

CHE121 :: CHEMISTRY-I**Time Allowed: 03:00 hrs****Max.Marks: 100**

1. This paper contains 6 questions divided in two parts.
2. All questions are compulsory.
3. The marks assigned to each question are shown at the end of the each question in square brackets.
4. Attempt either (a) OR (b) from each question of PART B.
5. Answer all questions in serial order.
6. Do not write anything on the question paper except your registration number at the designed space.

Part A

- Q1 (a) Alkalinity of water can never be due to simultaneous presence of OH^- , CO_3^{2-} , HCO_3^- ions? Justify it. [2.5 Marks]
- (b) A hard water sample contains 14.5 mg/l MgCl_2 and 25 mg/ $\text{Ca}(\text{HCO}_3)_2$. Calculate the temporary hardness in $^\circ\text{Fr}$ and $^\circ\text{Cl}$. (atomic weight of $\text{mg}=24$ amu, $\text{C}=12$ amu, $\text{O}=16$ amu, $\text{Cl}=35.5$ amu, $\text{H}=1$ amu) [2.5 Marks]
- (c) What is the plastic deformation? Give its uses. [2.5 Marks]
- (d) What is compounding in plastics? How compounding can be done for a polymer? [2.5 Marks]
- (e) List five function of lubricants. [2.5 Marks]
- (f) What are the consequences of using non biodegradable detergents? [2.5 Marks]
- (g) What is transgenic animal? [2.5 Marks]
- (h) What is transgenic plant? [2.5 Marks]
- (i) Write greener method for synthesis of ibuprofen? [2.5 Marks]
- (j) Write the advantages of DMC (dimethyl carbonate) over other methylating agents such as phosgene and dimethyl sulfate? [2.5 Marks]

PART B

- Q2.(a)(i) Calculate the degree of Polymerization of vinyl chloride if the molecular weight of polymer chain is 1.31×10^5 g/mol. [5]
- (ii) Difference between addition and condensation polymers by giving suitable examples? [10]
- OR**
- (b) What is the glass transition temperature? Give factor that can affect T_g . What is the significance of T_g . [15 Marks]
- Q3.**(a) (i) Briefly discuss the classification of lubricants. [15 Marks]
- (ii) Explain cloud and pour point. [15 Marks]
- OR**
- (b) What is soap? How it can be prepared? Explain interaction of soap with water and cleansing action of soap. [15 Marks]
- Q4.**(a) (i) What is fermentation? Explain alcoholic fermentation with the help of chemical reaction. [15 Marks]
- (ii) What are vitamins? Give the names of three micro-organisms and the vitamins produced by them.

[10+5]

[15 Marks]

OR

- (b) (i) What is bio-reactor? Classify bio-reactors on the basis of process performed by bioreactor.
(ii) What are the two systems for the growth of micro-organism ? Explain. [10+5]

[15 Marks]

Q5 (a) Write down structure ,name and synthesis of the gas which was responsible for Bhopal gas tragedy?
Which pesticides was produce from this gas , give name, structure and synthesis of that pesticide?

[15marks]

OR

- (b) What are the Ionic Liquids? Give their advantage and two examples of ionic liquids?

[15 Marks]

Q6(a) Explain the basics principle of flame photometry . What are the applications of flame photometry ? What are the application of differential Scanning Calorimetry (DSC)?

[15 Marks]

OR

- (b) What are the applications of Atomic Absorption Spectrsocopy (AAS)? Draw the block diagram of Atomic absorption spectrometer and explain the basic principle of Atomic Absorption Spectrsocopy(AAS).

[15 Marks]

-- End of Question Paper --