3rd Semester Regular / Back Examination 2015-16

CHEMISTRY-II
Branch: CHEM,ENV,TEXTILE
Time: 3 Hours

Max Marks: 70
Q.Code: T384
Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Q1   **Answer the following questions:**   **(2 x 10)**
  a) Write different units to express the Hardness of water and the relationship
         between them.

  b) A sample of water on analysis found to contain 24mg/L and 5.85mg/L of
         $MgSO_4$ and NaCl respectively. What is the hardness of the sample of
         water?

  c) When a piece of copper is exposed to moist-air containing carbon dioxide,
         its surface becomes green. Give proper reason for this.

  d) State and explain Pilling- Bedworth rule.

  e) Write the monomers of PMMA, PVC, PS, Perlon-U.

  f) What is knocking of petrol?

  g) Define Synthetic petrol.

  h) A piece of impure zinc and pure zinc are placed in a salt solution. Which
         will corrode faster and why?

  i) Why carbon nanotube has been termed as "ultimate fiber"?

  j) How is water gas superior to producer gas?

Q2 **a)** Explain the free radical mechanism of Addition polymerization with suitable examples. **(5)**

b) Explain why polyaniline behaves as a conducting polymer but polyethylene doesn't? **(3)**

c) What do you mean by vulcanization of rubber? **(2)**

Q3 **a)** Discuss the factors affecting the corrosion of metal. **(5)**

b) Explain the following: **(5)**
    (i) Small anodic area results in intense corrosion.
    (ii) A copper equipment should not possess a small iron bolt.

Q4 Discuss briefly the lime soda process for softening of Hard water with its advantage and disadvantage. **(10)**

Q5 **a)** Calculate the minimum amount of air required for the complete combustion of 100kg of the fuel containing 80% C, 6% H_2, 5% O_2, 2% S and the rest N_2 by weight. **(5)**

b) Write down the characteristics of a good fuel. **(3)**

c) Why CNG is preferred over LPG? **(2)**

Q6 **a)** Write notes on **(7)**
    (i) Reserve batteries
    (ii) Alkaline batteries
b) What are the basic components of a Battery? **(3)**

Q7 **a)** Calculate the quantity of lime and soda required for softening 50,000 Lt. of water containing: $CaCO_3$ = 5.0mg/L; $Mg(HCO_3)_2$ = 7.5mg/L; $CaSO_4$ = 13.6mg/L; $MgSO_4$ = 12.0mg/L; $MgCl_2$ = 2.0mg/L; SiO_2 = 2.5mg/L **(5)**

b) What do you mean by chlorine demand and Break point chlorine? Explain graphically. **(5)**

Q8 **Distinguish between** **(2.5x4)**
a) LDPE and HDPE
b) Octane and Cetane number
c) Primary Battery and Secondary Battery
d) Homopolymer and Copolymer