रेलवे भर्ती बोर्ड / RAILWAY RECRUITMENT BOARD

सी ई एन नं. - 03/2024 / CEN No. - 03/2024

Test Date	22/04/2025
Test Time	2:30 PM - 4:30 PM
Subject	RRB JE Stage 2 Chemical and Metallurgical Supervisor

*** 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	**An alloy is considered a homogeneous mixture because:**
Ans	✔ 1. it exhibits uniform composition throughout
	✘ 2. it contains two or more phases
	✘ 3. its components are chemically combined in fixed proportions
	✘ 4. its components can be separated by filtration

Q.2	**Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.**
Ans	✘ 1. emotional defects
	✔ 2. mutations
	✘ 3. syndromes
	✘ 4. diseases

Q.3	**The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?**
Ans	✔ 1. Article 123
	✘ 2. Article 110
	✘ 3. Article 72
	✘ 4. Article 356

Q.4	**Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?**
Ans	✔ 1. Smriti Mandhana
	✘ 2. Jhulan Goswami
	✘ 3. Harmanpreet Kaur
	✘ 4. Mithali Raj

Q.5	**Which of the following bridges is constructed over the Brahmaputra River in India?**
Ans	✘ 1. Howrah Bridge
	✘ 2. Pamban Bridge
	✘ 3. Mahatma Gandhi Setu
	✔ 4. Dhola-Sadiya Bridge

Q.6	The main reason for which we are dependent on air is our _____.
Ans	✗ 1. excretion
	✗ 2. osmoregulation
	✓ 3. respiration
	✗ 4. digestion

Q.7	Which of the following is NOT a source of collection of municipal solid waste?
Ans	✗ 1. Waste from hospitals
	✓ 2. Radioactive waste
	✗ 3. Waste from schools
	✗ 4. Waste from homes

Q.8	Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?
Ans	✗ 1. VALUE()
	✗ 2. NUMBERTOTEXT()
	✗ 3. FORMAT()
	✓ 4. TEXT()

Q.9 Which of the following correctly differentiates mixtures and compounds?

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
- ✗ 1. Option C (Properties) is correct
- ✓ 2. Option A (Separation) is correct
- ✗ 3. Option B (Composition) is correct
- ✗ 4. Option D (Formation) is correct

Q.10	In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?
Ans	✗ 1. Global Navigation Satellite System (GLONASS)
	✗ 2. Galileo
	✗ 3. Global Positioning System (GPS)
	✓ 4. Navigation with Indian Constellation (NavIC)

Q.11	A sound wave with a low frequency will have _____.
Ans	✓ 1. a low pitch
	✗ 2. a low amplitude
	✗ 3. a short wavelength
	✗ 4. a high pitch

Q.12	A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?
Ans	✓ 1. 5.625 J
	✗ 2. 7.500 J
	✗ 3. 3.750 J
	✗ 4. 1.875 J

Q.13	Which of the following options is NOT a greenhouse gas?
Ans	✗ 1. Methane
	✗ 2. Nitrous oxide
	✗ 3. Carbon dioxide
	✓ 4. Carbon tetrachloride

Q.14	What is the primary function of a computer firewall?
Ans	✓ 1. To prevent unauthorised access to a private network
	✗ 2. To speed up internet connectivity
	✗ 3. To detect and remove computer viruses
	✗ 4. To store user passwords securely

Q.15	Who is known as the leader of the Green Revolution in India?
Ans	✗ 1. Tribhuvandas Kishibhai Patel
	✗ 2. C Subramaniam
	✓ 3. Prof. MS Swaminathan
	✗ 4. Dr. Rajendra Prasad

Q.16	Which operating system is known for its open-source nature and community-driven development for desktops and laptops?
Ans	✗ 1. iOS
	✗ 2. macOS
	✓ 3. Linux
	✗ 4. Windows

Q.17	In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?
Ans	✗ 1. 600 metres T20
	✗ 2. 100 metres T20
	✓ 3. 400 metres T20
	✗ 4. 200 metres T20

Q.18	A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.
Ans	✗ 1. random motion
	✓ 2. uniform motion
	✗ 3. rotational motion
	✗ 4. non-uniform motion

Q.19	Which of the following is NOT toxic to non-target organisms in the soil?
Ans	✗ 1. Pesticides
	✗ 2. Fungicides
	✗ 3. Herbicides
	✓ 4. Organic fertilisers

Q.20	Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?
Ans	✗ 1. Ivor Jennings
	✗ 2. BR Ambedkar
	✗ 3. HM Seervai
	✓ 4. LM Singhvi

Q.21	The atomic mass of sulphur is 32 u, and sulphur exists as S_8 molecules. What is the molecular mass of sulphur?
Ans	✗ 1. 64 u
	✗ 2. 32 u
	✓ 3. 256 u
	✗ 4. 128 u

Q.22	What does LAN stand for?
Ans	✗ 1. Large Area Network
	✗ 2. Linked Access Network
	✓ 3. Local Area Network
	✗ 4. Limited Access Node

Q.23	Who among the following developed the notation system for Hindustani classical music?
Ans	✗ 1. Ustad Bismillah Khan
	✗ 2. Ustad Amjad Ali Khan
	✗ 3. Pandit Ravi Shankar
	✓ 4. Pandit Vishnu Narayan Bhatkhande

Q.24	A concave lens has a focal length of −2 cm. What is its power?
Ans	✗ 1. −0.5 D
	✗ 2. 25 D
	✓ 3. −50 D
	✗ 4. 0.5 D

Q.25	Which function key is used to move text or graphics in a document?
Ans	✗ 1. F5
	✗ 2. F1
	✗ 3. F12
	✓ 4. F2

Q.26	Which of the following will increase the heat produced by a heating element?
Ans	✗ 1. Using a material with high conductivity
	✗ 2. Decreasing the applied voltage
	✓ 3. Increasing the current flowing through the wire
	✗ 4. Using a wire of lower resistance

Q.27	Where can one find the option to change a PowerPoint template?
Ans	✗ 1. Insert → Themes
	✗ 2. View → Slide Master
	✗ 3. Home → Layout
	✓ 4. Design → Themes

Q.28	The kinetic energy of an object is derived using which of the following equations of motion?
Ans	✗ 1. $v = u + at$
	✗ 2. $a = (v - u) / t$
	✗ 3. $s = ut + \frac{1}{2} at^2$
	✓ 4. $v^2 - u^2 = 2as$

Q.29	What is the primary function of a firewall tool in a computer network?
Ans	✗ 1. To store data securely
	✗ 2. To speed up internet connections
	✓ 3. To monitor and control incoming and outgoing network traffic
	✗ 4. To detect and remove viruses

Q.30	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	✗ 1. 20%
	✓ 2. 16.67%
	✗ 3. 25%
	✗ 4. 45%

Q.31	Which of the following was NOT an artisan guild during the Mauryan period?
Ans	✓ 1. Astrologers
	✗ 2. Bankers and Merchants
	✗ 3. Potters
	✗ 4. Carpenters

Q.32	Electricity production is categorised under which of the following economic sectors?
Ans	✗ 1. Quaternary sector
	✓ 2. Secondary sector
	✗ 3. Primary sector
	✗ 4. Tertiary sector

Q.33	For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year _____.
Ans	✗ 1. 1992
	✓ 2. 1986
	✗ 3. 1972
	✗ 4. 1984

Q.34	In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.
Ans	✗ 1. organochlorine
	✓ 2. DDT
	✗ 3. phosphates
	✗ 4. chlorine

Q.35	Which country proposed the idea of holding a United Nations conference on human interactions with the environment in 1968?
Ans	✗ 1. United States
	✗ 2. France
	✗ 3. Canada
	✓ 4. Sweden

Q.36	The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is _____.
Ans	✗ 1. UV-A
	✗ 2. UV-D
	✓ 3. UV-B
	✗ 4. UV-C

Q.37	Due to global warming, the temperature of the earth has increased by _____
Ans	✓ 1. 0.6°C
	✗ 2. 0.7°C
	✗ 3. 0.8°C
	✗ 4. 0.5°C

Q.38	Why do covalent compounds generally have low melting and boiling points?
Ans	✗ 1. They have strong electrostatic forces.
	✗ 2. They contain metallic bonds.
	✗ 3. They have a rigid lattice structure.
	✓ 4. They have weak intermolecular forces.

Q.39	The people of _____ were famously involved in execution of the Chipko movement.
Ans	✗ 1. Assam
	✓ 2. Garhwal Himalayas
	✗ 3. Gujarat
	✗ 4. Delhi

Q.40	What happens to the pH of pure water when a few drops of lemon juice are added?
Ans	✗ 1. The pH becomes neutral
	✗ 2. The pH increases
	✓ 3. The pH decreases
	✗ 4. The pH remains the same

Q.41	An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____.
Ans	✗ 1. −10.0 cm
	✓ 2. −37.5 cm
	✗ 3. −9.37 cm
	✗ 4. 17.5 cm

Q.42	Who among the following established the Bengal Chemical Swadeshi Stores?
Ans	✗ 1. BG Tilak
	✓ 2. Acharya PC Ray
	✗ 3. Dadabhai Naoroji
	✗ 4. Surendranath Banerjee

Q.43	The President has the power to dissolve which house of Parliament?
Ans	✗ 1. Rajya Sabha only
	✗ 2. Legislative Assembly
	✗ 3. Both Rajya Sabha and Lok Sabha
	✓ 4. Lok Sabha only

Q.44	Which of the following elements has an atomic number of 8?
Ans	✗ 1. Hydrogen
	✗ 2. Nitrogen
	✓ 3. Oxygen
	✗ 4. Carbon

Q.45	What is the general orientation of the Himalayan ranges in the northwestern part of India?
Ans	✗ 1. Northeast to Southwest
	✗ 2. South-North
	✓ 3. Northwest to Southeast
	✗ 4. East-South

Q.46	A metal wire is stretched, but it does not break easily. This property is known as:
Ans	✗ 1. hardness
	✗ 2. brittleness
	✓ 3. ductility
	✗ 4. malleability

Q.47	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	✗ 1. Leica
	✓ 2. Carl Zeiss AG
	✗ 3. Schneider Kreuznach
	✗ 4. Jenoptik

Q.48	Which formula should be entered in cell C2 to multiply the values of cells A2 and B2 in Excel?
Ans	✗ 1. =A2-B2
	✗ 2. =A2+B2
	✓ 3. =A2*B2
	✗ 4. =MULTIPLY(A2,B2)

Q.49	What happens when you click on the 'Forward' button in an email?
Ans	✗ 1. The email is permanently deleted.
	✗ 2. The email is automatically sent to all contacts.
	✓ 3. The original message is copied into a new email draft.
	✗ 4. A blank email opens.

Q.50	Which type of RAM is faster and DOES NOT require refreshing?
Ans	✗ 1. ROM
	✗ 2. Flash Memory
	✓ 3. SRAM
	✗ 4. DRAM

Section : **Technical Abilities**

Q.1	What will be the output of the following C code?
	
	void main()
	{
	int result=1;
	if (++result >1)
	printf("%d",result+=3);
	else
	printf("%d",result+=5);
	}

Ans	✗ 1. 4
	✓ 2. 5
	✗ 3. 6
	✗ 4. 7

Q.2	Which of the following statements about a hub in a star topology is true?
Ans	✗ 1. It prevents collisions.
	✓ 2. It forwards data to all connected devices.
	✗ 3. It improves network security.
	✗ 4. It filters traffic based on MAC addresses.

Q.3	Which type of winding is commonly used in core-type transformers?
Ans	✗ 1. Disk winding
	✓ 2. Cylindrical winding
	✗ 3. Helical winding
	✗ 4. Sandwich winding

Q.4	Which of the following raw materials is the chief source of sulphur in the blast furnace pig iron?
Ans	✗ 1. Limestone
	✗ 2. Dolomite
	✓ 3. Coke
	✗ 4. Haematite

Q.5	What does the %d format specifier represent in scanf()?
Ans	✗ 1. Floating-point input
	✗ 2. Character input
	✓ 3. Integer input
	✗ 4. String input

Q.6	Which of the following polymers are composed of extended, rod-shaped and rigid molecules and in the liquid condition the molecules can become aligned in highly ordered configurations?
Ans	✗ 1. Foams
	✗ 2. Thermoplastic Elastomers
	✗ 3. Ultrahigh Molecular Weight Polyethylene
	✓ 4. Liquid Crystal Polymers

Q.7	The expression $\oint dQ = \oint dW$ is valid when _____.
Ans	✗ 1. the first law of thermodynamics is applied to an open system in a flow process
	✓ 2. the first law of thermodynamics is applied to a closed system for a cyclic process
	✗ 3. the second law of thermodynamics is applied to a closed system for a cyclic process
	✗ 4. the second law of thermodynamics is applied to an open system in a flow process

Q.8	**Which of the following pairs is correctly matched regarding door fittings?**
Ans	✗ 1. Hinges - Used to lock the door
	✗ 2. Aldrop - Used for sliding doors
	✓ 3. Door Stopper - Used to hold the door at an angle
	✗ 4. Tower Bolt - Used to open the door automatically

Q.9	**Which of the following is a technique used to control gaseous pollutants by transferring them into a liquid?**
Ans	✗ 1. Adsorption
	✓ 2. Absorption
	✗ 3. Incineration
	✗ 4. Filtration

Q.10	**Molybdenum is added to steel to _____.**
Ans	✗ 1. improve ductility
	✗ 2. reduce weight
	✗ 3. increase corrosion resistance
	✓ 4. improve hardness and strength

Q.11	**Which of the following is a major application of liquefied natural gas (LNG)?**
Ans	✗ 1. Feedstock for plastic production
	✗ 2. Raw material for fertiliser production
	✓ 3. Fuel for power generation
	✗ 4. Coolant in industrial processes

Q.12	**In an energy diagram of P-N junction, when the junction is at equilibrium _____.**
Ans	✗ 1. an energy gap between the conduction and valance bands increases
	✓ 2. an energy gradient exists across the depletion region
	✗ 3. no energy gradient exists across the depletion region
	✗ 4. an energy gap between the conduction and valance bands decreases

Q.13	**A router determines the best path between source and destination for sending data using:**
Ans	✓ 1. IP addresses
	✗ 2. MAC addresses
	✗ 3. port numbers
	✗ 4. data packets

Q.14	**Which of the following is the most fundamental principle of surveying?**
Ans	✗ 1. Measuring distances accurately only when required
	✓ 2. Working from whole to part
	✗ 3. Taking measurements without reference to control points
	✗ 4. Avoiding triangulation methods

Q.15	**What is the mechanism of plastic deformation in non-crystalline ceramics?**
Ans	✗ 1. Twinning
	✗ 2. Slip
	✓ 3. Viscous flow
	✗ 4. Cross-slip

Q.16	The architecture of an operating system consists of:
Ans	✗ 1. Kernel only
	✗ 2. CPU and Memory
	✗ 3. Hardware only
	✓ 4. Kernel and Shell

Q.17	Which of the following is a disadvantage of Monel?
Ans	✓ 1. High cost
	✗ 2. Low strength
	✗ 3. Poor machinability
	✗ 4. Susceptibility to corrosion

Q.18	Which of the following is NOT a way that sulfur is released into the atmosphere?
Ans	✗ 1. Burning of fossil fuels
	✗ 2. Decomposition of organic molecules
	✓ 3. Photosynthesis
	✗ 4. Volcanic activity

Q.19	A concave lens forms an image at a distance of 20 cm from the lens when an object is placed at a distance of 30 cm from the lens. Calculate the power of the lens.
Ans	✗ 1. $\frac{5}{3}$D
	✓ 2. $-\frac{5}{3}$D
	✗ 3. $\frac{3}{5}$D
	✗ 4. $-\frac{3}{5}$D

Q.20	Which of the following characteristics is primarily responsible for most polymeric materials being poor conductors of electricity?
Ans	✗ 1. Weak bonding
	✗ 2. Low tensile strength
	✓ 3. Unavailability of free electrons
	✗ 4. Low melting temperature

Q.21	What is the drawback of hot forging compared to cold forging?
Ans	✗ 1. Increased hardness of the final product
	✗ 2. Reduced ductility of the material
	✓ 3. Poor surface finish and lower dimensional accuracy
	✗ 4. Increased residual stresses

Q.22	Which of the following statements is NOT true?
Ans	✓ 1. At critical angle incident angle is 90°
	✗ 2. Incidence angle must be greater than critical angle
	✗ 3. In total internal reflection no transmission of light take place
	✗ 4. For total internal reflection light ray must travel from denser medium to rarer medium

Q.23	What is the function of an oxidiser in an explosive material?
Ans	✔ 1. To contribute atoms of oxidising elements for the fuel to burn
	✘ 2. To control the rate of reaction
	✘ 3. To decrease the sensitivity of the explosive
	✘ 4. To absorb heat and prevent explosion

Q.24	What will be the output of the following C code?
	
	#include <stdio.h>
	void main()
	{
	int Arrav[5]={12.32.56,78};
	printf("%d",Array[4]);
	}

Ans	✘ 1. 78
	✔ 2. 0
	✘ 3. 4
	✘ 4. Error

Q.25	Which of the following statements is INCORRECT about ammonium nitrate?
Ans	✘ 1. It is highly soluble in water.
	✘ 2. It decomposes at the temperature 210°C-260°C.
	✘ 3. It is hygroscopic in nature.
	✔ 4. It has pH more than 7.5.

Q.26	Which of the following is true for a hydraulic load cell?
Ans	✘ 1. This technology is cheaper than all other types of load cells.
	✘ 2. These type of load cells are not effective devices in outdoor environments.
	✔ 3. The load cell is completely filled with oil.
	✘ 4. The piston does actually come in contact with the load cell.

Q.27	Which material is used to insulate the commutator segments in a DC generator?
Ans	✘ 1. Rubber
	✔ 2. Mica
	✘ 3. Fiberglass
	✘ 4. Plastic

Q.28	Why has carbon tetrachloride production and use been restricted in the UK?
Ans	✘ 1. It causes respiratory issues
	✘ 2. It is a highly flammable substance
	✘ 3. It is a known carcinogen
	✔ 4. It depletes the ozone layer

Q.29	Which liquid fuel is most commonly used in automobiles worldwide?
Ans	✘ 1. Ethanol
	✔ 2. Gasoline
	✘ 3. Natural gas
	✘ 4. Kerosene

Q.30	Which of the following are the Miller Indices of a close packed plane in the FCC crystal?
Ans	✗ 1. (100)
	✗ 2. (112)
	✗ 3. (110)
	✓ 4. (111)

Q.31	What is the typical carbon content range in high carbon steel?
Ans	✗ 1. 0.1% to 0.3%
	✗ 2. 2.0% to 4.0%
	✗ 3. 0.01% to 0.1%
	✓ 4. 0.6% to 1.5%

Q.32	Which of the following is an example of an abiotic factor in an ecosystem?
Ans	✓ 1. The amount of sunlight
	✗ 2. A population of deer
	✗ 3. A forest of pine trees
	✗ 4. A community of bacteria

Q.33	What makes biodiesel a sustainable alternative to traditional diesel?
Ans	✓ 1. It is produced from renewable sources like vegetable oils.
	✗ 2. It is derived from crude oil.
	✗ 3. It has a higher energy density.
	✗ 4. It is cheaper to produce.

Q.34	In a p-type semiconductor, the acceptor energy level is located:
Ans	✗ 1. slightly below the valence band
	✓ 2. slightly above the valence band
	✗ 3. in the middle of conduction band and valence band
	✗ 4. slightly below the conduction band

Q.35	In a cascade refrigeration system:
Ans	✗ 1. refrigeration effect is obtained using a single refrigerant
	✓ 2. two different refrigerants are used, refrigerant with low NBP is placed in the evaporator and refrigerant with high NBP is placed in condenser
	✗ 3. two different refrigerants are used, either of the refrigerants can be placed in the evaporator or condenser side
	✗ 4. two different refrigerants are used, refrigerant with high NBP is placed in evaporator and refrigerant with low NBP is placed in condenser

Q.36	A grey body ($\varepsilon = 0.8$) emits the same amount of heat as the black body at 1075 K. The required temperature of the grey body will be _____.
Ans	✗ 1. 113.672^{o}C
	✓ 2. 1136.72 K
	✗ 3. 113.672 K
	✗ 4. 1136.72^{o}C

Q.37	Which of the following steps is typically NOT involved in the preparation of glycerine for injection?
Ans	✗ 1. Decolorisation using activated carbon
	✗ 2. Coarse filtration
	✗ 3. Ultra-filtration
	✓ 4. Fermentation

Q.38	**A solid shaft is replaced by a hollow shaft of the same material and weight. To achieve the same strength in torsion, the outer diameter of the hollow shaft should be:**
Ans	✗ 1. less than the diameter of the solid shaft
	✗ 2. independent of the diameter of the solid shaft
	✓ 3. greater than the diameter of the solid shaft
	✗ 4. equal to the diameter of the solid shaft

Q.39	**Which of the following components has the highest percentage in coal oven gas?**
Ans	✗ 1. Methane (CH_4)
	✗ 2. Carbon dioxide (CO_2)
	✗ 3. Carbon monoxide (CO)
	✓ 4. Hydrogen (H_2)

Q.40	**Which of the following statements describes the relationship between rolling friction and static friction?**
Ans	✗ 1. Rolling friction is slightly greater than static friction
	✗ 2. Rolling friction is always equal to static friction
	✓ 3. Rolling friction is much smaller than static friction
	✗ 4. Rolling friction is much greater than static friction

Q.41	**What will be the output of the following C code?**
	
	**#include <stdio.h>
	int main() {
	int a = 10, b = 20;
	if (a = b > 15)
	printf("True");
	else
	printf("False");
	return 0;
	}**

Ans	✗ 1. False
	✗ 2. TrueFalse
	✓ 3. True
	✗ 4. Compile-time error

Q.42	**Calculate the mass defect of the Helium nucleus which consists of 2 proton and 2 neutrons. The masses of the individual particle are:** **Mass of proton – 1.007276 u Mass of neutron – 1.008665 u Mass of helium nucleus – 4.001503 u**
Ans	✗ 1. 0.048377 u
	✗ 2. 0.040377 u
	✓ 3. 0.030379 u
	✗ 4. 0.038377 u

Q.43	**Which property of brass makes it suitable for musical instruments?**
Ans	✗ 1. Low density
	✗ 2. High melting point
	✓ 3. Excellent acoustic properties
	✗ 4. High electrical conductivity

Q.44	**Which of the following correctly depicts the progressive metamorphism of coal and its effect on the increase in rank?**
Ans	✔ 1. Peat → Lignite → Bituminous coal → Anthracite → Graphite
	✘ 2. Lignite → Peat → Bituminous coal → Anthracite → Graphite
	✘ 3. Lignite → Bituminous coal → Peat → Anthracite → Graphite
	✘ 4. Peat → Lignite → Anthracite → Bituminous coal → Graphite

Q.45	**There are two tables: Professor and Department. In order to retrieve all employees and their department names, even if some employees are not assigned to a department, which JOIN should be used?**
Ans	✘ 1. FULL JOIN
	✘ 2. INNER JOIN
	✔ 3. LEFT JOIN
	✘ 4. RIGHT JOIN

Q.46	**What is the correct way to create a hyperlink in HTML?**
Ans	✘ 1. <a>www.xyz.com
	✘ 2. <url>www.xyz.com</url>
	✘ 3. <link href="www.zyx.com">Click Here</link>
	✔ 4. Click Here

Q.47	**What is the primary advantage of using a multi-level cache hierarchy?**
Ans	✔ 1. Decreased memory access latency
	✘ 2. Improved disk read/write speeds
	✘ 3. Reduced power consumption
	✘ 4. Increased main memory capacity

Q.48	**Which process is used to produce coal oven gas?**
Ans	✘ 1. Fractional distillation
	✘ 2. Electrolysis
	✔ 3. Destructive distillation of coal
	✘ 4. Steam reforming

Q.49	**For semiconductor the energy (E_g) band gap (at room temperature) between valence band and conduction band is _____.**
Ans	✘ 1. E_g = 7eV
	✘ 2. E_g = 0 eV
	✘ 3. E_g > 3eV
	✔ 4. E_g < 3eV

Q.50	**In a compound gear train, the 'Train Value' is:**
Ans	✔ 1. the reciprocal of the velocity ratio
	✘ 2. the ratio of the speed of the driving gear to the speed of the driven gear
	✘ 3. the ratio of the number of teeth on the driven gear to the driver gear
	✘ 4. the product of the gear ratios in all stages

Q.51	**Which of the following equations represents the voltage-pressure relationship in a piezoelectric transducer?**
Ans	✔ 1. V = gPt
	✘ 2. V = P/gt
	✘ 3. V = g/Pt
	✘ 4. V = gP/t

Q.52	**What is the lowest temperature at which rubber-like behaviour persists for many of the common elastomers and below which an elastomer becomes brittle?**
Ans	✘ 1. Critical temperature
	✘ 2. Curie temperature
	✔ 3. Glass transition temperature
	✘ 4. Neel temperature

Q.53	**Which of the following is a consequence of climate change that threatens biodiversity?**
Ans	✘ 1. Expansion of natural habitats
	✘ 2. Increased agricultural yields
	✘ 3. Decrease in human population
	✔ 4. Melting ice caps affecting polar habitats

Q.54	**In a common emitter transistor, the collector current (Ic) is 10 mA and the base current (IB) is 0.1 mA. Calculate the current gain of the transistor.**
Ans	✘ 1. 1
	✘ 2. 10
	✘ 3. 0.1
	✔ 4. 100

Q.55	**The emissive power of certain black bodies is P. If the temperature of the black body is tripled, the emissive power will become _____.**
Ans	✔ 1. 81P
	✘ 2. 27P
	✘ 3. 9P
	✘ 4. 3P

Q.56	**Which of the following ceramics exhibits piezoelectricity?**
Ans	✔ 1. $BaTiO_3$
	✘ 2. ZrO_2
	✘ 3. Al_2O_3
	✘ 4. MgO

Q.57	**Which of the following is NOT a property of nuclear force?**
Ans	✘ 1. It is attractive in nature.
	✘ 2. Nuclear force is much stronger than Coulomb's force.
	✘ 3. It has saturation property.
	✔ 4. It depends on charge.

Q.58	The refringent enters in the evaporator as _____ in the ideal vapour compression cycle.
Ans	✗ 1. high-pressure liquid
	✗ 2. low-pressure liquid
	✓ 3. low-pressure liquid-vapor mixture
	✗ 4. low-pressure vapor

Q.59	What is the boiling point of ethyl alcohol (ethanol) at standard atmospheric pressure?
Ans	✗ 1. 51.2 °C
	✗ 2. 100 °C
	✓ 3. 78.2 °C
	✗ 4. 120 °C

Q.60	Which of the following impurities is commonly found in Coal Oven Gas (COG) and must be removed before its use?
Ans	✗ 1. Helium (He)
	✓ 2. Ammonia (NH_3)
	✗ 3. Oxygen (O_2)
	✗ 4. Argon (Ar)

Q.61	In a full mesh topology with 7 nodes, how many direct connections are required?
Ans	✗ 1. 7
	✗ 2. 14
	✓ 3. 21
	✗ 4. 11

Q.62	For mass production of small components, which of the following is the most suitable pattern?
Ans	✗ 1. Loose piece pattern
	✓ 2. Match plate pattern
	✗ 3. Skeleton pattern
	✗ 4. Sweep pattern

Q.63	What is the purpose of dechlorination in tertiary wastewater treatment?
Ans	✓ 1. To remove the chlorine that was used to disinfect the water
	✗ 2. To filter out large solid contaminants
	✗ 3. To add chlorine to kill bacteria and viruses
	✗ 4. To purify wastewater through oxidation

Q.64	Why is biodiversity important for agriculture?
Ans	✗ 1. Because it promotes the use of monoculture farming
	✗ 2. Because it reduces the need for pollination
	✓ 3. Because it supports pollinators and maintains healthy soil
	✗ 4. Because it decreases the nutritional value of crops

Q.65	A light incidence on a mirror at an angle 30°, calculate the angle of reflection.
Ans	✗ 1. 90°
	✗ 2. 60°
	✗ 3. 45°
	✓ 4. 30°

Q.66	**Which of the following raw materials in blast furnace iron making acts as a fuel source to provide the heat, acts as a reducing agent, and provides an open permeable bed through which slag and metal pass down into the hearth and hot reducing gases pass upwards?**
Ans	✗ 1. Dolomite
	✓ 2. Coke
	✗ 3. Limestone
	✗ 4. Coal

Q.67	**Which property of copper makes it ideal for electrical wiring?**
Ans	✗ 1. High density
	✓ 2. High electrical conductivity
	✗ 3. Low thermal conductivity
	✗ 4. Low ductility

Q.68	**Which of the following methods is commonly NOT used for the commercial preparation of ammonium chloride?**
Ans	✗ 1. Reacting ammonium sulphate with sodium chloride, involving heating, evaporation and cooling
	✗ 2. Reacting sodium chloride with carbon dioxide and ammonia in the Solvay process
	✗ 3. Reacting ammonia with hydrogen chloride gas or hydrochloric acid
	✓ 4. Electrolysis of ammonium salts

Q.69	**What is the number of the nearest neighbour atoms in contact with any atom in the BCC crystal?**
Ans	✓ 1. 8
	✗ 2. 12
	✗ 3. 4
	✗ 4. 6

Q.70	**Which of the following polymers have extensive covalent crosslinks between adjacent molecular chains?**
Ans	✓ 1. Network polymers
	✗ 2. Linear polymers
	✗ 3. Thermoplastic polymers
	✗ 4. Polyethylene

Q.71	**Which of the following is a physical property of benzene?**
Ans	✗ 1. It reacts vigorously with water
	✓ 2. It is a colourless liquid with a sweet odour
	✗ 3. It is highly reactive due to the presence of double bonds
	✗ 4. It is denser than water

Q.72	**Which of the following statements removes a primary key constraint from an existing table whose name is BookStore?**
Ans	✗ 1. ALTER TABLE BookStore REMOVE PRIMARY KEY;
	✗ 2. DELETE PRIMARY KEY FROM BookStore;
	✗ 3. DROP PRIMARY KEY FROM BookStore;
	✓ 4. ALTER TABLE BookStore DROP PRIMARY KEY;

Q.73	By which of the following methods do the conducting polymers which have an electron energy band structure characteristic of that for an electrical insulator at 0 K become conductive?
Ans	✗ 1. Heat treatment
	✗ 2. Annealing
	✗ 3. Crazing
	✓ 4. Doping

Q.74	Which of the following is the deformation behaviour of glassy thermoplastics below their glass transition temperatures?
Ans	✗ 1. Flexible
	✗ 2. Soft
	✗ 3. Ductile
	✓ 4. Brittle

Q.75	Select the correct option based on the given statements about the soundness test of cement. Statement 1: The soundness test ensures that cement does not undergo excessive expansion after setting. Statement 2: Excess magnesia (MgO) and free lime (CaO) in cement cause volume expansion.
Ans	✗ 1. Statement 1 is true, but Statement 2 is false.
	✓ 2. Both statements are true, and Statement 2 explains Statement 1.
	✗ 3. Both statements are true, but Statement 2 does not explain Statement 1.
	✗ 4. Statement 1 is false, but Statement 2 is true.

Q.76	How does hard water affect the lifespan of boiler components?
Ans	✗ 1. It has no effect on lifespan
	✗ 2. It extends the lifespan due to better heat retention
	✓ 3. It accelerates wear and tear on components
	✗ 4. It improves the efficiency of components

Q.77	In the context of space exploration, what is the primary reason for using cryogenic liquid fuels like liquid hydrogen and liquid oxygen in rocket propulsion systems?
Ans	✓ 1. They provide the highest specific impulse among chemical propellants.
	✗ 2. They are easier to store and handle than other fuels.
	✗ 3. They produce minimal greenhouse gas emissions.
	✗ 4. They are cheaper to produce than solid fuels.

Q.78	Molybdenum is commonly used in _____.
Ans	✗ 1. high carbon steel
	✓ 2. high-speed steel
	✗ 3. low carbon steel
	✗ 4. stainless steel

Q.79	What is the primary reason platinum metal is preferred over other metals for Resistance Temperature Detector (RTD) construction?
Ans	✗ 1. It has a high thermal conductivity.
	✗ 2. It is the most cost-effective metal for temperature sensing.
	✗ 3. It has a stable and non linear relation ship between temperature and resistance.
	✓ 4. It exhibits a perfectly linear resistance-temperature relationship.

Q.80	The cycle on which an air refrigerator works is known as _____.
Ans	✗ 1. Carnot cycle
	✗ 2. Ericson cycle
	✗ 3. Stirling cycle
	✓ 4. Bell Coleman cycle

Q.81	What is the difference between armature torque (T_a) and shaft torque (T_s) called?
Ans	✓ 1. Loss torque
	✗ 2. Rotor resistance torque
	✗ 3. Electrical torque
	✗ 4. Eddy current torque

Q.82	Which property of zinc makes it suitable for galvanising steel?
Ans	✗ 1. High density
	✓ 2. Corrosion resistance
	✗ 3. High melting point
	✗ 4. High electrical conductivity

Q.83	Select the correct option based on the given statements regarding bamboo reinforcement in concrete structures. Statement 1: Bamboo can be used as reinforcement in concrete structures. Statement 2: Bamboo reinforcement provides strength equal to steel in all conditions.
Ans	✓ 1. Statement 1 is true, but Statement 2 is false.
	✗ 2. Both Statements 1 and 2 are false.
	✗ 3. Both Statements 1 and 2 are true.
	✗ 4. Statement 1 is false, but Statement 2 is true.

Q.84	Which of the following materials is commonly used in piezoelectric transducers?
Ans	✗ 1. Silicon
	✗ 2. Copper
	✓ 3. Quartz
	✗ 4. Aluminium

Q.85	How does hard water affect energy consumption in boilers?
Ans	✗ 1. Decreases energy consumption
	✓ 2. Increases energy consumption
	✗ 3. No effect on energy consumption
	✗ 4. Stabilises energy consumption

Q.86	The 'Moody's Chart' is used to determine the _____.
Ans	✗ 1. Reynolds number
	✓ 2. friction factor in pipe flow
	✗ 3. hydraulic radius
	✗ 4. velocity of flow

Q.87	A thermocouple vacuum gauge operates on the principle that at low pressures, the thermal conductivity of a gas is the function of _____.
Ans	✔ 1. pressure
	✘ 2. resistivity
	✘ 3. density
	✘ 4. temperature

Q.88	Match the Plane Table Methods with their Characteristics.

Method	Characteristic
P) Radiation	1) Uses two known points to locate an unknown point
Q) Intersection	2) Involves connecting several stations in sequence
R) Resection	3) Used when a single point is fixed and multiple points are determined
S) Traversing	4) Determines the position of the instrument station

Ans	✘ 1. P-2, Q-4, R-3, S-1
	✔ 2. P-3, Q-1, R-4, S-2
	✘ 3. P-1, Q-3, R-2, S-4
	✘ 4. P-4, Q-2, R-1, S-3

Q.89	Which of the following polymers soften when heated and harden when cooled?
Ans	✘ 1. Network polymers
	✔ 2. Thermoplastic polymers
	✘ 3. Thermosetting polymers
	✘ 4. Crosslinked polymers

Q.90	By reverse biasing the PN junction diode, the width of depletion layer _____.
Ans	✘ 1. is independent of bias
	✘ 2. remains same as that of in forward bias PN junction
	✔ 3. increases
	✘ 4. decreases

Q.91	Transformers work on the principle of _____.
Ans	✘ 1. displacement current
	✘ 2. self induction
	✘ 3. conservation of charge
	✔ 4. mutual induction

Q.92	For a certain material, the values of transmissivity and reflectivity are specified as 0.88 and 0.07, respectively. The absorptivity of that material is _____.
Ans	✘ 1. 0.88
	✘ 2. 1
	✔ 3. 0.05
	✘ 4. 0.07

Q.93	Which of the following is an example of a solid lubricant?
Ans	✘ 1. Lithium grease
	✘ 2. Silicone grease
	✘ 3. Calcium grease
	✔ 4. Graphite

Q.94	What is the primary indicator of the biological health of a water body?
Ans	✗ 1. Electrical conductivity
	✗ 2. pH
	✓ 3. Dissolved oxygen
	✗ 4. Turbidity

Q.95	_____ type of flame is commonly used for welding mild steel.
Ans	✓ 1. Neutral
	✗ 2. Reducing
	✗ 3. Oxidising
	✗ 4. Carburising

Q.96	Select the correct statement.
Ans	✗ 1. Stefan-Boltzmann Law is obtained by integrating Plank's Law over all frequencies
	✓ 2. Stefan-Boltzmann Law is obtained by integrating Plank's Law over all wavelengths.
	✗ 3. Stefan-Boltzmann Law is obtained by integrating Wien's Displacement Law over all frequencies.
	✗ 4. Stefan-Boltzmann Law is obtained by integrating Wien's Displacement Law over all wavelengths.

Q.97	What is the dimension of strain?
Ans	✓ 1. $[M^0L^0T^0]$
	✗ 2. $[M^1L^2T^{-2}]$
	✗ 3. $[M^1L^1T^1]$
	✗ 4. $[M^0L^3T^0]$

Q.98	Which of the following are the various types of load cells used to convert slowly varying forces into electrical signals?
Ans	✗ 1. Dynamic load cells, hydraulic load cells and pneumatic load cells
	✓ 2. Hydraulic load cells, pneumatic load cells and strain gauge load cells
	✗ 3. Dynamic load cells, hydraulic load cells and strain gauge load cells
	✗ 4. Dynamic load cells, pneumatic load cells and strain gauge load cells

Q.99	Which of the following is the primary source of calcium in Portland cement production?
Ans	✗ 1. Clay
	✗ 2. Shale
	✓ 3. Limestone
	✗ 4. Iron ore

Q.100	What is the purpose of using A-weighting in noise measurement?
Ans	✗ 1. To measure peak sound pressure from machinery
	✓ 2. To mirror the range of human hearing sensitivity
	✗ 3. To measure low-frequency components of sound
	✗ 4. To represent noise levels without any frequency weights