MAR-21-210008

B. Tech. EXAMINATION, March 2021

Semester I & II (CBCS)

ENGINEERING CHEMISTRY

CH-101

Time : 3 Hours *Maximum Marks : 60*

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *Five* questions in all, selecting *one* question from each Sections A, B, C and D. Q. No. 9 is compulsory.

Section A

1. (a) What is Permutit ? How does permutit function in removing hardness of water ? 5

   (b) What is a Primary References Electrode ? Describe the working and construction of standard hydrogen electrode. 5

2. (a) Explain the determination of total hardness of water by EDTA method. 5

   (b) Explain the construction and working of hydrogen-oxygen fuel cell. 5

Section B

3. (a) What is Corrosion ? Explain the electrochemical theory of corrosion. How can it be prevented ? 5

   (b) State Beer-Lambert's law and derive mathematical expression for Beer-Lambert's law. 5

4. (a) Discuss the basis principle and application of XRD. 5

   (b) What is McLafferty rearrangement ? Explain with example. 5

Section C

5. (a) What is Knocking ? What are its adverse effects ? How can it be prevented ? 6

   (b) Discuss the mechanism of Lubrication. 4

6. (a) What are the advantages of catalytic cracking over thermal cracking ? 5

(b) What are solid and synthetic lubricants ? Mention their applications. 5

Section D

7. (a) Write short notes on the following :

(i) Nylon-6, 6

(ii) Nylon-6. 6

(b) What do you understand by carbon nanotubes ? What are its applications ? 4

8. (a) Write a short note on rubber and vulcanization. 4

(b) What are fullerene and nano-cones ? Discuss their applications. 6

(Compulsory Question)

9. Answer all the questions : 10×2=20

(a) Distinguish between priming and foaming.

(b) What will be the EMF of a cell at 298 K by dipping zinc rods in 0.001 M and 0.5 M $ZnSO_4$ solutions ?

(c) Define molar absorptivity and absorptivity.

(d) Explain briefly rusting of iron.

(e) What is water gas and producer gas ?

(f) Differentiate UV and IR Spectroscopy.

(g) What is glass transition temperature ?

(h) Write a short note on Bakelite and Urea formaldehyde resin.

(i) Define solar cell and its working.

(j) What is pulverized coal ? List its advantages.

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