Q1.

1. Formula of urea is:

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

2. Specific heat capacity of water is:

   (A) $4.2\ KJg^{-1}K^{-1}$ (B) $4.2\ Jg^{-1}K^{-1}$ (C) $2.4\ KJg^{-1}K^{-1}$ (D) $2.4\ Jg^{-1}K^{-1}$

3. Permanent hardness is removed by adding:

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

4. Normally rain water is weakly acidic because of:

   (A) CO_2 gas (B) CO_3 gas (C) SO_2 gas (D) NO_2 gas

5. Who discovered vitamin B1 (Thiamin)?

   (A) Hopkins (B) Funk (C) Bohar (D) Watson

6. Which one of the following is triglyceride?

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

7. Substitution reaction is the characteristic of:

   (A) alkanes (B) alkenes (C) alkyne (D) aldehydes

8. Which one of the following is Lewis base?

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

9. Functional group -COOH is found in:

   (A) carboxylic acids (B) aldehydes (C) alcohols (D) esters

10. Acetic acid is used for:

    (A) flavouring food (B) making explosives

    (C) etching designs (D) cleaning metals

11. Law of mass action was presented in:

    (A) 1865 (B) 1867 (C) 1869 (D) 1871

12. For a reaction between PCl_3 and Cl_2 to form PCl_5, the units of K_c are:

    (A) $mol\ dm^{-3}$ (B) $mol^{-1}\ dm^{-1}$ (C) $mol^{-1}\ dm^3$ (D) $mol\ dm^3$

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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 chemical equilibrium state.

(ii) Write the equilibrium constant expression for the given reaction: $N_{2(g)} + O_{2(g)} \longrightarrow 2NO_{(g)}$

(iii) Give two characteristics of reversible reaction.

(iv) What is the relationship between active mass and rate of reaction?

(v) What is the difference between Arrhenius base and Bronsted Lowry base?

(vi) Name the acids present in vinegar and apple.

(vii) Give two characteristics of salts.

(viii) Write the names of two double salts.

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

(i) Define structural formula with one example.

(ii) How organic compounds are used as fuel?

(iii) What is meant by homologous series?

(iv) Define saturated hydrocarbon with one example.

(v) Why alkanes are known as paraffins?

(vi) Define amino acid. Write its general formula.

(vii) What is meant by essential amino acids?

(viii) What is RNA? Write its function.

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

(i) Explain atmosphere.

(ii) Write the names and formula of two primary pollutants.

(iii) Why the normal rain water is weakly acidic?

(iv) Describe the causes of hardness in water.

(v) Write the names of two methods used for removal of permanent hardness.

(vi) What is gangue?

(vii) Explain froth flotation process.

(viii) What is the principle of fractional distillation?

(PART - II)

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

Q5. (a) Define reversible reaction. Write four characteristics of reverse reaction.   5

    (b) Write uses of any four bases.   4

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

    (b) Write four usages of carbohydrates for our body.   4

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

    (b) Write down four properties of water.   4

Q1.   **12**

1. Who put forward the law of mass action?

    (A) Dalton   (B) Guldberg   (C) Rutherford   (D) Moselay

2. Which one of the following species is not amphoteric?

    (A) H_2O (B) NH_3 (C) HCO_3^{-1} (D) SO_4^{2-}

3. Which base is used to neutralize acidity in the stomach?

    (A) $Ca(OH)_2$ (B) $NaOH$ (C) $Mg(OH)_2$ (D) KOH

4. Nitrogen and hydrogen react to make ammonia. What will be present in the equilibrium mixture? $K = 2.86 \; mol^{-2} \; dm^6$ $N_2 + 3H_2 \rightleftharpoons 2NH_3$

    (A) only NH_3 (B) NH_3 and N_2, H_2 (C) H_2 and N_2 (D) only H_2

5. Pitch is the black residue of:

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

6. Thousands of the amino acids polymerize to form:

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

7. Chemical formula of fructose is:

    (A) $C_{12}H_{22}O_{11}$ (B) $C_6H_{12}O_6$ (C) C_4H_{10} (D) C_5H_{12}

8. The end product of oxidation of acetylene is:

    (A) oxalic acid   (B) glycol   (C) glyoxal   (D) potassium hydroxide

9. Which gas protects the earth's surface from ultraviolet radiations?

    (A) CO_2 (B) CO (C) N_2 (D) O_3

10. The nitrogen present in urea is used by plants to synthesize:

    (A) sugar   (B) proteins   (C) fats   (D) DNA

11. A disease that causes bones and teeth damage is:

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

12. Which one is responsible to rising up water from the roots of plants to leaves:

    (A) capillary action   (B) heat capacity   (C) photosynthesis   (D) surface tension

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 chemical equilibrium state.

(ii) Write the equilibrium constant expression for the given reaction: $N_2 + 3H_2 \longrightarrow 2NH_3$

(iii) What is meant by active mass?

(iv) Define law of mass action.

(v) Define acids and base according to the Arrhenius concept.

(vi) Write any two uses of sodium silicate.

(vii) Name two mineral acids.

(viii) What are acidic salts? Also give one example.

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

(i) What are aromatic compounds? Why they are called aromatic?

(ii) Write the general formula of alkanes and give one example.

(iii) Define coal.

(iv) Which are two types of hydrocarbons?

(v) Write down two uses of methane.

(vi) Write the names of two monosaccharides which have hexoses molecules.

(vii) What are the essential aminoacids?

(viii) What is the function of RNA?

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

(i) How acid rain is formed?

(ii) Write two serious effects of ozone depletion.

(iii) What is the difference between primary and secondary pollutants?

(iv) Why are non-polar compounds insoluble in water?

(v) Write any two properties of water.

(vi) What is meant by smelting?

(vii) Write the names of raw material used in Solvay's process.

(viii) Write two uses of kerosene oil.

(PART - II)

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

Q5. (a) Define reversible reaction and explain it with the help of graph.   5

     (b) Write down four important characteristics of salts.   4

Q6. (a) Write five uses of acetylenes.   5

     (b) Define vitamins and describe their importance.   4

Q7. (a) Explain bessemerization and specific example of copper.   5

     (b) Explain four important water borne diseases? How they can be prevented?   4