.625 J</div></div><div><div>✖</div><div>2. 3.750 J</div></div><div><div>✖</div><div>3. 1.875 J</div></div><div><div>✖</div><div>4. 7.500 J</div></div></div>
Q.13	In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.
Ans	<div><div><div>✖</div><div>1. chlorine</div></div><div><div>✖</div><div>2. phosphates</div></div><div><div>✖</div><div>3. organochlorine</div></div><div><div>✔</div><div>4. DDT</div></div></div>

Q.14	An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____.
Ans	<input checked="" type="checkbox"/> 1. 17.5 cm
	<input checked="" type="checkbox"/> 2. -9.37 cm
	<input checked="" type="checkbox"/> 3. -10.0 cm
	<input checked="" type="checkbox"/> 4. -37.5 cm
Q.15	Which function key is used to move text or graphics in a document?
Ans	<input checked="" type="checkbox"/> 1. F1
	<input checked="" type="checkbox"/> 2. F5
	<input checked="" type="checkbox"/> 3. F2
	<input checked="" type="checkbox"/> 4. F12
Q.16	Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?
Ans	<input checked="" type="checkbox"/> 1. =A2+B2
	<input checked="" type="checkbox"/> 2. =A2*B2
	<input checked="" type="checkbox"/> 3. =MULTIPLY(A2,B2)
	<input checked="" type="checkbox"/> 4. =A2-B2
Q.17	The atomic mass of sulphur is 32 u, and sulphur exists as S <sub>8</sub> molecules. What is the molecular mass of sulphur?
Ans	<input checked="" type="checkbox"/> 1. 256 u
	<input checked="" type="checkbox"/> 2. 64 u
	<input checked="" type="checkbox"/> 3. 32 u
	<input checked="" type="checkbox"/> 4. 128 u
Q.18	Where can one find the option to change a PowerPoint template?
Ans	<input checked="" type="checkbox"/> 1. Design → Themes
	<input checked="" type="checkbox"/> 2. Home → Layout
	<input checked="" type="checkbox"/> 3. View → Slide Master
	<input checked="" type="checkbox"/> 4. Insert → Themes
Q.19	What happens to the pH of pure water when a few drops of lemon juice are added?
Ans	<input checked="" type="checkbox"/> 1. The pH remains the same
	<input checked="" type="checkbox"/> 2. The pH becomes neutral
	<input checked="" type="checkbox"/> 3. The pH decreases
	<input checked="" type="checkbox"/> 4. The pH increases
Q.20	Which of the following is NOT a source of collection of municipal solid waste?
Ans	<input checked="" type="checkbox"/> 1. Waste from hospitals
	<input checked="" type="checkbox"/> 2. Waste from schools
	<input checked="" type="checkbox"/> 3. Radioactive waste
	<input checked="" type="checkbox"/> 4. Waste from homes
Q.21	What is the primary function of a computer firewall?
Ans	<input checked="" type="checkbox"/> 1. To store user passwords securely
	<input checked="" type="checkbox"/> 2. To prevent unauthorised access to a private network
	<input checked="" type="checkbox"/> 3. To speed up internet connectivity
	<input checked="" type="checkbox"/> 4. To detect and remove computer viruses

Q.22	Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?																
Ans	<div><div>✖</div>1. Ivor Jennings</div>																
	<div><div>✔</div>2. LM Singhvi</div>																
	<div><div>✖</div>3. BR Ambedkar</div>																
	<div><div>✖</div>4. HM Seervai</div>																
Q.23	The people of _____ were famously involved in execution of the Chipko movement.																
Ans	<div><div>✔</div>1. Garhwal Himalayas</div>																
	<div><div>✖</div>2. Assam</div>																
	<div><div>✖</div>3. Gujarat</div>																
	<div><div>✖</div>4. Delhi</div>																
Q.24	Which of the following bridges is constructed over the Brahmaputra River in India?																
Ans	<div><div>✔</div>1. Dhola-Sadiya Bridge</div>																
	<div><div>✖</div>2. Howrah Bridge</div>																
	<div><div>✖</div>3. Pamban Bridge</div>																
	<div><div>✖</div>4. Mahatma Gandhi Setu</div>																
Q.25	Which of the following correctly differentiates mixtures and compounds?																
	<table><tr><th>Feature</th><th>Mixture</th><th>Compound</th></tr><tr><td>A) Separation</td><td>Can be separated by physical methods</td><td>Requires chemical me</td></tr><tr><td>B) Composition</td><td>Fixed ratio</td><td>Variable ratio</td></tr><tr><td>C) Properties</td><td>Always the same as constituents</td><td>Different from consti</td></tr><tr><td>D) Formation</td><td>By chemical reaction</td><td>By simple mixing</td></tr></table>	Feature	Mixture	Compound	A) Separation	Can be separated by physical methods	Requires chemical me	B) Composition	Fixed ratio	Variable ratio	C) Properties	Always the same as constituents	Different from consti	D) Formation	By chemical reaction	By simple mixing	
Feature	Mixture	Compound															
A) Separation	Can be separated by physical methods	Requires chemical me															
B) Composition	Fixed ratio	Variable ratio															
C) Properties	Always the same as constituents	Different from consti															
D) Formation	By chemical reaction	By simple mixing															
Ans	<div><div>✖</div>1. Option B (Composition) is correct</div>																
	<div><div>✔</div>2. Option A (Separation) is correct</div>																
	<div><div>✖</div>3. Option D (Formation) is correct</div>																
	<div><div>✖</div>4. Option C (Properties) is correct</div>																
Q.26	A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.																
Ans	<div><div>✖</div>1. random motion</div>																
	<div><div>✖</div>2. rotational motion</div>																
	<div><div>✖</div>3. non-uniform motion</div>																
	<div><div>✔</div>4. uniform motion</div>																
Q.27	The President has the power to dissolve which house of Parliament?																
Ans	<div><div>✔</div>1. Lok Sabha only</div>																
	<div><div>✖</div>2. Legislative Assembly</div>																
	<div><div>✖</div>3. Both Rajya Sabha and Lok Sabha</div>																
	<div><div>✖</div>4. Rajya Sabha only</div>																
Q.28	Electricity production is categorised under which of the following economic sectors?																
Ans	<div><div>✖</div>1. Quaternary sector</div>																
	<div><div>✔</div>2. Secondary sector</div>																
	<div><div>✖</div>3. Primary sector</div>																
	<div><div>✖</div>4. Tertiary sector</div>																

Q.29	Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?	
Ans	<input checked="" type="checkbox"/> 1. Sweden	
	<input type="checkbox"/> 2. Canada	
	<input type="checkbox"/> 3. United States	
	<input type="checkbox"/> 4. France	
Q.30	A metal wire is stretched, but it does not break easily. This property is known as:	
Ans	<input type="checkbox"/> 1. brittleness	
	<input type="checkbox"/> 2. malleability	
	<input type="checkbox"/> 3. hardness	
	<input checked="" type="checkbox"/> 4. ductility	
Q.31	The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is ____.	
Ans	<input checked="" type="checkbox"/> 1. UV-B	
	<input type="checkbox"/> 2. UV-A	
	<input type="checkbox"/> 3. UV-D	
	<input type="checkbox"/> 4. UV-C	
Q.32	Which of the following will increase the heat produced by a heating element?	
Ans	<input checked="" type="checkbox"/> 1. Increasing the current flowing through the wire	
	<input type="checkbox"/> 2. Using a material with high conductivity	
	<input type="checkbox"/> 3. Using a wire of lower resistance	
	<input type="checkbox"/> 4. Decreasing the applied voltage	
Q.33	A solution is prepared by dissolving 40 g of NaCl in 200 g of water. What is the mass per cent of NaCl in the solution?	
Ans	<input type="checkbox"/> 1. 20%	
	<input checked="" type="checkbox"/> 2. 16.67%	
	<input type="checkbox"/> 3. 45%	
	<input type="checkbox"/> 4. 25%	
Q.34	The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?	
Ans	<input type="checkbox"/> 1. Article 356	
	<input checked="" type="checkbox"/> 2. Article 123	
	<input type="checkbox"/> 3. Article 110	
	<input type="checkbox"/> 4. Article 72	
Q.35	What is the primary function of a firewall tool in a computer network?	
Ans	<input type="checkbox"/> 1. To speed up internet connections	
	<input type="checkbox"/> 2. To store data securely	
	<input type="checkbox"/> 3. To detect and remove viruses	
	<input checked="" type="checkbox"/> 4. To monitor and control incoming and outgoing network traffic	

Q.36	Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.
Ans	<div><div>✓</div>1. mutations</div>
	<div><div>✗</div>2. emotional defects</div>
	<div><div>✗</div>3. syndromes</div>
	<div><div>✗</div>4. diseases</div>
Q.37	Which of the following options is NOT a greenhouse gas?
Ans	<div><div>✗</div>1. Carbon dioxide</div>
	<div><div>✗</div>2. Nitrous oxide</div>
	<div><div>✗</div>3. Methane</div>
	<div><div>✓</div>4. Carbon tetrachloride</div>
Q.38	A concave lens has a focal length of −2 cm. What is its power?
Ans	<div><div>✗</div>1. 25 D</div>
	<div><div>✗</div>2. 0.5 D</div>
	<div><div>✓</div>3. −50 D</div>
	<div><div>✗</div>4. −0.5 D</div>
Q.39	For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year _____.
Ans	<div><div>✓</div>1. 1986</div>
	<div><div>✗</div>2. 1992</div>
	<div><div>✗</div>3. 1972</div>
	<div><div>✗</div>4. 1984</div>
Q.40	In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?
Ans	<div><div>✗</div>1. 600 metres T20</div>
	<div><div>✗</div>2. 200 metres T20</div>
	<div><div>✗</div>3. 100 metres T20</div>
	<div><div>✓</div>4. 400 metres T20</div>
Q.41	Which of the following is NOT toxic to non-target organisms in the soil?
Ans	<div><div>✗</div>1. Fungicides</div>
	<div><div>✓</div>2. Organic fertilisers</div>
	<div><div>✗</div>3. Pesticides</div>
	<div><div>✗</div>4. Herbicides</div>
Q.42	What happens when you click on the 'Forward' button in an email?
Ans	<div><div>✗</div>1. The email is automatically sent to all contacts.</div>
	<div><div>✗</div>2. A blank email opens.</div>
	<div><div>✗</div>3. The email is permanently deleted.</div>
	<div><div>✓</div>4. The original message is copied into a new email draft.</div>
Q.43	Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?
Ans	<div><div>✗</div>1. VALUE()</div>
	<div><div>✗</div>2. NUMBERTOTEXT()</div>
	<div><div>✗</div>3. FORMAT()</div>
	<div><div>✓</div>4. TEXT()</div>

Q.44	Who is known as the leader of the Green Revolution in India?
Ans	<div><div><div>✖</div><div>1. C Subramaniam</div></div><div><div>✔</div><div>2. Prof. MS Swaminathan</div></div><div><div>✖</div><div>3. Tribhuvandas Kishibhai Patel</div></div><div><div>✖</div><div>4. Dr. Rajendra Prasad</div></div></div>
Q.45	An alloy is considered a homogeneous mixture because:
Ans	<div><div><div>✔</div><div>1. it exhibits uniform composition throughout</div></div><div><div>✖</div><div>2. its components are chemically combined in fixed proportions</div></div><div><div>✖</div><div>3. its components can be separated by filtration</div></div><div><div>✖</div><div>4. it contains two or more phases</div></div></div>
Q.46	Due to global warming, the temperature of the earth has increased by _____
Ans	<div><div><div>✖</div><div>1. 0.8°C</div></div><div><div>✔</div><div>2. 0.6°C</div></div><div><div>✖</div><div>3. 0.5°C</div></div><div><div>✖</div><div>4. 0.7°C</div></div></div>
Q.47	What is the general orientation of the Himalayan ranges in the northwestern part of India?
Ans	<div><div><div>✖</div><div>1. East-South</div></div><div><div>✔</div><div>2. Northwest to Southeast</div></div><div><div>✖</div><div>3. Northeast to Southwest</div></div><div><div>✖</div><div>4. South-North</div></div></div>
Q.48	Who among the following established the Bengal Chemical Swadeshi Stores?
Ans	<div><div><div>✖</div><div>1. Surendranath Banerjee</div></div><div><div>✔</div><div>2. Acharya PC Ray</div></div><div><div>✖</div><div>3. BG Tilak</div></div><div><div>✖</div><div>4. Dadabhai Naoroji</div></div></div>
Q.49	Why do covalent compounds generally have low melting and boiling points?
Ans	<div><div><div>✖</div><div>1. They have a rigid lattice structure.</div></div><div><div>✔</div><div>2. They have weak intermolecular forces.</div></div><div><div>✖</div><div>3. They have strong electrostatic forces.</div></div><div><div>✖</div><div>4. They contain metallic bonds.</div></div></div>
Q.50	In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?
Ans	<div><div><div>✖</div><div>1. Global Positioning System (GPS)</div></div><div><div>✖</div><div>2. Global Navigation Satellite System (GLONASS)</div></div><div><div>✔</div><div>3. Navigation with Indian Constellation (NavIC)</div></div><div><div>✖</div><div>4. Galileo</div></div></div>

Q.1	In Shunt Zener diode voltage regulator circuit, the purpose of the resistor (R) connected in series with the input voltage is:
Ans	<div>✗ 1. to filter out noise and ripples in the output voltage</div> <div>✗ 2. to amplify the input voltage</div> <div>✓ 3. to limit the current through the Zener diode</div> <div>✗ 4. to add the input voltage and voltage drop across the resistor R and provide it to the Zener diode</div>
Q.2	In arc heating, the arc is sustained by:
Ans	<div>✗ 1. dielectric strength of air</div> <div>✗ 2. magnetic field</div> <div>✓ 3. ionisation of air</div> <div>✗ 4. heat conduction</div>
Q.3	The difference between Capacity Factor and Load Factor represents _____.
Ans	<div>✗ 1. the total energy consumed by the plant</div> <div>✗ 2. the plant's efficiency in converting fuel to electricity</div> <div>✗ 3. the maximum demand of the plant</div> <div>✓ 4. the plant's reserve capacity for future load growth</div>
Q.4	Which of the following is characteristic of soft magnetic materials?
Ans	<div>✗ 1. Large hysteresis loss</div> <div>✓ 2. Low coercivity</div> <div>✗ 3. Low relative permeability</div> <div>✗ 4. Low absolute permeability</div>
Q.5	Find the total current fed at the sending end A, in the given ring distributor ABC_____.
Ans	<div>✗ 1. (13.6 + j14.4) A</div> <div>✗ 2. (12 + j8)</div> <div>✓ 3. (14.4 + j13.6) A</div> <div>✗ 4. (8 + j6) A</div>
Q.6	Read the given Assertion (A) and Reason (R) carefully and select the correct option.  (A): Weakening of springs in PMMC is due to aging and temperature. (R): Permanent magnets used in PMMC instruments tend to lose their strength over time.
Ans	<div>✗ 1. A is false, but R is true</div> <div>✓ 2. Both A and R are true, but R is not the correct explanation of A.</div> <div>✗ 3. A is true, but R is false.</div> <div>✗ 4. Both A and R are true, and R is the correct explanation of A.</div>



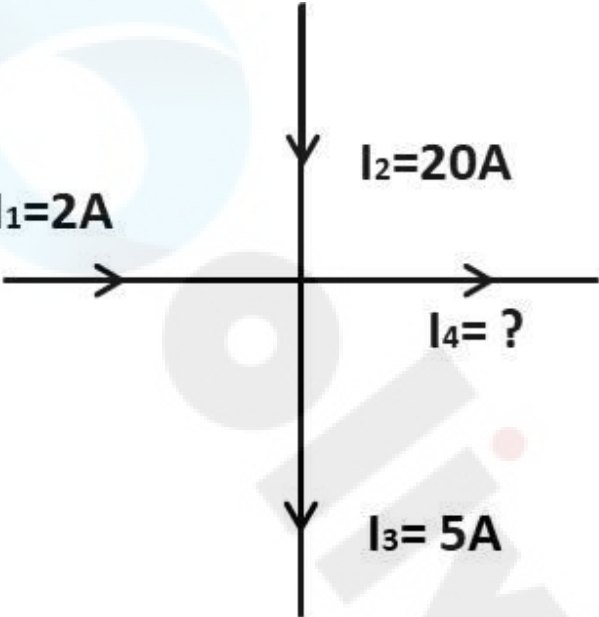
Q.7	With reference to energy band diagram of the NPN BJT, there exist _____ space charge regions and maximum band bending at _____ junction.
Ans	<div><div><input checked="" type="checkbox"/></div>1. three; base collector</div>
	<div><div><input checked="" type="checkbox"/></div>2. two; base emitter</div>
	<div><div><input checked="" type="checkbox"/></div>3. three; base emitter</div>
	<div><div><input checked="" type="checkbox"/></div>4. two; base collector</div>
Q.8	The ‘ $\pi$ (Pi) Model’ or the ‘T Model’ is commonly used to represent which type of transmission line?
Ans	<div><div><input checked="" type="checkbox"/></div>1. Medium transmission line (80 km to 160 km)</div>
	<div><div><input checked="" type="checkbox"/></div>2. Long transmission line (more than 160 km)</div>
	<div><div><input checked="" type="checkbox"/></div>3. Ultra-high voltage transmission line (above 1000 km)</div>
	<div><div><input checked="" type="checkbox"/></div>4. Short transmission line (less than 80 km)</div>
Q.9	Why are short-pitch windings preferred in alternators despite their lower induced EMF per coil?
Ans	<div><div><input checked="" type="checkbox"/></div>1. They eliminate the need for insulation.</div>
	<div><div><input checked="" type="checkbox"/></div>2. They increase the length of end connections.</div>
	<div><div><input checked="" type="checkbox"/></div>3. They allow for higher voltage ratings.</div>
	<div><div><input checked="" type="checkbox"/></div>4. They increase the overall efficiency.</div>
Q.10	In a Star-Delta Starter used for induction motors, the starting torque is reduced to approximately:
Ans	<div><div><input checked="" type="checkbox"/></div>1. 33% of full-load torque</div>
	<div><div><input checked="" type="checkbox"/></div>2. 66% of full-load torque</div>
	<div><div><input checked="" type="checkbox"/></div>3. 50% of full-load torque</div>
	<div><div><input checked="" type="checkbox"/></div>4. 75% of full-load torque</div>
Q.11	Microwave heating is based on the principle of:
Ans	<div><div><input checked="" type="checkbox"/></div>1. conduction heating</div>
	<div><div><input checked="" type="checkbox"/></div>2. dielectric heating</div>
	<div><div><input checked="" type="checkbox"/></div>3. induction heating</div>
	<div><div><input checked="" type="checkbox"/></div>4. arc heating</div>
Q.12	Which of the following is a key characteristic of a slip ring induction motor?
Ans	<div><div><input checked="" type="checkbox"/></div>1. High efficiency at all loads</div>
	<div><div><input checked="" type="checkbox"/></div>2. Low starting torque and high starting current</div>
	<div><div><input checked="" type="checkbox"/></div>3. Operates only at synchronous speed</div>
	<div><div><input checked="" type="checkbox"/></div>4. High starting torque and low starting current</div>
Q.13	What is the primary purpose of estimation and costing in unit earthing for commercial installations?
Ans	<div><div><input checked="" type="checkbox"/></div>1. To eliminate the need for earthing in electrical systems</div>
	<div><div><input checked="" type="checkbox"/></div>2. To determine the materials, labour and costs required for a safe and effective earthing system</div>
	<div><div><input checked="" type="checkbox"/></div>3. To ensure the earthing system is aesthetically pleasing</div>
	<div><div><input checked="" type="checkbox"/></div>4. To focus only on the decorative aspects of the installation</div>

Q.14	Consider a fixed bias circuit using a NPN BJT transistor in CE configuration along with base resistance $R_b$ , collector resistance $R_c$ and supply voltage $V_{cc}$ . If $\beta$ is the current gain of the BJT, then the stability factor of the fixed bias circuit is:
Ans	<div><div><input checked="" type="checkbox"/></div>1. inversely proportional to <math>\beta</math></div> <div><div><input checked="" type="checkbox"/></div>2. independent of <math>\beta</math></div> <div><div><input checked="" type="checkbox"/></div>3. directly proportional to <math>\beta</math></div> <div><div><input checked="" type="checkbox"/></div>4. inversely proportional to square of <math>\beta</math></div>
Q.15	What is the primary purpose of 'Inter-Turn Fault Protection' in an alternator?
Ans	<div><div><input checked="" type="checkbox"/></div>1. To detect faults between the rotor and stator windings</div> <div><div><input checked="" type="checkbox"/></div>2. To monitor the voltage imbalance in the alternator</div> <div><div><input checked="" type="checkbox"/></div>3. To protect against earth faults in the rotor winding</div> <div><div><input checked="" type="checkbox"/></div>4. To detect faults between adjacent turns of the stator winding</div>
Q.16	The direction of the induced EMF in a coil may be found with the help of:
Ans	<div><div><input checked="" type="checkbox"/></div>1. Fleming's right-hand rule</div> <div><div><input checked="" type="checkbox"/></div>2. Fleming's left-hand rule</div> <div><div><input checked="" type="checkbox"/></div>3. Steinmetz's law</div> <div><div><input checked="" type="checkbox"/></div>4. Faraday's law</div>
Q.17	In a synchronous motor, If the load angle exceeds $90^\circ$ , then the motor will:
Ans	<div><div><input checked="" type="checkbox"/></div>1. lose synchronism and stall</div> <div><div><input checked="" type="checkbox"/></div>2. reduce copper losses</div> <div><div><input checked="" type="checkbox"/></div>3. increase efficiency</div> <div><div><input checked="" type="checkbox"/></div>4. operate at leading power factor</div>
Q.18	What is the role of heliostats in a power tower system?
Ans	<div><div><input checked="" type="checkbox"/></div>1. To store solar energy for later use</div> <div><div><input checked="" type="checkbox"/></div>2. To convert thermal energy into electrical energy</div> <div><div><input checked="" type="checkbox"/></div>3. To track the Sun and direct sunlight to the receiver</div> <div><div><input checked="" type="checkbox"/></div>4. To generate electricity directly</div>
Q.19	What law explains the induction of eddy currents in the armature core?
Ans	<div><div><input checked="" type="checkbox"/></div>1. Lenz's Law</div> <div><div><input checked="" type="checkbox"/></div>2. Faraday's Law</div> <div><div><input checked="" type="checkbox"/></div>3. Ohm's Law</div> <div><div><input checked="" type="checkbox"/></div>4. Ampere's Law</div>
Q.20	In an auto transformer, if the voltage transformation ratio is 2 : 1, what is the ratio of the primary current to the secondary current?
Ans	<div><div><input checked="" type="checkbox"/></div>1. 2 : 1</div> <div><div><input checked="" type="checkbox"/></div>2. 1 : 2</div> <div><div><input checked="" type="checkbox"/></div>3. 1 : 1</div> <div><div><input checked="" type="checkbox"/></div>4. 2 : 3</div>
Q.21	What is the purpose of '100% Stator Earth Fault Protection' in an alternator?
Ans	<div><div><input checked="" type="checkbox"/></div>1. To monitor the voltage regulation of the alternator</div> <div><div><input checked="" type="checkbox"/></div>2. To detect and protect against earth faults occurring anywhere in the stator winding</div> <div><div><input checked="" type="checkbox"/></div>3. To detect and protect against phase-to-phase faults in the stator winding</div> <div><div><input checked="" type="checkbox"/></div>4. To protect the rotor winding from overheating</div>

Q.22	Which of the following statements is NOT correct regarding the errors in a Potential Transformer?
Ans	<div><div>✗</div>1. Both Power angle error and Ratio error influence Power measurement.</div> <div><div>✗</div>2. Both Power angle error and Ratio error are important for measuring Voltage.</div> <div><div>✓</div>3. Power angle error alone affects Voltage measurement in a Potential Transformer.</div> <div><div>✗</div>4. Voltage measurement in a Potential Transformer depends primarily on Ratio error.</div>
Q.23	In the torque-load characteristic curve of a DC series motor, what happens as the load increases?
Ans	<div><div>✗</div>1. The torque becomes constant.</div> <div><div>✗</div>2. The torque decreases proportionally.</div> <div><div>✓</div>3. The torque increases proportionally to the square of the armature current.</div> <div><div>✗</div>4. The armature current decreases.</div>
Q.24	Fleming's Right-Hand Rule is used to determine the direction of:
Ans	<div><div>✗</div>1. magnetic field around a conductor</div> <div><div>✓</div>2. the induced electromotive force</div> <div><div>✗</div>3. force on a charged particle</div> <div><div>✗</div>4. current flowing through a conductor</div>
Q.25	In j-notation, used in phasor representation, the imaginary unit $j^2$ represents ____.
Ans	<div><div>✓</div>1. -1</div> <div><div>✗</div>2. <math>\sqrt{-1}</math></div> <div><div>✗</div>3. 1</div> <div><div>✗</div>4. 0</div>
Q.26	A power system with a high reactive power demand will result in ____.
Ans	<div><div>✗</div>1. high power factor</div> <div><div>✗</div>2. no change in power factor</div> <div><div>✗</div>3. unity power factor</div> <div><div>✓</div>4. low power factor</div>
Q.27	Which factor does NOT affect the starting torque of an induction start synchronous motor?
Ans	<div><div>✓</div>1. Field excitation during startup</div> <div><div>✗</div>2. Rotor reactance</div> <div><div>✗</div>3. Rotor resistance</div> <div><div>✗</div>4. Supply voltage</div>
Q.28	In a power triangle, what is the relationship between active power (P), reactive power (Q) and apparent power (S)?
Ans	<div><div>✗</div>1. <math>Q^2 = S^2 + P^2</math></div> <div><div>✗</div>2. <math>P^2 = S^2 + Q^2</math></div> <div><div>✗</div>3. <math>S = P + Q</math></div> <div><div>✓</div>4. <math>S^2 = P^2 + Q^2</math></div>
Q.29	In a series RLC circuit, the total impedance is minimum when ____.
Ans	<div><div>✗</div>1. <math>X_L &lt; X_C</math></div> <div><div>✗</div>2. <math>X_L &gt; X_C</math></div> <div><div>✗</div>3. the resistance is zero</div> <div><div>✓</div>4. <math>X_L = X_C</math></div>

Q.30	What is the main drawback of using an induction generator in a grid-connected wind turbine?
Ans	<div><div>✗</div>1. It is not suitable for wind energy applications.</div>
	<div><div>✗</div>2. It cannot generate active power.</div>
	<div><div>✓</div>3. It requires external reactive power from the grid.</div>
	<div><div>✗</div>4. It cannot operate at high speeds.</div>
Q.31	In a three – phase induction motor which component represents mechanical load in the equivalent circuit?
Ans	<div><div>✗</div>1. <math>R_2(1 - s)</math></div>
	<div><div>✓</div>2. <math>\frac{R_2(1 - s)}{s}</math></div>
	<div><div>✗</div>3. <math>\frac{sR_2(1 - s)}{s}</math></div>
	<div><div>✗</div>4. <math>\frac{R_2}{s}</math></div>
Q.32	In a three-phase star-connected system with a neutral shift, how can the problem be corrected?
Ans	<div><div>✗</div>1. By increasing the phase voltage</div>
	<div><div>✗</div>2. By increasing the neutral wire resistance</div>
	<div><div>✗</div>3. By disconnecting the neutral wire</div>
	<div><div>✓</div>4. By balancing the load among the three phases</div>
Q.33	Read the given Assertion (A) and Reason (R) carefully and select the correct option.  (A): The burden of an instrument transformer is usually expressed in volt-amperes (VA). (R): Burden is the total impedance of the connected devices, including meters, relays, and wiring.
Ans	<div><div>✓</div>1. Both A and R are true and R is the not the correct explanation of A.</div>
	<div><div>✗</div>2. A is false, but R is true.</div>
	<div><div>✗</div>3. A is true, but R is false.</div>
	<div><div>✗</div>4. Both A and R are true and R is the correct explanation of A.</div>
Q.34	What is the first step in the design procedure for electrical installations in commercial buildings?
Ans	<div><div>✓</div>1. Conducting a load analysis to determine power requirements</div>
	<div><div>✗</div>2. Installing protective devices without planning</div>
	<div><div>✗</div>3. Selecting decorative lighting fixtures</div>
	<div><div>✗</div>4. Ignoring safety standards to reduce costs</div>
Q.35	Which connection method is correct when using a CT and PT with a wattmeter?
Ans	<div><div>✓</div>1. CT is connected in series with the wattmeter current coil, and PT is connected in parallel with the voltage coil.</div>
	<div><div>✗</div>2. CT is connected in parallel with the wattmeter current coil, and PT is connected in series with the voltage coil.</div>
	<div><div>✗</div>3. Both CT and PT are connected in series with the wattmeter.</div>
	<div><div>✗</div>4. Both CT and PT are connected in parallel with the wattmeter.</div>

Q.36	When armature conductors carry a lower load current, the armature's MMF (magnetomotive force) causes:	
Ans	<input checked="" type="checkbox"/> 1. no effect on the main field flux	
	<input checked="" type="checkbox"/> 2. the main field flux to strengthen	
	<input checked="" type="checkbox"/> 3. an increase in the induced emf	
	<input checked="" type="checkbox"/> 4. a cross-magnetising effect	

Q.37	Find the current $I_4$ flowing in the circuit shown below.	
		

Ans	<input checked="" type="checkbox"/> 1. 13 A	
	<input checked="" type="checkbox"/> 2. 23 A	
	<input checked="" type="checkbox"/> 3. 17 A	
	<input checked="" type="checkbox"/> 4. 27 A	

Q.38	Winding in wire wound resistor is made up of _____.	
Ans	<input checked="" type="checkbox"/> 1. Carbon	
	<input checked="" type="checkbox"/> 2. Chromium cobalt	
	<input checked="" type="checkbox"/> 3. Nickel	
	<input checked="" type="checkbox"/> 4. Nickel-chromium alloy	

Q.39	The luminous intensity of a source emitting light uniformly in all directions of 10 lumens per steradian is:	
Ans	<input checked="" type="checkbox"/> 1. 1 candela	
	<input checked="" type="checkbox"/> 2. 5 candela	
	<input checked="" type="checkbox"/> 3. 10 candela	
	<input checked="" type="checkbox"/> 4. 20 candela	

Q.40	Shaded pole motors are ideal for _____.	
Ans	<input checked="" type="checkbox"/> 1. low-power, continuous-duty applications	
	<input checked="" type="checkbox"/> 2. intermittent heavy-load tasks	
	<input checked="" type="checkbox"/> 3. high-vibration environments	
	<input checked="" type="checkbox"/> 4. precision speed control	

Q.41	For a P-N junction diode, as the temperature increases the forward knee voltage of the diode _____ and the reverse saturation current _____.
Ans	<div><div>✖</div>1. decreases; decreases</div>
	<div><div>✖</div>2. increases; decreases</div>
	<div><div>✖</div>3. increases; increases</div>
	<div><div>✔</div>4. decreases; increases</div>
Q.42	If laplace transform of voltage across capacitor of value 0.5 F is $V_c(s) = \frac{1}{s^2 + 1}$ , the value of current through capacitor at $t = 0^+$ will be:
Ans	<div><div>✖</div>1. 1 A</div>
	<div><div>✔</div>2. 0.5 A</div>
	<div><div>✖</div>3. zero</div>
	<div><div>✖</div>4. 2 A</div>
Q.43	Coefficient of coupling between two coils is given as _____, where M = Mutual Inductance, $L_1$ = Self Inductance of coil 1 and $L_2$ = Self Inductance of coil 2
Ans	<div><div>✔</div>1. <math>\frac{M}{\sqrt{L_1 L_2}}</math></div>
	<div><div>✖</div>2. <math>\frac{\sqrt{L_1 L_2}}{M}</math></div>
	<div><div>✖</div>3. <math>M\sqrt{L_1 L_2}</math></div>
	<div><div>✖</div>4. <math>L_1 \cdot L_2 \cdot M</math></div>
Q.44	Which of the following components is responsible for atomising the fuel in a diesel engine?
Ans	<div><div>✖</div>1. Turbocharger</div>
	<div><div>✖</div>2. Carburetor</div>
	<div><div>✖</div>3. Fuel pump</div>
	<div><div>✔</div>4. Injector</div>
Q.45	Identify the correct statement related to switching speed of the BJT.
Ans	<div><div>✖</div>1. Switching speed of BJT is greater than switching speed on a MOSFET.</div>
	<div><div>✖</div>2. Switching speed of BJT is equal to switching speed on a MOSFET.</div>
	<div><div>✔</div>3. Switching speed of BJT is less compared to switching speed on a MOSFET.</div>
	<div><div>✖</div>4. BJT is an amplifying device and hence cannot work as a switch. Therefore, switching speed parameter does not exist for a BJT.</div>
Q.46	The eddy current loss in a transformer is caused by:
Ans	<div><div>✖</div>1. resistance of the primary winding</div>
	<div><div>✖</div>2. voltage drop across the windings</div>
	<div><div>✖</div>3. saturation of the core material</div>
	<div><div>✔</div>4. circulating currents within the core due to changing magnetic flux</div>

Q.47	A $0.5\Omega$ shunt resistor is used to measure current with a CRO. If the measured voltage drop is 5V, what is the current?
Ans	<div><div><div><div><div></div></div><div>1. 2.5 A</div></div><div><div></div><div>2. 10 A</div></div><div><div></div><div>3. 5 A</div></div><div><div></div><div>4. 20 A</div></div></div></div>
Q.48	Electric Arc Welding is a type of:
Ans	<div><div><div><div><div></div></div><div>1. resistance welding</div></div><div><div></div><div>2. fusion welding</div></div><div><div></div><div>3. solid-state welding</div></div><div><div></div><div>4. pressure welding</div></div></div></div>
Q.49	Which of the following best describes the role of cogeneration in energy conservation and how the application of a tariff system can help reduce energy bills?
Ans	<div><div><div><div><div></div></div><div>1. Cogeneration is only applicable in large industrial settings and has no impact on energy conservation, while tariff systems are solely used for revenue generation by utilities.</div></div><div><div></div><div>2. Cogeneration and tariff systems are unrelated concepts, and neither contributes to energy conservation or cost reduction.</div></div><div><div></div><div>3. Cogeneration increases energy consumption by producing excess electricity, and tariff systems are used to penalize high energy users without reducing bills.</div></div><div><div></div><div>4. Cogeneration reduces energy waste by simultaneously producing electricity and useful thermal energy, while a well-designed tariff system incentivizes off-peak energy usage, lowering overall costs.</div></div></div></div>
Q.50	Which of the following materials should NOT be placed in a microwave oven?
Ans	<div><div><div><div><div></div></div><div>1. Paper</div></div><div><div></div><div>2. Aluminium foil</div></div><div><div></div><div>3. Glass</div></div><div><div></div><div>4. Plastic</div></div></div></div>
Q.51	Two magnetic paths BE and BCDE are in parallel and form a parallel magnetic circuit, as shown in the given figure. The Ampere Turn required for this parallel circuit is equal to:
Ans	<div><div><div><div><div></div></div><div>1. inverse of Ampere Turn required for BE</div></div><div><div></div><div>2. ampere Turn required for any one of the paths</div></div><div><div></div><div>3. square of Ampere Turn required for any one of the paths</div></div><div><div></div><div>4. sum of Ampere Turn required for BE and BCDE</div></div></div></div>
Q.52	Which of the following is a common internal fault in transformers?
Ans	<div><div><div><div><div></div></div><div>1. High power factor leading to overheating</div></div><div><div></div><div>2. Excessive cooling system efficiency</div></div><div><div></div><div>3. Overvoltage due to lightning strikes</div></div><div><div></div><div>4. Winding inter-turn short circuits</div></div></div></div>

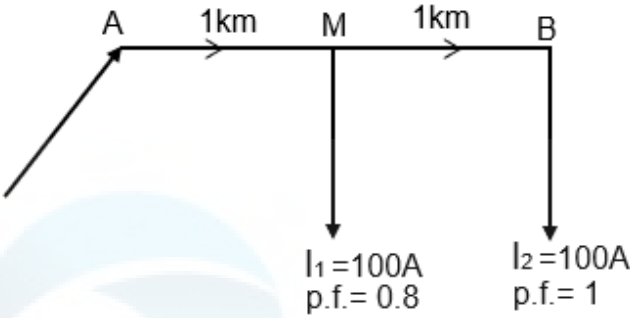
Q.53	Which of the following statements regarding active power in AC circuits is INCORRECT?
Ans	<div><div><div><div><div><div></div></div></div><div>1. Active power increases with an increase in power factor.</div></div></div><div><div><div></div></div><div>2. Active power is the real power consumed by the circuit.</div></div></div> <div><div><div></div></div><div>3. Active power is given by <math>P=VI\sin\phi</math> in an AC circuit.</div></div>

4. The unit of active power is Watt (W).



Q.60	How does the starting torque of a split-phase motor compare with that of a shaded-pole motor?
Ans	<input type="checkbox"/> 1. Both have similar starting torque.
	<input checked="" type="checkbox"/> 2. Split-phase motors have higher starting torque.
	<input type="checkbox"/> 3. Split-phase motors have no starting torque.
	<input type="checkbox"/> 4. Shaded-pole motors have higher starting torque.
Q.61	In a biomass power plant, what is the main purpose of the combustion/gasification chamber?
Ans	<input type="checkbox"/> 1. To cool down the system after power generation
	<input type="checkbox"/> 2. To store biomass for future use
	<input checked="" type="checkbox"/> 3. To burn biomass or convert it into syngas for energy generation
	<input type="checkbox"/> 4. To distribute electricity to the grid
Q.62	A composite magnetic circuit consisting of three different magnetic material of different permeability are joined in the form of a ring. The total reluctance is:
Ans	<input checked="" type="checkbox"/> 1. the sum of individual reluctances.
	<input type="checkbox"/> 2. thrice the reluctance of material 1
	<input type="checkbox"/> 3. the product of individual reluctances
	<input type="checkbox"/> 4. inverse of the sum of individual reluctances
Q.63	Why is an electrodynamicometer-type wattmeter used as a standard instrument in laboratories?
Ans	<input type="checkbox"/> 1. It works only for low-power circuits.
	<input checked="" type="checkbox"/> 2. It has high accuracy and precision.
	<input type="checkbox"/> 3. It is cheaper than other wattmeters.
	<input type="checkbox"/> 4. It requires no external power supply.
Q.64	Why does Kelvin's Law give different conductor sizes for two identical systems?
Ans	<input type="checkbox"/> 1. Because the electrical load is different in both systems
	<input checked="" type="checkbox"/> 2. Due to variations in interest rates, depreciation, and energy costs
	<input type="checkbox"/> 3. Because one system uses overhead lines and the other uses underground cables
	<input type="checkbox"/> 4. Because the resistance of conductors is always changing
Q.65	Magnetic fringing can be minimised by:
Ans	<input type="checkbox"/> 1. scattering the magnetic flux
	<input type="checkbox"/> 2. decreasing the temperature
	<input type="checkbox"/> 3. using low quality magnetic material
	<input checked="" type="checkbox"/> 4. reducing the air gap
Q.66	Calculate the potential difference of an energy source that provides 6.8 J for every milli-coulomb of charge that it delivers.
Ans	<input type="checkbox"/> 1. 6.8 mV
	<input checked="" type="checkbox"/> 2. 6.8 kV
	<input type="checkbox"/> 3. 6.8 V
	<input type="checkbox"/> 4. 0.68 V

Q.67	Which of the following is NOT a condition for the parallel operation of transformers?
Ans	<div><div><input type="checkbox"/></div><div>1. Same per unit impedance</div></div> <div><div><input type="checkbox"/></div><div>2. Same voltage ratio</div></div> <div><div><input checked="" type="checkbox"/></div><div>3. Same core material</div></div> <div><div><input type="checkbox"/></div><div>4. Same polarity</div></div>
Q.68	The total collector current for a BJT operating in the active region is given by the relation _____ and the leakage current component is _____.
Ans	<div><div><input type="checkbox"/></div><div>1. <math>I_c = I_{co}(\text{minority})</math>; majority carrier component</div></div> <div><div><input type="checkbox"/></div><div>2. <math>I_c = I_c(\text{majority}) + I_{co}(\text{minority})</math>; majority carrier component</div></div> <div><div><input type="checkbox"/></div><div>3. <math>I_c = I_c(\text{majority})</math>; minority carrier component</div></div> <div><div><input checked="" type="checkbox"/></div><div>4. <math>I_c = I_c(\text{majority}) + I_{co}(\text{minority})</math>; minority carrier component</div></div>
Q.69	What is a key factor in the installation and costing of electrical systems for commercial buildings?
Ans	<div><div><input type="checkbox"/></div><div>1. Ignoring safety standards to reduce costs</div></div> <div><div><input checked="" type="checkbox"/></div><div>2. Ensuring compliance with electrical codes and standards while estimating materials and labour costs</div></div> <div><div><input type="checkbox"/></div><div>3. Focusing only on decorative lighting and aesthetics</div></div> <div><div><input type="checkbox"/></div><div>4. Eliminating the use of protective devices</div></div>
Q.70	Which of the following is a commonly used light source in modern street light installations?
Ans	<div><div><input type="checkbox"/></div><div>1. Fluorescent tubes</div></div> <div><div><input type="checkbox"/></div><div>2. Candles</div></div> <div><div><input type="checkbox"/></div><div>3. Incandescent bulbs</div></div> <div><div><input checked="" type="checkbox"/></div><div>4. High-Pressure Sodium (HPS) lamps</div></div>
Q.71	Which of the following is NOT an advantage of a PMMC instrument?
Ans	<div><div><input checked="" type="checkbox"/></div><div>1. Suitable for AC and DC measurements</div></div> <div><div><input type="checkbox"/></div><div>2. Linear scale</div></div> <div><div><input type="checkbox"/></div><div>3. High accuracy</div></div> <div><div><input type="checkbox"/></div><div>4. Low power consumption</div></div>
Q.72	Stray load losses in synchronous motors are caused by _____.
Ans	<div><div><input type="checkbox"/></div><div>1. poor lubrication in bearings</div></div> <div><div><input type="checkbox"/></div><div>2. excessive field excitation</div></div> <div><div><input checked="" type="checkbox"/></div><div>3. leakage fluxes and harmonic effects</div></div> <div><div><input type="checkbox"/></div><div>4. high rotor inertia</div></div>
Q.73	In Lambert's Cosine Law, the angle $\theta$ is measured between:
Ans	<div><div><input type="checkbox"/></div><div>1. reflected light and normal</div></div> <div><div><input type="checkbox"/></div><div>2. source and observer</div></div> <div><div><input checked="" type="checkbox"/></div><div>3. incident light and normal</div></div> <div><div><input type="checkbox"/></div><div>4. horizontal and vertical plane</div></div>

Q.74	<p>A single-phase distributor, 2 km long, has a line impedance of <math>(0.2 + 0.3j) \Omega/\text{km}</math>. It supplies a load at the far end, where the voltage <math>V_B</math> is 100 V and the current is 100 A at unity power factor. Additionally, a load of 100 A at 0.8 power factor lagging is connected at its midpoint. Calculate the voltage drop at the midpoint.</p> 
Ans	<div>✗ 1. <math>120 + j15</math></div> <div>✗ 2. <math>110 + j15</math></div> <div>✗ 3. <math>210 + j15</math></div> <div>✓ 4. <math>120 + j30</math></div>
Q.75	<p>What is the purpose of a closed feeder ring in an interconnected system?</p>
Ans	<div>✗ 1. To reduce voltage stability</div> <div>✗ 2. To prevent power distribution</div> <div>✗ 3. To disconnect substations from each other</div> <div>✓ 4. To create a looped power supply network</div>
Q.76	<p>The collector to bias circuit in BJT has better stability than fixed bias circuit as _____.</p>
Ans	<div>✗ 1. it can operate on higher supply voltages than that of fixed bias circuit</div> <div>✗ 2. it can operate on higher power than fixed bias circuit</div> <div>✓ 3. its stability factor is lower than that of fixed bias</div> <div>✗ 4. its stability factor is higher than that of fixed bias</div>
Q.77	<p>Which underground cable laying method requires re-excavation for load expansion, making modifications costly?</p>
Ans	<div>✗ 1. Draw-in System</div> <div>✗ 2. Overhead System</div> <div>✓ 3. Trough Laying</div> <div>✗ 4. Direct Laying</div>
Q.78	<p>Power of an electrical system is measured in _____.</p>
Ans	<div>✗ 1. watt-sec</div> <div>✗ 2. newton-metre</div> <div>✗ 3. joule</div> <div>✓ 4. watt</div>
Q.79	<p>If the frequency of a series R-C circuit is increased, what happens to the capacitive reactance <math>X_C</math>?</p>
Ans	<div>✓ 1. It decreases</div> <div>✗ 2. It remains constant</div> <div>✗ 3. It increases</div> <div>✗ 4. It becomes infinite</div>

Q.80	Which of the following statements is NOT correct regarding the vector method in AC circuit analysis?
Ans	<div><div><input type="checkbox"/></div><div>1. The vector method is used to represent sinusoidal AC quantities.</div></div> <div><div><input type="checkbox"/></div><div>2. The vector method helps in determining the phase difference between voltage and current.</div></div> <div><div><input checked="" type="checkbox"/></div><div>3. Phasors in the vector method rotate in a clockwise direction in the complex plane.</div></div> <div><div><input type="checkbox"/></div><div>4. Phasor diagrams are used to solve AC circuit problems involving impedance.</div></div>
Q.81	A nuclear reactor produces $3.2 \times 10^{10}$ J of energy per second. How many fissions occur per second if each fission releases 200 MeV?
Ans	<div><div><input type="checkbox"/></div><div>1. <math>10^{10}</math></div></div> <div><div><input checked="" type="checkbox"/></div><div>2. <math>10^{21}</math></div></div> <div><div><input type="checkbox"/></div><div>3. <math>10^{11}</math></div></div> <div><div><input type="checkbox"/></div><div>4. <math>10^{19}</math></div></div>
Q.82	In relay terminology, what does the term 'pickup value' refer to?
Ans	<div><div><input type="checkbox"/></div><div>1. The time delay before the relay operates after detecting a fault</div></div> <div><div><input checked="" type="checkbox"/></div><div>2. The minimum value of the operating quantity (current, voltage, etc.) required to activate the relay</div></div> <div><div><input type="checkbox"/></div><div>3. The voltage level at which the relay resets after a fault is cleared</div></div> <div><div><input type="checkbox"/></div><div>4. The maximum current a relay can withstand without damage</div></div>
Q.83	The luminous intensity of a light source is defined as the luminous flux per unit:
Ans	<div><div><input type="checkbox"/></div><div>1. volume</div></div> <div><div><input type="checkbox"/></div><div>2. length</div></div> <div><div><input type="checkbox"/></div><div>3. area</div></div> <div><div><input checked="" type="checkbox"/></div><div>4. solid angle</div></div>
Q.84	Which control method enables four-quadrant operation of induction motors?
Ans	<div><div><input checked="" type="checkbox"/></div><div>1. Variable Frequency Drive (VFD)</div></div> <div><div><input type="checkbox"/></div><div>2. Rotor resistance control</div></div> <div><div><input type="checkbox"/></div><div>3. Stator voltage control</div></div> <div><div><input type="checkbox"/></div><div>4. Direct On-Line (DOL) starting</div></div>
Q.85	The EMF equation of a transformer is given by:
Ans	<div><div><input checked="" type="checkbox"/></div><div>1. <math>E = 4.44fN\phi</math></div></div> <div><div><input type="checkbox"/></div><div>2. <math>E = 4.44fNA\phi</math></div></div> <div><div><input type="checkbox"/></div><div>3. <math>E = 4.44NA\phi</math></div></div> <div><div><input type="checkbox"/></div><div>4. <math>E = 4.44f^2\phi N</math></div></div>
Q.86	Which of the following is an example of a constant load application for a DC shunt generator?
Ans	<div><div><input checked="" type="checkbox"/></div><div>1. Centrifugal pump</div></div> <div><div><input type="checkbox"/></div><div>2. DC arc welding</div></div> <div><div><input type="checkbox"/></div><div>3. Induction heating</div></div> <div><div><input type="checkbox"/></div><div>4. Electric motor</div></div>

Q.87	In large-scale solar PV plants, why is string inverter technology preferred over central inverters in some cases?
Ans	<div><div><input type="checkbox"/></div><div>1. It requires fewer connections and is easier to maintain.</div></div> <div><div><input type="checkbox"/></div><div>2. It generates higher voltage DC output.</div></div> <div><div><input checked="" type="checkbox"/></div><div>3. It reduces power losses due to shading and mismatch.</div></div> <div><div><input type="checkbox"/></div><div>4. It eliminates the need for AC cabling.</div></div>
Q.88	How many types of heating elements are commonly used in electric irons?
Ans	<div><div><input type="checkbox"/></div><div>1. Four</div></div> <div><div><input checked="" type="checkbox"/></div><div>2. Two</div></div> <div><div><input type="checkbox"/></div><div>3. One</div></div> <div><div><input type="checkbox"/></div><div>4. Three</div></div>
Q.89	What is the bias stability factor (S) for a fixed bias circuit?
Ans	<div><div><input type="checkbox"/></div><div>1. <math>S = (1 + \beta) / (1 + \beta + \beta^2)</math></div></div> <div><div><input checked="" type="checkbox"/></div><div>2. <math>S = (1 + \beta)</math></div></div> <div><div><input type="checkbox"/></div><div>3. <math>S = \beta / (1 + \beta)</math></div></div> <div><div><input type="checkbox"/></div><div>4. <math>S = 1 / (1 + \beta)</math></div></div>
Q.90	During the no-load test of a transformer, the secondary winding is:
Ans	<div><div><input type="checkbox"/></div><div>1. connected to a load</div></div> <div><div><input type="checkbox"/></div><div>2. connected in parallel with the primary winding</div></div> <div><div><input type="checkbox"/></div><div>3. short-circuited</div></div> <div><div><input checked="" type="checkbox"/></div><div>4. open-circuited</div></div>
Q.91	The capacitance of a parallel plate capacitor depends upon:
Ans	<div><div><input type="checkbox"/></div><div>1. potential difference between plates</div></div> <div><div><input type="checkbox"/></div><div>2. thickness of plates</div></div> <div><div><input checked="" type="checkbox"/></div><div>3. separation between plates</div></div> <div><div><input type="checkbox"/></div><div>4. type of metal used</div></div>
Q.92	In Norton's Theorem, the equivalent circuit consists of ____.
Ans	<div><div><input type="checkbox"/></div><div>1. a voltage source in parallel with a resistor</div></div> <div><div><input type="checkbox"/></div><div>2. a current source in series with a resistor</div></div> <div><div><input checked="" type="checkbox"/></div><div>3. a current source in parallel with a resistor</div></div> <div><div><input type="checkbox"/></div><div>4. a voltage source in series with a resistor</div></div>
Q.93	Which of the following is a critical factor in the installation and estimation of agricultural pumps and flourmills?
Ans	<div><div><input type="checkbox"/></div><div>1. Ignoring the load characteristics to simplify the design</div></div> <div><div><input type="checkbox"/></div><div>2. Focusing only on the mechanical components of the system</div></div> <div><div><input type="checkbox"/></div><div>3. Ensuring the system operates without any protective devices</div></div> <div><div><input checked="" type="checkbox"/></div><div>4. Calculating the power requirements and selecting appropriate protective devices</div></div>

Q.94	If the impedance of a parallel circuit is given by $Z = 5 - j4$ , then the admittance is given by_____.
Ans	<input checked="" type="checkbox"/> 1. $5 + j4$
	<input checked="" type="checkbox"/> 2. $5 - j4$
	<input checked="" type="checkbox"/> 3. 9
	<input checked="" type="checkbox"/> 4. $\frac{5 + j4}{41}$
Q.95	Why is voltage drop analysis important in an AC distribution system?
Ans	<input checked="" type="checkbox"/> 1. To increase power losses
	<input checked="" type="checkbox"/> 2. To reduce the system frequency
	<input checked="" type="checkbox"/> 3. To increase resistance in the conductors
	<input checked="" type="checkbox"/> 4. To ensure voltage levels remain within acceptable limits
Q.96	In a transformer, if the frequency of the supply voltage is increased, what happens to the induced voltage?
Ans	<input checked="" type="checkbox"/> 1. It becomes zero
	<input checked="" type="checkbox"/> 2. It remains the same
	<input checked="" type="checkbox"/> 3. It decreases
	<input checked="" type="checkbox"/> 4. It increases
Q.97	In a transformer, the efficiency can be calculated with reasonable accuracy by knowing:
Ans	<input checked="" type="checkbox"/> 1. the losses (core and copper losses)
	<input checked="" type="checkbox"/> 2. the input and output voltage
	<input checked="" type="checkbox"/> 3. the short-circuit current
	<input checked="" type="checkbox"/> 4. the rated power
Q.98	If the power factor of a three-phase system is 0.8, and the apparent power is 10 kVA, then what is the active power?
Ans	<input checked="" type="checkbox"/> 1. 8 kW
	<input checked="" type="checkbox"/> 2. 10 kW
	<input checked="" type="checkbox"/> 3. 12 kW
	<input checked="" type="checkbox"/> 4. 6 kW
Q.99	How can polarity in transformers be verified?
Ans	<input checked="" type="checkbox"/> 1. By conducting a short circuit test
	<input checked="" type="checkbox"/> 2. By measuring the input current
	<input checked="" type="checkbox"/> 3. By checking the voltage across the secondary winding
	<input checked="" type="checkbox"/> 4. By using a voltmeter to measure the voltage difference
Q.100	What will be the voltage relationship of frequency domain relation for inductor having time domain $v(t) = L di/dt$ ?
Ans	<input checked="" type="checkbox"/> 1. $V(s) = LsI(s) - Li(0)$
	<input checked="" type="checkbox"/> 2. $V(s) = LI(s)$
	<input checked="" type="checkbox"/> 3. $V(s) = LsI(s)$
	<input checked="" type="checkbox"/> 4. $V(s) = LI(s) - Li(0)$