

1E2205

Roll No.

1E2205

B. Tech. II-Sem. (Back) (Back) Exam., Oct.-Nov. - 2020

CY - 101 Engineering Chemistry

Maximum Marks: 48

Min. Passing Marks: 16

Time: 2 Hours

Instructions to Candidates:

Attempt any two questions including Question No. 1, which is compulsory. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

Q.1 **Compulsory**, Answers for each sub-question be given in about 25 words - [8×2=16]

(a) Define anti-knocking agents with example.

(b) What is breakpoint chlorination?

(c) Explain caustic embrittlement.

(d) What is elastomers?

(e) Define viscosity index.

(f) What is galvanization? Write applications also.

(g) What do you mean by vulcanization?

(h) What is annealing of glass?

Q2 (a) What is the degree of hardness? Discuss the EDTA method for determination of hardness of water. [8]

(b) Write short notes on the following - [8]

(i) Sterilization

(ii) Sedimentation

- Q.3 (a) What is calorific value of fuel? Describe the working of Bomb calorimeter. [10]
(b) The ultimate analysis of a coal sample is given in the following data –
C=84.5%, N=0.5%, H=6%, O=8.4% and S=1%. Calculate the high and low calorific value by Dulong's formula. [3]
(c) Signification of constituents of Coal. [3]
- Q.4 (a) Discuss the polymerization mechanism of free radical polymerization. [8]
(b) Write short notes on any two of the following – [4+4=8]
(i) Natural rubber & Vulcanization
(ii) Synthetic rubber
(iii) Fullerenes and its applications
(iv) Manufacturing and uses of nylon
- Q.5 (a) Explain thick layer lubricants. [8]
(b) Write short notes on – [8]
(i) Classification of lubricants
(ii) Emulsification
- Q.6 (a) Discuss about the chemical corrosion. [8]
(b) Describe various methods for the prevention of corrosion. [8]
- Q.7 (a) Explain the Portland cement manufacturing. [8]
(b) Calculate the requirement of lime and soda for softening 105 liters of water. Analysis of water is as follows– [8]
 $\text{HCO}_3^- = 396.5 \text{ mg/lit. ; Mg} = 42 \text{ mg/lit.}$
 $\text{Ca}^{++} = 90 \text{ mg/lit. ; H}^+ = 1.5 \text{ mg/lit.}$
 $\text{FeSO}_4 \cdot 7\text{H}_2\text{O} = 14 \text{ mg/lit.}$
The purity of lime is 91X and that of soda is 97.2X.

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