



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 CMA

* 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 of the following options is NOT a greenhouse gas?

Ans 1. Carbon tetrachloride

2. Carbon dioxide

3. Methane

4. Nitrous oxide

Q.2 A car moving at a constant speed of 123 km/hr along a straight road is an example of _____.

Ans 1. non-uniform motion

2. uniform motion

3. random motion

4. rotational motion

Q.3 An alloy is considered a homogeneous mixture because:

Ans 1. it contains two or more phases

2. its components are chemically combined in fixed proportions

3. its components can be separated by filtration

4. it exhibits uniform composition throughout

Q.4 In January 2025, India launched the NVS-02 satellite to strengthen which of the following navigation systems?

Ans 1. Navigation with Indian Constellation (NavIC)

2. Global Positioning System (GPS)

3. Galileo

4. Global Navigation Satellite System (GLONASS)

Q.5 Who among the following Indian female cricketers won the Best International Cricketer Award (Women) at the BCCI Naman Awards 2025?

Ans 1. Jhulan Goswami

2. Mithali Raj

3. Harmanpreet Kaur

4. Smriti Mandhana

Q.6	Which of the following elements has an atomic number of 8?
Ans	<input checked="" type="checkbox"/> 1. Oxygen <input type="checkbox"/> 2. Nitrogen <input type="checkbox"/> 3. Carbon <input type="checkbox"/> 4. Hydrogen
Q.7	What is the general orientation of the Himalayan ranges in the northwestern part of India?
Ans	<input type="checkbox"/> 1. South-North <input type="checkbox"/> 2. East-South <input checked="" type="checkbox"/> 3. Northwest to Southeast <input type="checkbox"/> 4. Northeast to Southwest
Q.8	Who among the following referred to the Directive Principles as the 'life-giving provisions' of the Constitution of India?
Ans	<input type="checkbox"/> 1. BR Ambedkar <input checked="" type="checkbox"/> 2. LM Singhvi <input type="checkbox"/> 3. Ivor Jennings <input type="checkbox"/> 4. HM Seervai
Q.9	Who among the following established the Bengal Chemical Swadeshi Stores?
Ans	<input type="checkbox"/> 1. Surendranath Banerjee <input type="checkbox"/> 2. Dadabhai Naoroji <input checked="" type="checkbox"/> 3. Acharya PC Ray <input type="checkbox"/> 4. BG Tilak
Q.10	The main reason for which we are dependent on air is our _____.
Ans	<input type="checkbox"/> 1. digestion <input type="checkbox"/> 2. osmoregulation <input checked="" type="checkbox"/> 3. respiration <input type="checkbox"/> 4. excretion
Q.11	A concave lens has a focal length of -2 cm. What is its power?
Ans	<input type="checkbox"/> 1. 0.5 D <input checked="" type="checkbox"/> 2. -50 D <input type="checkbox"/> 3. 25 D <input type="checkbox"/> 4. -0.5 D
Q.12	Where can one find the option to change a PowerPoint template?
Ans	<input checked="" type="checkbox"/> 1. Design → Themes <input type="checkbox"/> 2. Insert → Themes <input type="checkbox"/> 3. Home → Layout <input type="checkbox"/> 4. View → Slide Master
Q.13	Due to global warming, the temperature of the earth has increased by _____
Ans	<input type="checkbox"/> 1. 0.8°C <input type="checkbox"/> 2. 0.5°C <input type="checkbox"/> 3. 0.7°C <input checked="" type="checkbox"/> 4. 0.6°C

Q.14	What does LAN stand for?
Ans	<input checked="" type="checkbox"/> 1. Large Area Network <input checked="" type="checkbox"/> 2. Limited Access Node <input checked="" type="checkbox"/> 3. Linked Access Network <input checked="" type="checkbox"/> 4. Local Area Network
Q.15	What happens when you click on the 'Forward' button in an email?
Ans	<input checked="" type="checkbox"/> 1. A blank email opens. <input checked="" type="checkbox"/> 2. The original message is copied into a new email draft. <input checked="" type="checkbox"/> 3. The email is automatically sent to all contacts. <input checked="" type="checkbox"/> 4. The email is permanently deleted.
Q.16	Radiations that are emitted from nuclear wastes are known to cause _____ at a high rate.
Ans	<input checked="" type="checkbox"/> 1. mutations <input checked="" type="checkbox"/> 2. diseases <input checked="" type="checkbox"/> 3. syndromes <input checked="" type="checkbox"/> 4. emotional defects
Q.17	Why do covalent compounds generally have low melting and boiling points?
Ans	<input checked="" type="checkbox"/> 1. They have a rigid lattice structure. <input checked="" type="checkbox"/> 2. They contain metallic bonds. <input checked="" type="checkbox"/> 3. They have strong electrostatic forces. <input checked="" type="checkbox"/> 4. They have weak intermolecular forces.
Q.18	For the protection and improvement of the environmental quality, the Environment Protection Act came into force in the year _____.
Ans	<input checked="" type="checkbox"/> 1. 1984 <input checked="" type="checkbox"/> 2. 1972 <input checked="" type="checkbox"/> 3. 1992 <input checked="" type="checkbox"/> 4. 1986
Q.19	Which of the following bridges is constructed over the Brahmaputra River in India?
Ans	<input checked="" type="checkbox"/> 1. Pamban Bridge <input checked="" type="checkbox"/> 2. Howrah Bridge <input checked="" type="checkbox"/> 3. Mahatma Gandhi Setu <input checked="" type="checkbox"/> 4. Dhola-Sadiya Bridge
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. Waste from homes <input checked="" type="checkbox"/> 4. Radioactive waste
Q.21	Who is known as the leader of the Green Revolution in India?
Ans	<input checked="" type="checkbox"/> 1. Tribhuvandas Kishibhai Patel <input checked="" type="checkbox"/> 2. Dr. Rajendra Prasad <input checked="" type="checkbox"/> 3. C Subramaniam <input checked="" type="checkbox"/> 4. Prof. MS Swaminathan

Q.22	The atomic mass of sulphur is 32 u, and sulphur exists as S ₈ molecules. What is the molecular mass of sulphur?
Ans	<input checked="" type="checkbox"/> 1. 64 u <input checked="" type="checkbox"/> 2. 32 u <input checked="" type="checkbox"/> 3. 256 u <input checked="" type="checkbox"/> 4. 128 u
Q.23	Which of the following will increase the heat produced by a heating element?
Ans	<input checked="" type="checkbox"/> 1. Using a wire of lower resistance <input checked="" type="checkbox"/> 2. Using a material with high conductivity <input checked="" type="checkbox"/> 3. Decreasing the applied voltage <input checked="" type="checkbox"/> 4. Increasing the current flowing through the wire
Q.24	In an aquatic ecosystem, the phenomenon of biomagnification can best be studied in the case of _____.
Ans	<input checked="" type="checkbox"/> 1. phosphates <input checked="" type="checkbox"/> 2. organochlorine <input checked="" type="checkbox"/> 3. DDT <input checked="" type="checkbox"/> 4. chlorine
Q.25	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. United States <input checked="" type="checkbox"/> 2. France <input checked="" type="checkbox"/> 3. Sweden <input checked="" type="checkbox"/> 4. Canada
Q.26	A sound wave with a low frequency will have _____.
Ans	<input checked="" type="checkbox"/> 1. a low amplitude <input checked="" type="checkbox"/> 2. a low pitch <input checked="" type="checkbox"/> 3. a high pitch <input checked="" type="checkbox"/> 4. a short wavelength
Q.27	The kinetic energy of an object is derived using which of the following equations of motion?
Ans	<input checked="" type="checkbox"/> 1. $s = ut + \frac{1}{2}at^2$ <input checked="" type="checkbox"/> 2. $v = u + at$ <input checked="" type="checkbox"/> 3. $a = (v - u) / t$ <input checked="" type="checkbox"/> 4. $v^2 - u^2 = 2as$
Q.28	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. =MULTIPLY(A2,B2) <input checked="" type="checkbox"/> 2. =A2+B2 <input checked="" type="checkbox"/> 3. =A2-B2 <input checked="" type="checkbox"/> 4. =A2*B2

Q.29	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	<input checked="" type="checkbox"/> 1. Carl Zeiss AG
	<input type="checkbox"/> 2. Leica
	<input type="checkbox"/> 3. Jenoptik
	<input type="checkbox"/> 4. Schneider Kreuznach
Q.30	Which of the following was NOT an artisan guild during the Mauryan period?
Ans	<input checked="" type="checkbox"/> 1. Astrologers
	<input type="checkbox"/> 2. Bankers and Merchants
	<input type="checkbox"/> 3. Potters
	<input type="checkbox"/> 4. Carpenters
Q.31	Which type of RAM is faster and DOES NOT require refreshing?
Ans	<input type="checkbox"/> 1. ROM
	<input type="checkbox"/> 2. Flash Memory
	<input type="checkbox"/> 3. DRAM
	<input checked="" type="checkbox"/> 4. SRAM
Q.32	Electricity production is categorised under which of the following economic sectors?
Ans	<input type="checkbox"/> 1. Primary sector
	<input type="checkbox"/> 2. Tertiary sector
	<input type="checkbox"/> 3. Quaternary sector
	<input checked="" type="checkbox"/> 4. Secondary sector
Q.33	Which operating system is known for its open-source nature and community-driven development for desktops and laptops?
Ans	<input checked="" type="checkbox"/> 1. Linux
	<input type="checkbox"/> 2. Windows
	<input type="checkbox"/> 3. iOS
	<input type="checkbox"/> 4. macOS
Q.34	Which of the following MS Excel functions is used to convert a numeric value into a text with a specific format?
Ans	<input checked="" type="checkbox"/> 1. TEXT()
	<input type="checkbox"/> 2. FORMAT()
	<input type="checkbox"/> 3. NUMBERTOTEXT()
	<input type="checkbox"/> 4. VALUE()
Q.35	In which of the following events did Deepthi Jeevanji set a world record at the 2024 World Para Athletics Championships?
Ans	<input type="checkbox"/> 1. 200 metres T20
	<input checked="" type="checkbox"/> 2. 400 metres T20
	<input type="checkbox"/> 3. 100 metres T20
	<input type="checkbox"/> 4. 600 metres T20
Q.36	What is the primary function of a firewall tool in a computer network?
Ans	<input type="checkbox"/> 1. To speed up internet connections
	<input checked="" type="checkbox"/> 2. To monitor and control incoming and outgoing network traffic
	<input type="checkbox"/> 3. To store data securely
	<input type="checkbox"/> 4. To detect and remove viruses

Q.37	A ball of mass 50 grams is moving with a velocity of 15 m/s. What is its kinetic energy?
Ans	<input checked="" type="checkbox"/> 1. 5.625 J <input type="checkbox"/> 2. 7.500 J <input type="checkbox"/> 3. 1.875 J <input type="checkbox"/> 4. 3.750 J
Q.38	Which function key is used to move text or graphics in a document?
Ans	<input type="checkbox"/> 1. F1 <input type="checkbox"/> 2. F12 <input type="checkbox"/> 3. F5 <input checked="" type="checkbox"/> 4. F2
Q.39	What is the primary function of a computer firewall?
Ans	<input type="checkbox"/> 1. To store user passwords securely <input type="checkbox"/> 2. To speed up internet connectivity <input checked="" type="checkbox"/> 3. To prevent unauthorised access to a private network <input type="checkbox"/> 4. To detect and remove computer viruses
Q.40	Which of the following is NOT toxic to non-target organisms in the soil?
Ans	<input type="checkbox"/> 1. Fungicides <input type="checkbox"/> 2. Herbicides <input checked="" type="checkbox"/> 3. Organic fertilisers <input type="checkbox"/> 4. Pesticides
Q.41	The power to issue an ordinance when Parliament is NOT in session is given to the President under which Article?
Ans	<input checked="" type="checkbox"/> 1. Article 123 <input type="checkbox"/> 2. Article 356 <input type="checkbox"/> 3. Article 72 <input type="checkbox"/> 4. Article 110
Q.42	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.43	The wavelength of ultraviolet radiations which is most powerful and causes damage to the DNA is _____.
Ans	<input type="checkbox"/> 1. UV-A <input type="checkbox"/> 2. UV-C <input type="checkbox"/> 3. UV-D <input checked="" type="checkbox"/> 4. UV-B
Q.44	The people of _____ were famously involved in execution of the Chipko movement.
Ans	<input type="checkbox"/> 1. Delhi <input type="checkbox"/> 2. Gujarat <input type="checkbox"/> 3. Assam <input checked="" type="checkbox"/> 4. Garhwal Himalayas

Q.45	An object is placed 15 cm in front of a convex lens of focal length 25 cm. The image distance will be _____.
Ans	<input type="checkbox"/> 1. -9.37 cm <input type="checkbox"/> 2. -10.0 cm <input checked="" type="checkbox"/> 3. -37.5 cm <input type="checkbox"/> 4. 17.5 cm

Q.46	What happens to the pH of pure water when a few drops of lemon juice are added?
Ans	<input type="checkbox"/> 1. The pH remains the same <input checked="" type="checkbox"/> 2. The pH decreases <input type="checkbox"/> 3. The pH increases <input type="checkbox"/> 4. The pH becomes neutral

Q.47	Who among the following developed the notation system for Hindustani classical music?
Ans	<input type="checkbox"/> 1. Pandit Ravi Shankar <input type="checkbox"/> 2. Ustad Amjad Ali Khan <input checked="" type="checkbox"/> 3. Pandit Vishnu Narayan Bhatkhande <input type="checkbox"/> 4. Ustad Bismillah Khan

Q.48	The President has the power to dissolve which house of Parliament?
Ans	<input type="checkbox"/> 1. Rajya Sabha only <input type="checkbox"/> 2. Legislative Assembly <input checked="" type="checkbox"/> 3. Lok Sabha only <input type="checkbox"/> 4. Both Rajya Sabha and Lok Sabha

Q.49	A metal wire is stretched, but it does not break easily. This property is known as:
Ans	<input type="checkbox"/> 1. hardness <input type="checkbox"/> 2. malleability <input checked="" type="checkbox"/> 3. ductility <input type="checkbox"/> 4. brittleness

Q.50	Which of the following correctly differentiates mixtures and compounds?															
	<table border="1"> <thead> <tr> <th>Feature</th> <th>Mixture</th> <th>Compound</th> </tr> </thead> <tbody> <tr> <td>A) Separation</td> <td>Can be separated by physical methods</td> <td>Requires chemical methods</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 constituents</td> </tr> <tr> <td>D) Formation</td> <td>By chemical reaction</td> <td>By simple mixing</td> </tr> </tbody> </table>	Feature	Mixture	Compound	A) Separation	Can be separated by physical methods	Requires chemical methods	B) Composition	Fixed ratio	Variable ratio	C) Properties	Always the same as constituents	Different from constituents	D) Formation	By chemical reaction	By simple mixing
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C) Properties	Always the same as constituents	Different from constituents														
D) Formation	By chemical reaction	By simple mixing														
Ans	<input type="checkbox"/> 1. Option C (Properties) is correct <input type="checkbox"/> 2. Option B (Composition) is correct <input type="checkbox"/> 3. Option D (Formation) is correct <input checked="" type="checkbox"/> 4. Option A (Separation) is correct															

Section : Technical Abilities

Q.1	Why are s-block elements highly reactive?
Ans	<input type="checkbox"/> 1. They have completely filled orbitals. <input type="checkbox"/> 2. They have low atomic size. <input checked="" type="checkbox"/> 3. They have low ionisation enthalpy. <input type="checkbox"/> 4. They have high ionisation enthalpy.

Q.2	Which of the following is a fundamental unit?
Ans	<input checked="" type="checkbox"/> 1. Kilogram (kg) <input type="checkbox"/> 2. Pascal (Pa) <input type="checkbox"/> 3. Joule (J) <input type="checkbox"/> 4. Newton (N)
Q.3	What does the Lewis symbol for an element represent?
Ans	<input type="checkbox"/> 1. The number of protons in an atom <input type="checkbox"/> 2. The total number of electrons in an atom <input type="checkbox"/> 3. The atomic mass of an element <input checked="" type="checkbox"/> 4. The valence electrons of an atom
Q.4	Three resistors of resistances 2, 4 and 8 ohms are connected in parallel. What is the equivalent resistance?
Ans	<input type="checkbox"/> 1. 3.1 ohms <input checked="" type="checkbox"/> 2. 1.1 ohms <input type="checkbox"/> 3. 0.4 ohms <input type="checkbox"/> 4. 2.3 ohms
Q.5	Which of the following is the correct unit of coefficient of thermal conductivity in terms of Watt (W), metre (m) and Kelvin (K)?
Ans	<input type="checkbox"/> 1. $W^{-1} m K$ <input type="checkbox"/> 2. $W m K$ <input checked="" type="checkbox"/> 3. $W m^{-1} K^{-1}$ <input type="checkbox"/> 4. $W m^{-1} K$
Q.6	Which of the following correctly represents the relation between the number of free electrons n_e and number of holes n_h for an intrinsic semiconductors?
Ans	<input type="checkbox"/> 1. $n_e > n_h$ <input type="checkbox"/> 2. $n_e < n_h$ <input checked="" type="checkbox"/> 3. $n_e = n_h$ <input type="checkbox"/> 4. $n_e = n_h^2$
Q.7	During electrolytic refining, which of the following occurs at the anode?
Ans	<input checked="" type="checkbox"/> 1. Oxidation of metal <input type="checkbox"/> 2. Reduction of metal <input type="checkbox"/> 3. Metal deposition <input type="checkbox"/> 4. Hydrogen gas formation
Q.8	In the chemical reaction $ZnO + C \rightarrow Zn + CO$, ZnO is getting _____ and carbon is getting _____.
Ans	<input type="checkbox"/> 1. oxidised, oxidised <input type="checkbox"/> 2. reduced; reduced <input type="checkbox"/> 3. reduced; decomposed <input checked="" type="checkbox"/> 4. reduced; oxidised

Q.9	When a beam of 5.5 MeV α -particles emitted from a ${}_{83}^{214}\text{Bi}$ radioactive source is allowed to fall on a thin foil of gold of thickness 2.1×10^{-7} m, then what percentage of an incident α -particles scatter by more than 1° .
Ans	<input checked="" type="checkbox"/> 1. 0.014% <input checked="" type="checkbox"/> 2. 14.0% <input checked="" type="checkbox"/> 3. 1.4% <input checked="" type="checkbox"/> 4. 0.14%
Q.10	Which of the following is a major cause of eutrophication in water bodies?
Ans	<input checked="" type="checkbox"/> 1. Excessive use of pesticides in agriculture <input checked="" type="checkbox"/> 2. High concentration of phosphates and nitrates <input checked="" type="checkbox"/> 3. Presence of dissolved oxygen in water <input checked="" type="checkbox"/> 4. Dumping of heavy metals into rivers
Q.11	In longitudinal waves, which of the following options describes the direction of motion of the particles of the medium through which the wave is propagating?
Ans	<input checked="" type="checkbox"/> 1. No motion of the particle <input checked="" type="checkbox"/> 2. Move in a direction parallel to the direction of propagation <input checked="" type="checkbox"/> 3. Move in random directions <input checked="" type="checkbox"/> 4. Up and down about their mean position
Q.12	Which natural indicator turns dark pink in an acidic solution and green in a basic solution?
Ans	<input checked="" type="checkbox"/> 1. Turmeric <input checked="" type="checkbox"/> 2. Litmus <input checked="" type="checkbox"/> 3. China rose (Hibiscus) <input checked="" type="checkbox"/> 4. Methyl orange
Q.13	A nucleus ${}^A_Z\text{X}$ undergoes beta minus (β^-) decay. What will happen to the atomic number of ${}^A_Z\text{X}$?
Ans	<input checked="" type="checkbox"/> 1. It will increase by 2. <input checked="" type="checkbox"/> 2. It will decrease by 2. <input checked="" type="checkbox"/> 3. It will remain unchanged. <input checked="" type="checkbox"/> 4. It will increase by 1.
Q.14	Newton per coulomb is the SI unit of _____.
Ans	<input checked="" type="checkbox"/> 1. magnetic field <input checked="" type="checkbox"/> 2. magnetic potential <input checked="" type="checkbox"/> 3. electric potential <input checked="" type="checkbox"/> 4. electric field
Q.15	Which of the following laws explains the relationship between the pressure and solubility of a gas in a liquid?
Ans	<input checked="" type="checkbox"/> 1. Charles' Law <input checked="" type="checkbox"/> 2. Raoult's Law <input checked="" type="checkbox"/> 3. Avogadro's Law <input checked="" type="checkbox"/> 4. Henry's Law

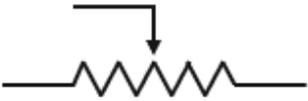
Q.16	As per the Bohr's second postulate, the electrons can revolve around a nucleus in only those orbits for which the angular momentum is an integral multiple of _____.
Ans	<input checked="" type="checkbox"/> 1. $\frac{2h}{\pi}$ <input checked="" type="checkbox"/> 2. $\frac{2\pi}{h}$ <input checked="" type="checkbox"/> 3. $2\pi h$ <input checked="" type="checkbox"/> 4. $\frac{h}{2\pi}$
Q.17	A solution turns blue litmus paper red. What does this indicate about the ions present in the solution?
Ans	<input checked="" type="checkbox"/> 1. The solution contains no ions at all. <input checked="" type="checkbox"/> 2. The solution contains equal amounts of H^+ and OH^- ions. <input checked="" type="checkbox"/> 3. The solution contains more H^+ ions than OH^- ions. <input checked="" type="checkbox"/> 4. The solution contains more OH^- ions than H^+ ions.
Q.18	Which method is used to separate iron-rich minerals like magnetite from unwanted materials?
Ans	<input checked="" type="checkbox"/> 1. Using a magnet to attract the mineral <input checked="" type="checkbox"/> 2. Using water to wash away lighter materials <input checked="" type="checkbox"/> 3. Using bubbles to lift the mineral <input checked="" type="checkbox"/> 4. Dissolving the mineral in a liquid
Q.19	Which of the following statements is NOT true regarding infrared waves?
Ans	<input checked="" type="checkbox"/> 1. They are used in physical therapy. <input checked="" type="checkbox"/> 2. These rays are also referred as heat waves. <input checked="" type="checkbox"/> 3. They are help in maintaining the average temperature of the Earth. <input checked="" type="checkbox"/> 4. They have wavelength much less than 700 nm.
Q.20	Identify whether the given statements are true or false. Statement-I: The word 'stoichiometry' is derived from two Greek words — stoicheion (meaning, element) and metron (meaning, measure). Statement-II: Stoichiometry, thus, deals with the calculation of masses (sometimes volumes also) of the reactants and the products involved in a chemical reaction.
Ans	<input checked="" type="checkbox"/> 1. Statement-I is false but Statement-II is true. <input checked="" type="checkbox"/> 2. Both the statements are false. <input checked="" type="checkbox"/> 3. Statement-I is true but Statement-II is false. <input checked="" type="checkbox"/> 4. Both the statements are true.
Q.21	Select the molecules where all bonds are single covalent bonds from the given list. O_2 , N_2 , CH_4 , CO_2 , NH_3
Ans	<input checked="" type="checkbox"/> 1. NH_3 and CH_4 <input checked="" type="checkbox"/> 2. O_2 and CH_4 <input checked="" type="checkbox"/> 3. CO_2 , CH_4 and NH_3 <input checked="" type="checkbox"/> 4. N_2 and NH_3

Q.22	What will be the energy gained by an electron when it has been accelerated by a potential difference of 1 volt?
Ans	<p><input type="checkbox"/> 1. 1.602×10^{-16} J</p> <p><input checked="" type="checkbox"/> 2. 1.602×10^{-19} J</p> <p><input type="checkbox"/> 3. 1.602×10^{16} J</p> <p><input type="checkbox"/> 4. 1.602×10^{19} J</p>
Q.23	Which of the following is a major source of pathogenic water pollution?
Ans	<p><input type="checkbox"/> 1. Industrial waste</p> <p><input type="checkbox"/> 2. Heavy metals from factories</p> <p><input type="checkbox"/> 3. Agricultural runoff</p> <p><input checked="" type="checkbox"/> 4. Domestic sewage and animal excreta</p>
Q.24	Which of the following reactions is used for the industrial preparation of sodium hydroxide?
Ans	<p><input type="checkbox"/> 1. Heating sodium carbonate with calcium hydroxide</p> <p><input type="checkbox"/> 2. Reaction of sodium with water</p> <p><input checked="" type="checkbox"/> 3. Electrolysis of sodium chloride solution</p> <p><input type="checkbox"/> 4. Decomposition of sodium bicarbonate</p>
Q.25	Which of the following relations is correct for the actual frequency ν_0 and the apparent frequency ν of a sound wave as observed by a stationary observer when the source of sound wave is moving towards the observer with velocity ν_s ? Take the actual velocity of the sound wave in the medium as v .
Ans	<p><input type="checkbox"/> 1. $\nu = \nu_0 \left(1 + \frac{\nu_s}{v}\right)$</p> <p><input type="checkbox"/> 2. $\nu = \nu_0 \left(1 + \frac{\nu_s}{\nu}\right)$</p> <p><input type="checkbox"/> 3. $\nu_0 = \nu \left(1 + \frac{\nu_s}{v}\right)$</p> <p><input checked="" type="checkbox"/> 4. $\nu_0 = \nu \left(1 - \frac{\nu_s}{v}\right)$</p>
Q.26	Which of the following statements about washing soda ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$) are correct? Statement 1: Washing soda is obtained from sodium hydroxide. Statement 2: It is used to remove permanent hardness of water. Statement 3: Washing soda is a hydrated salt.
Ans	<p><input type="checkbox"/> 1. All statements are correct.</p> <p><input type="checkbox"/> 2. Only Statements 1 and 3 are correct.</p> <p><input type="checkbox"/> 3. Only Statements 1 and 2 are correct.</p> <p><input checked="" type="checkbox"/> 4. Only Statements 2 and 3 are correct.</p>
Q.27	Identify the INCORRECT pair from the following options.
Ans	<p><input type="checkbox"/> 1. Cyclopropane - homocyclic</p> <p><input type="checkbox"/> 2. Tetrahydrofuran - heterocyclic</p> <p><input type="checkbox"/> 3. Aniline - aromatic</p> <p><input checked="" type="checkbox"/> 4. Thiophene - homocyclic</p>

Q.28	A paper weight is kept on a tabletop. The mass of paper weight is 0.5 kg and its dimensions are 10 cm × 4 cm × 2 cm. Find the pressure exerted by the paper weight on the table top if it is made to lie on the table top with its sides of dimensions 10 cm × 2 cm. (Take $g = 9.8 \text{ m/s}^2$)
Ans	<input checked="" type="checkbox"/> 1. 612.5 Nm^{-2} <input checked="" type="checkbox"/> 2. 2420 Nm^{-2} <input checked="" type="checkbox"/> 3. 2450 Nm^{-2} <input checked="" type="checkbox"/> 4. 49 Nm^{-2}
Q.29	A body is projected with a velocity $\vec{v} = 3\hat{i} + 4\hat{j}$ with respect to ground. At the highest point of motion of the body, what will be the magnitude of the vertical component of the velocity.
Ans	<input checked="" type="checkbox"/> 1. 4 m/s <input checked="" type="checkbox"/> 2. 0 m/s <input checked="" type="checkbox"/> 3. 5 m/s <input checked="" type="checkbox"/> 4. 3 m/s
Q.30	Identify the correct option in which the heat required to warm a given substance does not depend.
Ans	<input checked="" type="checkbox"/> 1. Change in temperature <input checked="" type="checkbox"/> 2. Atmospheric pressure <input checked="" type="checkbox"/> 3. Nature of the substance <input checked="" type="checkbox"/> 4. Mass of the substance
Q.31	What is the nature of the magnetic field at the centre of a current-carrying circular loop?
Ans	<input checked="" type="checkbox"/> 1. Straight lines <input checked="" type="checkbox"/> 2. Concentric circles <input checked="" type="checkbox"/> 3. Zig-zag pattern <input checked="" type="checkbox"/> 4. Radial lines
Q.32	What will be the energy gained by an electron with charge $q = 1.6 \times 10^{-19} \text{ C}$, when accelerated through a potential difference (ΔV) = 1 volt?
Ans	<input checked="" type="checkbox"/> 1. $1.6 \times 10^{19} \text{ J}$ <input checked="" type="checkbox"/> 2. $1.6 \times 10^{-19} \text{ J}$ <input checked="" type="checkbox"/> 3. 10^{-19} J <input checked="" type="checkbox"/> 4. 10^{19} J
Q.33	Which of the following is the correct pair of a physical quantity and its SI unit?
Ans	<input checked="" type="checkbox"/> 1. Force - dyne <input checked="" type="checkbox"/> 2. Power - kilowatt <input checked="" type="checkbox"/> 3. Pressure - Pascal <input checked="" type="checkbox"/> 4. Energy - ergs
Q.34	The mass of a body is 'X' kg on the surface of the Earth. What will be the weight of this body (in newton) on the surface of the Earth? (Take the value of g on Earth as 10 m/s^2)
Ans	<input checked="" type="checkbox"/> 1. $X/10$ <input checked="" type="checkbox"/> 2. X <input checked="" type="checkbox"/> 3. $X/5$ <input checked="" type="checkbox"/> 4. $10X$

Q.35	The relation between displacement (X) of a particle and time (t) is given by the following equation: $X = At + Bt^2$. What will be the dimensions of A/B, if the equation is dimensionally correct?
Ans	<input checked="" type="checkbox"/> 1. [T] <input type="checkbox"/> 2. [T ³] <input type="checkbox"/> 3. [T ⁻³] <input type="checkbox"/> 4. [T ⁻¹]
Q.36	Beyond the breakdown voltage, the current in a Zener diode _____.
Ans	<input checked="" type="checkbox"/> 1. changes by a large amount for a small change in voltage <input type="checkbox"/> 2. increases linearly with voltage <input type="checkbox"/> 3. is completely independent of voltage <input type="checkbox"/> 4. remains constant with voltage
Q.37	What determines the shape of a molecule like CH ₄ ?
Ans	<input type="checkbox"/> 1. The number of atoms in the molecule <input checked="" type="checkbox"/> 2. The overlap of atomic orbitals <input type="checkbox"/> 3. The temperature at which the molecule is formed <input type="checkbox"/> 4. The ionisation energy of atoms
Q.38	Which property is common to both mixtures and compounds?
Ans	<input checked="" type="checkbox"/> 1. Made of two or more substances <input type="checkbox"/> 2. Fixed composition <input type="checkbox"/> 3. Physically separated into components <input type="checkbox"/> 4. Homogeneous nature
Q.39	Why is it difficult to determine the exact position and velocity of an electron simultaneously?
Ans	<input type="checkbox"/> 1. Electrons move at extremely high speeds in all directions. <input checked="" type="checkbox"/> 2. Measuring one property affects the accuracy of the other. <input type="checkbox"/> 3. Electrons do not follow the basic laws of physics. <input type="checkbox"/> 4. Electrons are very small and cannot be detected easily.
Q.40	Which of the following is a real-life example of a neutralisation reaction?
Ans	<input type="checkbox"/> 1. Mixing salt in water to make a saline solution <input checked="" type="checkbox"/> 2. Adding baking soda to vinegar in a volcano experiment <input type="checkbox"/> 3. Dissolving sugar in tea <input type="checkbox"/> 4. Heating lemon juice to concentrate its acidity
Q.41	Which of the following equations correctly represents the Ampere's circuital law?
Ans	<input type="checkbox"/> 1. $\oint \vec{B} \cdot d\vec{l} = \frac{\mu_0}{I}$ <input type="checkbox"/> 2. $\oint \vec{B} \cdot d\vec{l} = \mu_0 I^2$ <input checked="" type="checkbox"/> 3. $\oint \vec{B} \cdot d\vec{l} = \mu_0 I$ <input type="checkbox"/> 4. $\oint \vec{B} \cdot d\vec{l} = 2 \mu_0 I$

Q.42	According to Planck's quantum theory, energy is emitted or absorbed in:
Ans	<p><input checked="" type="checkbox"/> 1. random energy bursts</p> <p><input checked="" type="checkbox"/> 2. discrete packets called quanta</p> <p><input checked="" type="checkbox"/> 3. infinite energy levels</p> <p><input checked="" type="checkbox"/> 4. continuous waves</p>
Q.43	<p>Which of the following statement(s) is/are true regarding the boiling point of a liquid?</p> <p>(i) The temperature at which the liquid and the vapour states of the substance coexist is called its boiling point.</p> <p>(ii) The temperature at which the liquid and the solid states of the substance coexist is called its boiling point.</p> <p>(iii) The boiling point for water is 273 K.</p>
Ans	<p><input checked="" type="checkbox"/> 1. Both (ii) and (iii)</p> <p><input checked="" type="checkbox"/> 2. Both (i) and (iii)</p> <p><input checked="" type="checkbox"/> 3. Only (i)</p> <p><input checked="" type="checkbox"/> 4. Only (ii)</p>
Q.44	What is the principal quantum number (n) of the ground state of a hydrogen atom?
Ans	<p><input checked="" type="checkbox"/> 1. n = 1</p> <p><input checked="" type="checkbox"/> 2. n = 2</p> <p><input checked="" type="checkbox"/> 3. n = 3</p> <p><input checked="" type="checkbox"/> 4. n = 0</p>
Q.45	<p>For all angles of incidence greater than the critical angle, the wave will undergo what is known as total internal reflection. Which of the following is the correct formula for the critical angle?</p> <p>(where $n_1 = \frac{\text{Speed of light in vacuum}}{\text{Speed of light in first medium}}$ and $n_2 = \frac{\text{Speed of light in vacuum}}{\text{Speed of light in second medium}}$ and n_1 is greater than n_2)</p>
Ans	<p><input checked="" type="checkbox"/> 1. $\sin i_c = \frac{n_2}{n_1}$</p> <p><input checked="" type="checkbox"/> 2. $\tan i_c = \frac{n_2}{n_1}$</p> <p><input checked="" type="checkbox"/> 3. $\tan i_c = \frac{n_1}{n_2}$</p> <p><input checked="" type="checkbox"/> 4. $\sin i_c = \frac{n_1}{n_2}$</p>
Q.46	<p>Which of following statement(s) is/are true?</p> <p>i. A mixture contains particles of two or more pure substances, which may be present in it in any ratio.</p> <p>ii. Sugar solution and air are the examples of homogeneous mixtures.</p> <p>iii. Mixtures of salt and sugar, grains and pulses along with some dirt (often stones), are heterogeneous mixtures.</p>
Ans	<p><input checked="" type="checkbox"/> 1. i, ii and iii</p> <p><input checked="" type="checkbox"/> 2. ii and iii only</p> <p><input checked="" type="checkbox"/> 3. i and iii only</p> <p><input checked="" type="checkbox"/> 4. i and ii only</p>

Q.47	What is the ratio of the total energy of the second excited state to that of the third excited state in a hydrogen atom?
Ans	<input checked="" type="checkbox"/> 1. 9/16 <input checked="" type="checkbox"/> 2. 9/4 <input checked="" type="checkbox"/> 3. 16/9 <input checked="" type="checkbox"/> 4. 4/9
Q.48	The corrosion of silver, copper and iron articles will produce _____, respectively.
Ans	<input checked="" type="checkbox"/> 1. silver sulphide, copper sulphide and iron oxide <input checked="" type="checkbox"/> 2. silver carbonate, copper carbonate and iron oxide <input checked="" type="checkbox"/> 3. silver oxide, copper carbonate and iron carbonate <input checked="" type="checkbox"/> 4. silver sulphide, copper carbonate and iron oxide
Q.49	A packet of potato chips contains nitrogen gas. Why is nitrogen gas used instead of oxygen?
Ans	<input checked="" type="checkbox"/> 1. Nitrogen enhances the taste of chips. <input checked="" type="checkbox"/> 2. Nitrogen prevents oxidation and rancidity. <input checked="" type="checkbox"/> 3. Oxygen is toxic for packaged food. <input checked="" type="checkbox"/> 4. Nitrogen is lighter than oxygen.
Q.50	Which of the following statements is INCORRECT regarding the structure of benzene?
Ans	<input checked="" type="checkbox"/> 1. It has six carbon-hydrogen single bonds. <input checked="" type="checkbox"/> 2. It has six carbon-carbon single bonds. <input checked="" type="checkbox"/> 3. It has six carbon atoms in a ring, each bonded to one hydrogen atom. <input checked="" type="checkbox"/> 4. It is an unsaturated cyclic hydrocarbon.
Q.51	Zinc is extracted from zinc sulphide (ZnS) by first converting it into zinc oxide (ZnO). This is done by:
Ans	<input checked="" type="checkbox"/> 1. dissolving ZnS in acid <input checked="" type="checkbox"/> 2. direct electrolysis of ZnS <input checked="" type="checkbox"/> 3. heating ZnS in the absence of air <input checked="" type="checkbox"/> 4. heating ZnS in the presence of air
Q.52	A _____ pitch sound corresponds to more number of compressions and rarefactions passing a fixed point per unit time.
Ans	<input checked="" type="checkbox"/> 1. low <input checked="" type="checkbox"/> 2. high and low <input checked="" type="checkbox"/> 3. high <input checked="" type="checkbox"/> 4. zero
Q.53	What is the correct name and function of the device represented by the given symbol?
	
Ans	<input checked="" type="checkbox"/> 1. Ammeter; used for measuring current flowing through a circuit. <input checked="" type="checkbox"/> 2. Rheostat; used for varying the current flowing through a circuit. <input checked="" type="checkbox"/> 3. Switch; used for connecting and disconnecting the circuit. <input checked="" type="checkbox"/> 4. Battery; used for providing potential difference.

Q.54	The earth's crust has only _____ carbon in the form of minerals (like carbonates, hydrogen carbonates, coal and petroleum).
Ans	<input checked="" type="checkbox"/> 1. 2% <input checked="" type="checkbox"/> 2. 0.2% <input checked="" type="checkbox"/> 3. 20% <input checked="" type="checkbox"/> 4. 0.02%
Q.55	<p>Which of the following statements is/are true?</p> <p>i. In elements, in the free or the uncombined state, each atom bears an oxidation number of zero.</p> <p>ii. For ions composed of only one atom, the oxidation number is equal to the charge on the ion.</p> <p>iii. In all its compounds, fluorine has an oxidation number of -1.</p> <p>iv. The algebraic sum of the oxidation number of all the atoms in a compound must be zero.</p>
Ans	<input checked="" type="checkbox"/> 1. Only i and ii <input checked="" type="checkbox"/> 2. Only i, iii and iv <input checked="" type="checkbox"/> 3. i, ii, iii and iv <input checked="" type="checkbox"/> 4. Only i, ii and iii
Q.56	What will be the conventional direction of electric current flowing through an electric circuit?
Ans	<input checked="" type="checkbox"/> 1. Does not depend on the direction of the flow of electrons <input checked="" type="checkbox"/> 2. Perpendicular to the direction of the flow of electrons <input checked="" type="checkbox"/> 3. In the direction of the flow of electrons <input checked="" type="checkbox"/> 4. Opposite to the direction of the flow of electrons
Q.57	Which property of nylon makes it suitable for making ropes and fibres?
Ans	<input checked="" type="checkbox"/> 1. High tensile strength <input checked="" type="checkbox"/> 2. Low melting point <input checked="" type="checkbox"/> 3. High water absorption <input checked="" type="checkbox"/> 4. Brittle nature
Q.58	<p>Identify whether the given statements are true or false.</p> <p>Statement-I: An H-bond in case of HF molecule, alcohol or water molecules is an intermolecular hydrogen bond.</p> <p>Statement-II: There is an intramolecular hydrogen bonding in an o-nitrophenol molecule.</p>
Ans	<input checked="" type="checkbox"/> 1. Statement-I is true but Statement-II is false. <input checked="" type="checkbox"/> 2. Both the statements are true. <input checked="" type="checkbox"/> 3. Statement-I is false but Statement-II is true. <input checked="" type="checkbox"/> 4. Both the statements are false.
Q.59	<p>Given below are two statements. Read the statements carefully and select the correct option.</p> <p>Statement I: Many metals, such as copper, zinc, tin, nickel, silver and gold, are refined electrolytically.</p> <p>Statement II: In Electrolytic Refining, the impure metal is made the anode and a thin strip of pure metal is made the cathode.</p>
Ans	<input checked="" type="checkbox"/> 1. Both Statements I and II are true. <input checked="" type="checkbox"/> 2. Statement I is true but Statement II is false. <input checked="" type="checkbox"/> 3. Statement I is false but Statement II is true. <input checked="" type="checkbox"/> 4. Both Statements I and II are false.

Q.60	A car is moving in a straight line from city A to city B then city C. Let the distance between city A to B is 240 km and between city A and C is 320 km. The car moves from A to C in 6 hrs and back to B from C in 2 hrs. What will be the average velocity of the car?
Ans	<p>✓ 1. 30 km/hr</p> <p>✗ 2. 40 km/hr</p> <p>✗ 3. 53.66 km/hr</p> <p>✗ 4. 50 km/hr</p>
Q.61	What does the pattern formed by iron filings around a magnet demonstrate?
Ans	<p>✗ 1. The presence of an electric field around the magnet</p> <p>✗ 2. The effect of friction on iron filings</p> <p>✗ 3. The presence of gravitational force</p> <p>✓ 4. The presence of a magnetic field around the magnet</p>
Q.62	Which of the following equations correctly defines the input resistance of the common emitter junction transistor?
Ans	<p>✗ 1. $r_i = \frac{\Delta V_{CE}}{\Delta I_E}$ at constant V_{BE}</p> <p>✗ 2. $r_i = \frac{\Delta V_{CE}}{\Delta I_B}$ at constant V_{BE}</p> <p>✓ 3. $r_i = \frac{\Delta V_{BE}}{\Delta I_B}$ at constant V_{CE}</p> <p>✗ 4. $r_i = \frac{\Delta V_{BE}}{\Delta I_E}$ at constant V_{CE}</p>
Q.63	Which of the following properties are usually shown by metals? i. They have a lustre (shine). ii. They conduct heat and electricity. iii. They are malleable (can be hammered into thin sheets).
Ans	<p>✗ 1. i and iii only</p> <p>✗ 2. i and ii only</p> <p>✗ 3. ii and iii only</p> <p>✓ 4. i, ii and iii</p>
Q.64	Rahul stirs a spoonful of salt into a glass of water. After a while, he notices that the salt is no longer visible. What type of mixture has he created?
Ans	<p>✓ 1. Homogeneous mixture</p> <p>✗ 2. Suspension</p> <p>✗ 3. Colloid</p> <p>✗ 4. Heterogeneous mixture</p>
Q.65	Two isotopes, A and B, are present in a chlorine sample with 75% and 25% abundances, respectively. Their average atomic mass is 35.5 u, and the sum of their nucleons is 72. What are the number of nucleons in A and B, respectively?
Ans	<p>✗ 1. 38 and 34</p> <p>✗ 2. 34 and 38</p> <p>✓ 3. 35 and 37</p> <p>✗ 4. 37 and 35</p>

Q.66	The metals high up in the reactivity series are very reactive. These metals are obtained by _____.
Ans	<input checked="" type="checkbox"/> 1. electrolytic reduction <input type="checkbox"/> 2. heating with carbon <input type="checkbox"/> 3. heating in air <input type="checkbox"/> 4. heating in absence of air
Q.67	20 g of ice cubes at 0°C are put in 60 g of water in a tumbler. If the initial temperature of water is 40°C, then what will be the final temperature of water, assuming that no heat is lost to the surroundings? (Take: Latent heat of ice = 80 cal/g; Specific heat capacity of water = 1 cal/g°C)
Ans	<input checked="" type="checkbox"/> 1. 10°C <input type="checkbox"/> 2. 50°C <input type="checkbox"/> 3. 100°C <input type="checkbox"/> 4. 20°C
Q.68	Which of the following is a physical intensive property?
Ans	<input type="checkbox"/> 1. Volume <input type="checkbox"/> 2. Energy <input checked="" type="checkbox"/> 3. Density <input type="checkbox"/> 4. Mass
Q.69	What happens to the impurities during the electrolytic refining of copper?
Ans	<input type="checkbox"/> 1. They dissolve in the electrolyte. <input checked="" type="checkbox"/> 2. They settle as anode mud. <input type="checkbox"/> 3. They evaporate as gas. <input type="checkbox"/> 4. They deposit on the cathode.
Q.70	Which of the following is the simplest ketose?
Ans	<input checked="" type="checkbox"/> 1. Dihydroxyacetone <input type="checkbox"/> 2. Glyceraldehyde <input type="checkbox"/> 3. Xylose <input type="checkbox"/> 4. Erythrose
Q.71	In the chlor-alkali process, _____ is given off at the anode, and _____ at the cathode.
Ans	<input type="checkbox"/> 1. chlorine gas, oxygen gas <input checked="" type="checkbox"/> 2. chlorine gas, hydrogen gas <input type="checkbox"/> 3. oxygen gas, hydrogen gas <input type="checkbox"/> 4. chlorine gas, water vapour
Q.72	How does electronegativity generally vary in the periodic table?
Ans	<input type="checkbox"/> 1. It increases down a group and increases across a period. <input checked="" type="checkbox"/> 2. It decreases down a group and increases across a period. <input type="checkbox"/> 3. It increases down a group and decreases across a period. <input type="checkbox"/> 4. It decreases down a group and decreases across a period.

Q.73	When an electric current is passed through a metallic conductor, a nearby compass needle gets deflected. What is the reason for this deflection?
Ans	<p><input type="checkbox"/> 1. The electric current creates an electric field that repels the needle.</p> <p><input type="checkbox"/> 2. The conductor gains magnetic properties due to heating.</p> <p><input checked="" type="checkbox"/> 3. The electric current generates a magnetic field around the conductor, influencing the needle.</p> <p><input type="checkbox"/> 4. The electric current produces heat in the conductor, affecting the needle.</p>
Q.74	Which of the following metals does NOT occur in nature in a free state?
Ans	<p><input type="checkbox"/> 1. Silver</p> <p><input type="checkbox"/> 2. Platinum</p> <p><input type="checkbox"/> 3. Gold</p> <p><input checked="" type="checkbox"/> 4. Aluminium</p>
Q.75	Which of the following statement(s) is/are true regarding the production and propagation of sound waves? (i) Sound is produced by vibrating objects. (ii) Sound waves do not require a material medium for their propagation. (iii) Sound waves fall in the category of non-mechanical waves.
Ans	<p><input type="checkbox"/> 1. Both (ii) and (iii)</p> <p><input type="checkbox"/> 2. Only (ii)</p> <p><input checked="" type="checkbox"/> 3. Only (i)</p> <p><input type="checkbox"/> 4. Both (i) and (iii)</p>
Q.76	Which of the following are physical properties? i. Melting point ii. Hardness iii. Density iv. Fluidity
Ans	<p><input type="checkbox"/> 1. i and ii only</p> <p><input type="checkbox"/> 2. i, ii and iii only</p> <p><input type="checkbox"/> 3. i, iii and iv only</p> <p><input checked="" type="checkbox"/> 4. i, ii, iii and iv</p>
Q.77	The binding energy of a nucleus gives a _____ contribution to the mass of the nucleus.
Ans	<p><input type="checkbox"/> 1. negligible</p> <p><input type="checkbox"/> 2. zero</p> <p><input checked="" type="checkbox"/> 3. negative</p> <p><input type="checkbox"/> 4. positive</p>
Q.78	Which of the following sets of quantum numbers (n, l, m_l, m_s) is NOT allowed for an electron in an atom?
Ans	<p><input type="checkbox"/> 1. (2, 1, -1, -1/2)</p> <p><input checked="" type="checkbox"/> 2. (4, 3, -4, +1/2)</p> <p><input type="checkbox"/> 3. (5, 2, 0, -1/2)</p> <p><input type="checkbox"/> 4. (3, 2, 1, +1/2)</p>

Q.79	Which of the following is/are the use(s) of washing soda? i. Sodium carbonate (washing soda) is used in glass, soap, and paper industries. ii. It is used in the manufacture of sodium compounds such as borax.
Ans	<input type="checkbox"/> 1. Neither i nor ii
	<input type="checkbox"/> 2. ii only
	<input checked="" type="checkbox"/> 3. Both i and ii
	<input type="checkbox"/> 4. i only
Q.80	In which of the following materials is the energy gap (E_g) between the top of the valence band and bottom of the conduction band is between greater than 0.5 eV and less than 3 eV?
Ans	<input type="checkbox"/> 1. Insulators
	<input checked="" type="checkbox"/> 2. Semiconductors
	<input type="checkbox"/> 3. Conductors
	<input type="checkbox"/> 4. Superconductors
Q.81	If a liquid of density ρ and coefficient of viscosity η flow with a velocity v through a pipe of diameter D , then the Reynold's number is X . If the velocity of the liquid flowing through the pipe increases to $2v$ and the diameter of the pipe is reduced to $D/4$ (keeping all the other parameters the same), the new Reynold's number is Y . What will be the value of $X : Y$?
Ans	<input type="checkbox"/> 1. 1 : 4
	<input type="checkbox"/> 2. 4 : 1
	<input type="checkbox"/> 3. 1 : 2
	<input checked="" type="checkbox"/> 4. 2 : 1
Q.82	Identify the INCORRECT pair from the given options.
Ans	<input type="checkbox"/> 1. Three-carbon chain with a ketone group - Propanone
	<input type="checkbox"/> 2. Alkane having three carbon atoms - Propane
	<input type="checkbox"/> 3. Alcohol - Propanol
	<input checked="" type="checkbox"/> 4. Aldehyde - Propanone
Q.83	The melting point of a substance at standard atmospheric pressure is called it's _____.
Ans	<input type="checkbox"/> 1. thermal equilibrium point
	<input type="checkbox"/> 2. standard freezing point
	<input checked="" type="checkbox"/> 3. normal melting point
	<input type="checkbox"/> 4. absolute melting point
Q.84	Why is metal refining important?
Ans	<input type="checkbox"/> 1. To make metals heavier
	<input checked="" type="checkbox"/> 2. To remove unwanted impurities and obtain pure metal
	<input type="checkbox"/> 3. To convert metal oxides into metals
	<input type="checkbox"/> 4. To increase impurities in metals
Q.85	What happens to the pH when a strong acid reacts with a strong base?
Ans	<input checked="" type="checkbox"/> 1. It becomes 7.
	<input type="checkbox"/> 2. It becomes 1.
	<input type="checkbox"/> 3. It becomes 14.
	<input type="checkbox"/> 4. It remains unchanged.

Q.86	If the pressure of an ideal gas is doubled and its volume is halved at constant temperature, what happens to the number of moles (n)?
Ans	<p><input type="checkbox"/> 1. It doubles.</p> <p><input type="checkbox"/> 2. It becomes zero.</p> <p><input type="checkbox"/> 3. It becomes half.</p> <p><input checked="" type="checkbox"/> 4. It remains the same.</p>
Q.87	Which of the following represents the correct electronic configuration of Chromium (Z = 24)?
Ans	<p><input type="checkbox"/> 1. [Ar] 3d³ 4s³</p> <p><input type="checkbox"/> 2. [Ar] 3d⁴ 4s²</p> <p><input type="checkbox"/> 3. [Ar] 3d⁶ 4s⁰</p> <p><input checked="" type="checkbox"/> 4. [Ar] 3d⁵ 4s¹</p>
Q.88	<p>Select the option that is correct regarding the following two statements labelled Assertion (A) and Reason (R).</p> <p>Assertion: The magnetic field lines do not form closed loops. Reason: Magnetic field lines can never intersect.</p>
Ans	<p><input type="checkbox"/> 1. Assertion is true but reason is false.</p> <p><input type="checkbox"/> 2. Both assertion and reason are true and reason is the correct explanation of assertion.</p> <p><input type="checkbox"/> 3. Both assertion and reason are false.</p> <p><input checked="" type="checkbox"/> 4. Assertion is false but reason is true.</p>
Q.89	A potential difference (V) is applied for time (t) across the heating element of an electric geyser having a resistance (R). Which of the following is the correct relation between heat produced (H) in the geyser coil in terms of V, t, and R?
Ans	<p><input checked="" type="checkbox"/> 1. $H = \left(\frac{V^2}{R}\right)t$</p> <p><input type="checkbox"/> 2. $H = VRt$</p> <p><input type="checkbox"/> 3. $H = \frac{VR}{t}$</p> <p><input type="checkbox"/> 4. $H = \left(\frac{V^2R}{t}\right)$</p>
Q.90	The mass number of a nucleus is X, while its atomic number is Y. What will be the number of neutrons and protons, respectively, in the nucleus?
Ans	<p><input type="checkbox"/> 1. (X + Y) and X</p> <p><input type="checkbox"/> 2. Y and (X - Y)</p> <p><input type="checkbox"/> 3. X and (X + Y)</p> <p><input checked="" type="checkbox"/> 4. (X - Y) and Y</p>
Q.91	Which of the following is NOT an example of forced convection?
Ans	<p><input type="checkbox"/> 1. Forced-air heating systems</p> <p><input type="checkbox"/> 2. Human circulatory system</p> <p><input type="checkbox"/> 3. Cooling system of an automobile engine</p> <p><input checked="" type="checkbox"/> 4. Heating up of ground more quickly than large bodies of water</p>

Q.92	Which of the following statements is/are true? i. The covalent bond may be classified into two types depending upon the types of overlapping: (i) Sigma(σ) bond and (ii) pi(π) bond ii. Basically, the strength of a bond depends upon the extent of overlapping. iii. In case of sigma bond, the overlapping of orbitals takes place to a larger extent. Hence, it is stronger compared to the pi bond where the extent of overlapping occurs to a smaller extent.
Ans	<input checked="" type="checkbox"/> 1. Only ii and iii <input checked="" type="checkbox"/> 2. Only i and iii <input checked="" type="checkbox"/> 3. Only i and ii <input checked="" type="checkbox"/> 4. i, ii and iii
Q.93	Why was DDT widely used after World War II?
Ans	<input checked="" type="checkbox"/> 1. It acted as a natural fertiliser. <input checked="" type="checkbox"/> 2. It helped control malaria and insect-borne diseases. <input checked="" type="checkbox"/> 3. It increased soil fertility. <input checked="" type="checkbox"/> 4. It was biodegradable and eco-friendly.
Q.94	A medium has an absolute refractive index of $\sqrt{3}$. What will be the polarising angle for this medium?
Ans	<input checked="" type="checkbox"/> 1. 60° <input checked="" type="checkbox"/> 2. 0° <input checked="" type="checkbox"/> 3. 45° <input checked="" type="checkbox"/> 4. 30°
Q.95	What did Rutherford's experiment prove about the structure of the atom?
Ans	<input checked="" type="checkbox"/> 1. Atoms do not contain any empty space. <input checked="" type="checkbox"/> 2. Atoms have a dense, positively charged nucleus. <input checked="" type="checkbox"/> 3. Atoms are made only of electrons. <input checked="" type="checkbox"/> 4. Atoms are solid throughout.
Q.96	What does BJT stand for?
Ans	<input checked="" type="checkbox"/> 1. Base Junction Transistor <input checked="" type="checkbox"/> 2. Binary Junction Transistor <input checked="" type="checkbox"/> 3. Bipolar Junction Transistor <input checked="" type="checkbox"/> 4. Bi-layer Junction Transistor
Q.97	Which of the following statements is true about the reactivity series of metals?
Ans	<input checked="" type="checkbox"/> 1. It is a list of metals arranged in order of their decreasing atomic numbers. <input checked="" type="checkbox"/> 2. It is a list of metals arranged in order of their decreasing reactivity. <input checked="" type="checkbox"/> 3. It is a list of metals arranged in order of their increasing reactivity. <input checked="" type="checkbox"/> 4. It is a list of metals arranged in order of their increasing atomic masses.
Q.98	Identify the INCORRECT pair from the given options.
Ans	<input checked="" type="checkbox"/> 1. Alkenes - Contain one or more double bonds <input checked="" type="checkbox"/> 2. Hydrocarbon - Carbon and hydrogen <input checked="" type="checkbox"/> 3. Alkanes - Unsaturated hydrocarbons <input checked="" type="checkbox"/> 4. Alkynes - Contain one or more triple bonds

Q.99	On heating gypsum at 373 K, it loses water molecules and becomes _____, called Plaster of Paris.
Ans	<input checked="" type="checkbox"/> 1. calcium sulphate hemihydrate
	<input type="checkbox"/> 2. calcium sulphate dihydrate
	<input type="checkbox"/> 3. calcium sulphate
	<input type="checkbox"/> 4. calcium sulphate trihydrate
Q.100	Given below are two statements. Read the statements carefully and select the correct option. Statement I: p-Block Elements comprise those belonging to Group 13 to 18 of the modern periodic table. Statement II: p-Block Elements, together with the s-Block Elements, are called the Representative Elements or Main Group Elements.
Ans	<input type="checkbox"/> 1. Both Statements I and II are false.
	<input type="checkbox"/> 2. Statement I is true but Statement II is false.
	<input type="checkbox"/> 3. Statement I is false but Statement II is true.
	<input checked="" type="checkbox"/> 4. Both Statements I and II are true.