

**Instructions :**

- (i) Attempt all questions.
- (ii) Question Nos. 1 to 4 are objective type. Carries total 20 marks.
- (iii) Question Nos. 5 to 8. each question carries 2 marks. (word limit 30 words)
- (iv) Question Nos. 9 to 12, each question carries 3 marks. (word limit 75 words)
- (v) Question Nos. 13 to 17, each question carries 4 marks. (word limit 120 words)
- (vi) Question Nos. 18 to 20, each question carries 5 marks. (word limit 150 words)
- (vii) Internal options are given in Question Nos. 5 to 20.

Q.1

Choose the correct option :

1 × 5 = 5

- (a) The defect in which the crystal lattice have the vacancy of one cation and one anion is :
  - (i) Ionic defect
  - (ii) Atomic defect
  - (iii) Frankel defect
  - (iv) Schottky defect
- (b) Fe, Co, Ni are which type of magnetic substance?
  - (i) Paramagnetic
  - (ii) Ferromagnetic
  - (iii) Diamagnetic
  - (iv) Anti-ferromagnetic
- (c) Which of the following is not an organometallic compound?
  - (i) Ethyl magnesium bromide
  - (ii) Tetra ethyl lead
  - (iii) Sodium ethoxide
  - (iv) Tetra methyl aluminium
- (d) Which is not a glyceride?
  - (i) Fat
  - (ii) Oil
  - (iii) Phospholipid
  - (iv) Soap
- (e) Which hydride is found in liquid state?
  - (i) HF
  - (ii) HCl
  - (iii) HBr
  - (iv) HI

Q.2

Fill in the blanks :

1 × 5 = 5

- (a) The process of adding minute amount of impurity in an element or compound is called \_\_\_\_\_
- (b) Arrhenius equation is represented by \_\_\_\_\_
- (c) In lead storage cell \_\_\_\_\_ works as electrolyte.
- (d) Carbylamine test gives only \_\_\_\_\_ amine.
- (e) Protein is a polymer of \_\_\_\_\_

- Q.3 Write answers in one word of each : 1 × 5 = 5
- F-centers give colour to crystal due to whose presence?
  - Which noble gas is used in electric bulbs with nitrogen?
  - Colloidal solution of liquid in liquid is known as \_\_\_\_\_
  - Write the name of organometallic compound used as an anti-knock.
  - Which protein is responsible for the clotting of blood?
- Q.4 Match the pair correctly : 1 × 5 = 5
- | "A"                  | "B"                               |
|----------------------|-----------------------------------|
| (a) Diazonium salt   | (i) Explosive                     |
| (b) Gas mask         | (ii) $C_6H_5N_2Cl$                |
| (c) Philosopher wool | (iii) Radioactive halogen         |
| (d) Astatine         | (iv) ZnO                          |
| (e) T.N.B.           | (v) Adsorption of poisonous gases |
- Q.5 What is Electrophoresis? 2
- (Or) What are catalytic promoters? Give one example.
- Q.6 Sea divers for breathing inside sea uses the mixture of Helium and Oxygen. Why? 2
- (Or) All Halogens are strong oxidising agents. Why?
- Q.7 What are chelates? Give one example. 2
- (Or) Write chemical formula of the following coordinate compounds
- Hexaaquachromium (II) chloride
  - Potassium tetraiodomercurate (II)
- Q.8 Write the simple and chemical name of vitamins; whose deficiency causes the following diseases : 2
- Sterility
  - Non-clotting of blood
- (Or) What is peptide bond?
- Q.9 On dissolving 4 gm urea in 100 gm water, 1.24°C depression in freezing point of the solution is obtained. Calculate molecular mass of urea. ( $K_f = 1.86 \text{ K mol}^{-1}$ ) 2
- (Or) Calculate osmotic pressure of the solution which contains 68.4 gram sucrose in 1000 ml of solution at 293 K. ( $R = 0.082 \text{ litre atm. K}^{-1} \text{ mol}^{-1}$ )
- Q.10 Define the following 1 + 1 + 1 = 3
- Azeotropic mixtures
  - Isotonic solution
  - Semipermeable membrane

- (Or) Define the following :
- Osmotic pressure
  - Van't Hoff factor
  - Molal freezing depression constant
- Q.11 Write the electronic configuration of  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  (Atomic No. of Fe = 26). Which one is more paramagnetic? 3
- (Or) Ionic radii of  $\text{Fe}^{2+}$  is less than ionic radii of  $\text{Mn}^{2+}$ . Why?
- Q.12 How is  $\text{K}_2\text{Cr}_2\text{O}_7$  prepared from chromite ore? Write with equation. 3
- (Or) What is lanthanide contraction? How is it caused?
- Q.13 Write four differences between molecularity and order reaction. 1 + 1 + 1 + 1 = 4
- (Or) Write four differences between rate of reaction and rate constant.
- Q.14 Write the concentration of Bauxite ore by Hall's process with equation. 4
- (Or) Describe with diagram the Siemens Martin process of manufacturing of steel.
- Q.15 Explain the following reactions of chloroform : 4
- Effect of Air and Sunlight
  - Reimer-Tiemann Reaction
- (Or) Explain the following reactions of chlorobenzene :
- Reaction with chlorine in the presence of  $\text{FeCl}_3$  in dark
  - Fitting reaction. <http://www.mpboardonline.com>
- Q.16 Give the reasons : 2 + 2 = 4
- Boiling points of alcohols are higher than ethers.
  - Pure phenol is a colourless solid but it converted into pink after some time by placing open in the air. Give chemical reaction.
- (Or) What do you understand by dehydration of alcohol? Explain its mechanism.
- Q.17 How will you obtain following from acetic acid? (Give equations only) 1 + 1 + 1 + 1 = 4
- Acetic anhydride
  - Ethyl acetate
  - Trichloroacetic acid
  - Acetyl chloride
- (Or) How will you obtain following compounds from benzaldehyde? (Give equations only)
- Cinnamaldehyde

- (ii) Benzoin
- (iii) Cinnamic acid
- (iv) Benzoyl chloride

Q.18 Define the following and write the formula and unit of each

- (i) Equivalent conductivity  $2\frac{1}{2} + 2\frac{1}{2} = 5$
- (ii) Molar conductivity

(Or) Draw a labelled diagram of Galvanic cell and explain cell reaction.

- Q.19 (i) Explain the hydrides of Nitrogen family under the following points :  $3 + 2 = 5$
- (a) Basic property
  - (b) Reducing property
  - (c) Melting and Boiling point.

(ii)  $\text{PCl}_5$  exists but  $\text{NCl}_5$  does not, why?

(Or) (i) Explain the hydrides of Oxygen family under the following points :

- (a) Reducing property
- (b) Acidic property
- (c) Thermal stability
- (ii) Oxygen exhibits oxidation states -2 to +2 while other elements of this group exhibit oxidation states +2, +4 and +6, why?

Q.20 Define the following and give examples  $1 + 1 + 1 + 1 + 1 = 5$

- (i) Antifertility
- (ii) Antacids
- (iii) Hypnotics
- (iv) Non-hypnotic
- (v) Antibiotics

(Or) (i) What are artificial sweeteners? Write any four names.  $3 + 2 = 5$

(ii) Write note on insect repellent.