Sem I / CBSGS / Appl. Chem - I / NOV-16

QP Code:529604

(2 Hours) 27-12-2016 [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 Weights: Ca=40, Mg=24, Cl=35.5, S =32, H=1, C=12, O=16, K=39

1. Attempt any **five** from the following:- **15**
   (a) define BOD and COD.
   (b) What are the drawbacks of natural rubber?
   (c) Distinguish between thermoplastic and thermosetting resins.
   (d) Define cloud point and pour point. Discuss its significance.
   (e) What is a condensed system? State the condensed phase equation.
   (f) List the applicaitons of CNT's
   (g) 25 ml of a sewage water sample was refluxed with 10 ml of 0.25 N k_2Cr_2ON solution in presence of dill H_2SO_4, Ag_2SO_4 and $HgSO_4$. The unrea cted dichromate required 5.5 ml of solution, under the same conditions. Calculate the COD of sewage water sample.

2. (a) Calulate the amount of lime (85% pure) and soda (95% pure) required to soften one millon litres 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. **6**
   (b) State Gibb's phase rule. Give its applicaitons to one component system. **5**
   (c) What are CNTs? Describe the laser method of preparation of CNT. **4**

3. (a) Define lubricant. Discuss the boundary film lubrication mechanism. **6**
   (b) Explain compounding of plastics. (any **five**) **5**
   (c) State the limitations of phase rule. **4**

4. (a) Give the preparation, properties and uses of (any **two**) **6**
      (i) PMMA (b) Buna-s (iii) Kevlar
   (b) With the help of neat and labelled diagram explain zeolite process for softening of water. **5**
   (c) Find the acid value of oil whose 5 ml required 2 ml. of 0.01 N KOH during titration. (density of the oil = 0.92) **4**

5. (a) Explain manufacturing of portland cement (wet process) with a labelled diagram of rotary kiln. **6**
   (b) Explain the injection moulding method with the help of a neat diagram. **5**

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(c) The hardness of 50,000 litres of water sample was removed by passing it through a zeolite softner. Then it required 200 litres of NaCl solution containing 125 g/l of NaCl of regeneration. Calculate the hardness of water sample. **4**

6. (a) Discuss the following treatment methods for municipal water.(any **two**) **6**
   - (i) Bleaching powder
   - (ii) Ozone
   - (iii) Chlorine

   (b) Discuss any two of the following:- **5**
   - (i) Glass transition temperature
   - (ii) Polymers in medicine and surgery
   - (iii) Conducting polumers

   (c) Write a note on blended oil. **4**
