F.E- SEM I [CBSGS]

AC-I

22.12.2014

(REVISED COURSE) **QP Code : 11950**

(2 Hours) **[Total Marks : 60**

N.B. : (1) Question No.1 is **compulsory.**
(2) Answer any **three** questions from the remaining **five.**
(3) **All** questions **carry equal** marks.
(4) Atomic weight:— C=12, O=16, N=14, S=32, Cl=35.5 H=1, Ca=40, Mg=24, Na=23, Al=27, K=39.

1. Solve any **five** :— **15**
   (a) Define cloud point and pour point. Discuss its significance.
   (b) Explain the principle of EDTA method.
   (c) Distinguish between thermoplastic and thermosetting resins.
   (d) Write a brief note on CNT's.
   (e) Explain the reduced Phase rule.
   (f) Explain the role of plasticizers and lubricants in the compounding of plastics.
   (g) 25 ml of sewage water is refluxed with 0.1 N $K_2Cr_2O_7$ solution in presence of H_2SO_4 and Ag_2SO_4. The unreacted dichromate required 5.5 ml of 0.1N FAS solution. Bank tifration consumed 15ml of 0.1N FAS solution. Calculate COD of the effluent in mgll. **6**

2. (a) Calculate the amount of lime (85% pure) and soda (95% pure) required to soften one million liters of water which contains: $MgCO_3$=8.4 ppm, $CaCl_2$ =22.2 ppm, $MgCl_2$=9.5 ppm, CO_2=33 ppm, HCl=7.3 ppm, KCl=16.8 ppm. **5**
   (b) Explain the two-component, Pb-Ag system with an appropriate phase diagram. **4**
   (c) Write the preparation and uses of (any **one**)
      (i) Dolomite Dricks (ii) Silicon Carbide bricks **6**

3. (a) What are the conditions for the use of solid lubricants? Explain the structure and uses of graphite. **5**
   (b) What is vulcanization? Explain with proper reaction. Mention the advantages of vulcanized rubber. **4**
   (c) Explain the following terms giving **two** suitable examples.
      (i) Phase (ii) Component **6**

4. (a) Give the preparation, properties and uses of (any **two**)
      (i) PMMA
      (ii) Kevlar
      (iii) Buna-S rubber
   (b) Explain the zeolite method for softening of water including the following points. : Diagram, process with reaction, regeneration with reactions.