

Roll No

BE - 101

B.E. I & II Semester Examination, June 2014

Engineering Chemistry

Time : Three Hours

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Maximum Marks : 70

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) What are the advantages of break point chlorination? 2
- b) In the deionization process water is usually first passed through the cation exchanger and than through the anion exchanger. Give reason? 2
- c) How many grams of CaSO_4 dissolved per litre gives 126 ppm of hardness? 3
- d) Write the equations involved in the lime soda process. Give the advantages of Hot lime soda process over cold lime soda process? 7

OR

Define alkaline and non alkaline hardness of water. Mention various units use for its expression and show their relation also? 7

Unit - II

2. a) Why is Ethylene dibromide add when TEL is used as an antiknock? 2
- b) Why are gaseous fuel more advantageous than solid fuel? 2
- c) 0.72 gram of a fuel containing 80% carbon, when burnt in a bomb calorimeter, increased the temperature of water from 27.3 to 29.1°C. If the calorimeter contains 250 gms of water and its water equivalents is 150 grams calculate the H.C.V. of the fuel in kJ/kg? 3
- d) What do you know about term cracking? Describe fixed bed catalytic cracking with diagram? 7

OR

Describe how proximate analysis of a fuel carried out. What is the importance of this analysis? 7

Unit - III

3. a) Why should a good lubricating oil posses a low SEN? 2

- b) Give the classification of refractories with examples. 2
- c) An oil sample under test has a say bolt universal viscosity of 64 seconds at 210°F and 564 seconds at 100°F the low viscosity standard (gulf oil) possess a say bolt viscosity of 64 seconds at 210°F and 774 seconds at 100°F. The high viscosity standard (Pennsylvanian oil) gave the say bolt viscosity value of 64 seconds at 210°F and 414 seconds at 100°F. Calculate the V.J. of the oil sample under test? 3
- d) Describe important process parameters for manufacturing a good cement clinker? 7

OR

Define flash point and fire point. Describe the determination of flash point by pensky marten's apparatus? www.rgpvonline.com 7

Unit - IV

4. a) What is meant by Tacticity of polymers? Explain. 2
- b) Define polymerization. List out various initiators used in addition polymerization? 2
- c) Explain preparation, Properties and uses of plexiglass? 3
- d) What is compounding of rubber? Name the ingredients used in compounding also give their functions? 7

OR

Write short note on : 7

- i) Nylon 6:6
- ii) Gutta percha Rubber

Unit - V

5. a) Draw optical diagram of a simple photo electric photometer? 2
- b) Define following with examples. 2
- i) Chromophore
- ii) Auxochrome
- c) A 50 ml of water sample contains 840 ppm of dissolved oxygen. After 5 days the dissolved oxygen value becomes 230 ppm after the sample has been diluted to 80 ml calculate the BOD of the sample? 3
- d) What are the essential parts of a gas chromatographic assembly? Give the important applications of gas chromatography? 7

OR

0.5 g of CaCO_3 was dissolved in HCl and the solution was made to 500 ml with distilled water. 50ml of this solution required 25ml of EDTA solution for titration. 50ml of hard water sample required 20 ml of EDTA. After boiling 50ml of boiled water sample required 15ml of same EDTA calculate each type of hardness in mg/l? 7
