

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

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| 1-1 | Which of the following will have the same number of molecules at S.T.P :<br>(A) $280\text{ cm}^3$ of $\text{CO}_2$ and $280\text{ cm}^3$ of $\text{N}_2\text{O}$ (B) $11.2\text{ dm}^3$ of $\text{O}_2$ and $32\text{ g}$ of $\text{O}_2$<br>(C) $44\text{ g}$ of $\text{CO}_2$ and $11.2\text{ dm}^3$ of $\text{CO}$ (D) $28\text{ g}$ of $\text{N}_2$ and $5.6\text{ dm}^3$ of oxygen                                                                            |
| 2   | Quantum number values for 2p orbitals are :<br>(A) $n = 2, \ell = 1$ (B) $n = 1, \ell = 2$ (C) $n = 1, \ell = 0$ (D) $n = 2, \ell = 0$                                                                                                                                                                                                                                                                                                                             |
| 3   | For which system does the equilibrium constant, $K_c$ has units of (concentration) $^{-1}$ :<br>(A) $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$ (B) $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$<br>(C) $2\text{NO}_2(\text{g}) \rightleftharpoons \text{N}_2\text{O}_4(\text{g})$ (D) $2\text{HF}(\text{g}) \rightleftharpoons \text{H}_2(\text{g}) + \text{F}_2(\text{g})$ |
| 4   | The unit of the rate constant is the same as that of the rate of reaction in :<br>(A) First order reaction (B) Second order reaction<br>(C) Zero order reaction (D) Third order reaction                                                                                                                                                                                                                                                                           |
| 5   | Isotopes differ in :<br>(A) Properties which depend upon mass<br>(B) Arrangement of electrons in orbitals<br>(C) Chemical properties<br>(D) The extent to which they may be affected in electromagnetic field                                                                                                                                                                                                                                                      |
| 6   | The bond angle in $\text{NH}_3$ molecule is :<br>(A) $109.5^\circ$ (B) $107.5^\circ$ (C) $104.5^\circ$ (D) $108^\circ$                                                                                                                                                                                                                                                                                                                                             |
| 7   | The comparative rates at which the solutes move in paper chromatography depends on :<br>(A) The size of the paper (B) $R_f$ values of solutes<br>(C) Temperature of the experiment (D) Size of the chromatographic tank used                                                                                                                                                                                                                                       |
| 8   | The number of bonds in nitrogen molecule is :<br>(A) One $\sigma$ and one $\pi$ (B) One $\sigma$ and two $\pi$<br>(C) Three sigma only (D) Two $\sigma$ and one $\pi$                                                                                                                                                                                                                                                                                              |
| 9   | If a strip of Cu metal is placed in a solution of $\text{FeSO}_4$ :<br>(A) Cu will be deposited (B) Fe is precipitated out<br>(C) Cu and Fe both dissolve (D) No reaction takes place                                                                                                                                                                                                                                                                              |
| 10  | London dispersion forces are the only forces present among the :<br>(A) Molecules of water in liquid state<br>(B) Atoms of helium in gaseous state at high temperature<br>(C) Molecules of solid iodine<br>(D) Molecules of hydrogen chloride gas                                                                                                                                                                                                                  |

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| 11 | The mass of one mole of electron is :<br>(A) 1.008 mg                      (B) 0.55 mg                      (C) 0.184 mg                      (D) 1.673 mg                                                                                                                                                                                |
| 12 | Diamond is a bad conductor because :<br>(A) It has a tight structure<br>(B) It has a high density<br>(C) There are no free electron present in the crystal of diamond to conduct electricity<br>(D) Is transparent to light                                                                                                               |
| 13 | How should the conditions be changed to prevent the volume of a given gas from expanding when its mass is increased :<br>(A) Temperature is lowered and pressure is increased<br>(B) Temperature is increased and pressure is lowered<br>(C) Temperature and pressure both are lowered<br>(D) Temperature and pressure both are increased |
| 14 | Bohr's model of atom is contradicted by :<br>(A) Plank's quantum theory                      (B) Dual nature of matter<br>(C) Heisenberg's uncertainty principle                      (D) All of these                                                                                                                                    |
| 15 | Chromatography in which the stationary phase is a solid classified as :<br>(A) Partition chromatography                      (B) Gas chromatography<br>(C) Adsorption chromatography                      (D) Thin layer chromatography                                                                                                   |
| 16 | The net heat change in a chemical reaction is same, whether it is brought about in two or more different ways in one or several steps. It is known as :<br>(A) Henry's law                      (B) Joule's principle<br>(C) Hess's law                      (D) Law of conservation of energy                                            |
| 17 | Molarity of pure water is :<br>(A) 1                      (B) 18                      (C) 55.5                      (D) 6                                                                                                                                                                                                                 |