Q1.

1. Thousands of amino acids polymerize to form:

   (A) carbohydrates   (B) proteins   (C) lipids   (D) vitamins

2. Which one of the following is a triglyceride?

   (A) vitamins   (B) lipids   (C) proteins   (D) carbohydrates

3. Depending upon temperature variation, atmosphere has been divided into number of regions:

   (A) 1   (B) 2   (C) 3   (D) 4

4. Which one of the following diseases causes liver inflammation?

   (A) typhoid   (B) jaundice   (C) cholera   (D) hepatitis

5. Water dissolves non ionic compounds by:

   (A) hydrogen bonding   (B) ion-ion forces   (C) dipole-dipole forces   (D) ion dipole forces

6. Formula of urea is:

   (A) NH_2COONH_4 (B) NH_2COONH_2 (C) NH_2CONH_4 (D) NH_2CONH_2

7. The gas prepared by Haber's process is:

   (A) SO_2 (B) SO_3 (C) NH_3 (D) CO_2

8. In equilibrium state K_c is equal:

   (A) $\dfrac{K_r}{K_f}$ (B) $\dfrac{K_f}{K_r}$ (C) $\dfrac{R_f}{R_r}$ (D) $\dfrac{R_f}{K_f}$

9. Acid used for flavouring of food is:

   (A) benzoic acid   (B) acetic acid   (C) sulphuric acid   (D) nitric acid

10. Which one is an amphoteric compound?

    (A) H_2O (B) NH_3 (C) HCl   (D) CH_3COOH

11. The general formula of alkyl radical is:

    (A) C_nH_{2n+2} (B) C_nH_{2n} (C) C_nH_{2n-2} (D) C_nH_{2n+1}

12. The other name of alkanes is:

    (A) halogens   (B) olefins   (C) paraffins   (D) acetylene

Roll No.(in Figures): .... (in Words): ....

Maximum Marks: 48   **SUBJECTIVE TYPE**   Time Allowed :1.45 Hours

(PART - I)

Q2. Write short answers to any FIVE (5) questions.   5×2=10

(i)   Define irreversible reaction. Give one example.

(ii)   How is dynamic equilibrium established?

(iii) How can you know that a reaction has attained an equilibrium state?

(iv)   What do you mean by an extent of a reaction?

(v)   Write name of two indicators used to identify the acidic and basic solutions.

(vi)   Give two uses of calcium chloride ($CaCl_2$).

(vii) Why H^+ ion acts as a Lewis acid?

(viii) Write formula of two normal salts.

Q3. Write short answers to any FIVE (5) questions.   5×2=10

(i)   What is vital force theory?

(ii)   Define petroleum.

(iii) Write down the formula of ethyl acetate.

(iv)   Why are the alkanes called paraffins?

(v)   Write two uses of methane.

(vi)   What is difference between glucose and fructose?

(vii) Why RNA is called a messanger?

(viii) Name two fatty acids with their formula.

Q4. Write short answers to any FIVE (5) questions.   5×2=10

(i)   Write down name of two primary pollutants.

(ii)   Write down two harmful effects of SO_2.

(iii) Write down two physical properties of CO.

(iv)   Explain, why a water molecule is polar?

(v)   Describe two causes of hardness in water.

(vi)   Write the name and formula of two copper ores.

(vii) Describe electromagnetic separation.

(viii) Write down two fraction found in residual oil.

(PART - II)

Note: Attempt any TWO questions.   2×9=18

Q5. (a) What is equilibrium constant? How units of equilibrium constant can be derived from a

          balanced chemical equation?   5

     (b) Write down four chemical properties of acids.   4

Q6. (a) Write note on the following: (i) three sources of alkanes (ii) reduction of alkyl halides   5

     (b) Give four uses of carbohydrates.   4

Q7. (a) Write five advantages of Solvay's process.   5

     (b) Define water pollution. Also write its three effects.   4

Q1.   12

1. Deficiency of vitamin D causes disease:

   (A) rickets   (B) scurvy   (C) anemia in babies   (D) night blindness

2. Which is a fat soluble vitamin?

   (A) vitamin A   (B) vitamin E   (C) vitamin K   (D) all of these

3. Acid rain affects the aquatic life by clogging fish gills due to:

   (A) lead   (B) chromium   (C) mercury   (D) aluminium

4. Permanent hardness of water is removed by adding:

   (A) Na_2-zeolite   (B) soda lime   (C) lime water   (D) quick lime

5. Which gas is used to destroy harmful bacteria in water?

   (A) iodine   (B) chlorine   (C) flurine   (D) bromine

6. Crude oil is heated in furnace up to:

   (A) 300°C   (B) 350°C   (C) 400°C   (D) 450°C

7. Guldberg and Waage put forward the law of mass action in:

   (A) 1859 A.D   (B) 1869 A.D   (C) 1879 A.D   (D) 1889 A.D

8. When the magnitude of K_c is very large it indicates:

   (A) reaction mixture consists of almost all products

   (B) reaction mixture consists of almost all reactants

   (C) reaction has not gone to completion   (D) reaction mixture has negligible products

9. _____ is used as drying agent for gases.

   (A) $CaCO_3$ (B) NaCl   (C) CaO   (D) Na_2SiO_3

10. Which one of the following is a Lewis base?

    (A) NH_3 (B) BF_3 (C) H^+ (D) $AlCl_3$

11. Pitch is a black residue of:

    (A) coke   (B) coal tar   (C) coal   (D) coal gas

12. Dehydration of alcohols is carried out with:

    (A) NaOH   (B) KOH   (C) H_2SO_4 (D) HCl

Roll No.(in Figures): .... (in Words): ....

Maximum Marks: 48   **SUBJECTIVE TYPE**   Time Allowed :1.45 Hours

(PART - I)

Q2. Write short answers to any FIVE (5) questions.   5×2=10

(i) Define static equilibrium. Give an example.

(ii) Write two characteristics of irreversible chemical reaction.

(iii) If $Q_c < K_c$ then predict the direction of chemical reaction.

(iv) Write the formula of aluminium hydroxide.

(v) Write two uses of calcium hydroxide.

(vi) Define hyperacidity.

(vii) Define acid and base according to Lewis concept.

(viii) How are salts prepared by the reaction of acid and metal?

Q3. Write short answers to any FIVE (5) questions.   5×2=10

(i) Define structural formula and give an example.

(ii) Write down the name and formula of two heterocyclic compounds.

(iii) Define isomerism.

(iv) Write two physical properties of alkenes.

(v) Write down two sources of alkanes.

(vi) Differentiate between glucose and fructose with the help of structure.

(vii) What is the function of DNA?

(viii) Differentiate between oil and fats.

Q4. Write short answers to any FIVE (5) questions.   5×2=10

(i) Write two effects of global warming.

(ii) What do you mean by pollutants?

(iii) What is ozone?

(iv) Differentiate between soft and hard water.

(v) Why are pesticides used?

(vi) What is meant by minerals?

(vii) Define smelting.

(viii) Write any two fractions of residual oil.

(PART - II)

Note: Attempt any TWO questions.   2×9=18

Q5. (a) Derive equilibrium constant expression for a general reversible chemical reaction.   5

    (b) Write four specific characteristics of bases.   4

Q6. (a) Write down five physical properties of alkanes.   5

    (b) Write a note on monosaccharides.   4

Q7. (a) What is fractional distillation? Describe fractional distillation of petroleum.   5

    (b) Water is universal solvent. Explain it.   4