

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2010

Second Semester

CHY105: CHEMISTRY FOR TEXTILES

(Common to Textile Technology & Fashion Technology)

Time: Three Hours**Maximum Marks: 100****Answer ALL questions: -****PART A (10 x 1 = 10 Marks)**

- The solubility of oxygen gas in water can be explained using
 - dipole-dipole interaction
 - ion-dipole interaction
 - dipole-induced dipole interaction
 - hydrogen bonding
- Which among the following bonds has the highest ionic character?
 - $>N-H$
 - $-O-H$
 - $H-Cl$
 - $H-F$
- The molecular weight of a polypropylene molecule with degree polymerization 1000 is
 - 42000
 - 28000
 - 63000
 - 10000
- The requirement for a polymer to undergo vulcanization is
 - Presence of long straight chains
 - presence of crosslinking covalent bonds between polymer chains
 - presence of unsaturated bonds in the polymer chains
 - presence of reactive functional groups
- Malachite green falls in the category of
 - Azo dyes
 - anthroquinone dyes
 - triphenyl methane dyes
 - phthalein dyes
- Which among the following is a chromophoric group
 - $-NH-R$
 - $-O-H$
 - $-N=N-$
 - $-NR_2$
- Which among the following metals is the most suitable to act as sacrificial anode to steel
 - Cu
 - Mg
 - Zn
 - Ni
- The corrosion of Zn-Fe couple in acid medium is referred as
 - galvanic corrosion
 - uniform corrosion
 - differential aeration corrosion
 - pitting corrosion
- In which among the following processes the treated water contains more amounts of dissolved solids?
 - Ion exchange method
 - zeolite method
 - reverse osmosis method
 - electrodialysis method
- Which among the following is the biological way of treating waste water
 - Chlorination
 - coagulation
 - flocculation
 - trickling filter

PART B (10 x 2 = 20 Marks)

- What is the force responsible for the existence of hydrocarbon in liquid state?
- What is origin of polarity of covalent bonds? How does it affect the properties of molecules?
- Give the various classifications of polymers.
- What is meant by tacticity of polymers?
- Why do highly conjugated molecules absorb light?
- Write the synthetic reaction for phenolphthalein or eosin.

17. What is the importance of Pilling-Bedworth rule?
18. What are the constituents of fire-retardant paints? How do they function?
19. What is the trouble caused due to the presence of iron in water to be used in textile industries?
20. How is solubility product principle helpful in understanding the precipitation of Ca ions as CaCO_3 in carbonate conditioning of boiler feed water?

PART C (5 x 14 = 70 Marks)

21. a) (i) How is the concept of hybridization helpful in understanding the geometry of molecules? (8)
- (ii) What are the applications of dipole moment measurement? (6)

(OR)

- b) (i) Write a detail note on the nature of hydrogen bonding and its influence on the properties of substances. (8)
- (ii) HCl is a covalent molecule but it is completely ionized in aqueous solution. Why? (6)

22. a) (i) Write the mechanism of radical polymerization taking styrene as the example. (8)
- (ii) How is Teflon prepared? Give its properties and applications. (6)

(OR)

- b) (i) Write the preparations, properties and used of PVC and Nylon -6,6 (8)
- (ii) What is the need for vulcanization of rubber? What is the structural change occurring during vulcanization? (6)

23. a) (i) Explain the modern theory of colour and constitutions. (8)
- (ii) How are dyes classified based on methods of applications? Give examples and their chemical structures. (6)

(OR)

- b) Write the synthesis and applications of
 - (i) malachite green (8)
 - (ii) alizarin (6)

24. a) (i) Explain the principle of electrochemical corrosion of metals. (8)
- (ii) How do metal purity and unfavorable cathode area ratio affect the rate of corrosion of metals? (6)

(OR)

- b) (i) Explain the cathodic protection methods of corrosion control (8)
- (ii) What are the constituents of paints? Explain the functions of drying oils and plasticizers. (6)

25. a) (i) How is water treated in ion-exchange method? (8)
- (ii) Write the principle of desalination by reverse osmosis process. (6)

(OR)

- b) (i) Give an account on the various stages in the treatment of waste water from textile industries. (8)
- (ii) How are phosphates useful in the internal conditioning of boiler feed water? (6)
