FE / I / 19.12.18 / CBSGS

Paper / Subject Code: 58504 / Applied Chemistry - I.

[Time: 2 Hours] **[Total Marks: 60]**

Please check whether you have got the right question paper.

N.B:
1. Question no **1** is **compulsory**.
2. Answer **any three** questions from remaining **five** questions.
3. Figure to the right indicate full marks.
4. Atomic weights : Ca = 40, Cl = 35.5 Mg = 24, C = 12, O = 16, H = 1.

Q.1 Attempt **any five** from the following: **15**

a) Explain the principal of EDTA method.
b) Explain vulcanization of rubber.
c) Define lubricant and give its functions.
d) State Gibb's phase rule and define phase.
e) What are nano materials?
f) Distinguish between thermoplastics and thermosetting plastics.
g) 20 ml of sewage water is refluxed with 0.1N $K_2Cr_2O_7$ in presence of H_2SO_4 and Ag_2SO_4. The unreacted dichromate required 6ml of 0.1N FAS solution. Blank titration consumed 15ml of 0.1N FAS solution. Calculate COD of effluent.

Q.2 a) Calculate the quantity of lime (90% pure) and (80% pure) required to soften one million litres of water containing $CaCl_2$ = 22.2ppm, $MgCl_2$ = 9.5 ppm, CO_2 = 33ppm, HCl = 7.3ppm **06**

b) With the help of phase diagram explain one component system. **05**

c) Describe laser method of preparation of CNT's. **04**

Q.3 a) Define lubrication. Discuss the boundary film lubrication mechanism. **06**

b) Write short note on injection moulding process. **05**

c) State the limitations of phase rule. **04**

Q.4 a) Give the preparation, properties and uses of (any two) **06**
a) PMMA b) Buna – S c) Kevlar

b) With the help of neat and labelled diagram explain zeolite process. **05**

c) 5ml of an oil takes 2.1ml of 0.02N KOH for titration. Find its acid value. (Density = 0.91 g/ml) **04**

Q.5 a) Write short notes on **06**
i) Decay of concrete.
ii) RCC

b) Write short note on 'Conducting Polymer.' **05**

c) The hardness of 10,000 litres of Hard water was removed by passing through zeolite. Zeolite required 5000 litres of NaCl solution containing 1170 mg NaCl / litre. Determine the hardness of water sample. **04**

Q.6 a) With the help of flow sheet diagram explain activated sludge process. **06**

b) Write notes on **05**
i) Glass transition temp.
ii) Polymers in medicine and surgery

c) Explain the following properties of lubricants with significance. **04**
i) Flash point and Fire point
ii) Cloud point and pour point

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