[Total No. of Questions - 9] [Total No. of Printed Pages - 3]

Dec.-22-1352

CHM-101L (Applied Chemistry)

B.Tech. 1st (CBCS)

Max. Marks : 60

Time : 3 Hours

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 each from Section A, B, C and D. Section E is compulsory.

SECTION - A

1. (a) What is concentration cell? Explain the types of concentration cell with suitable example. (5)

   (b) What is meant by diesel knocking? How it can be found? How it can be avoided? (5)

2. (a) Describe briefly conductometric titrations. How are these classified and discuss its advantages over volumetric methods. (6)

   (b) What is the principle involved in biogas formation? (4)

SECTION - B

3. (a) What is hardness of water? Classify it and what are the different units used to express hardness of water. (5)

   (b) Write a short note on green house effect. (5)

4. (a) How is hard water softened using zeolite process? Enumerate its advantages and disadvantages. (5)

   (b) Draw a neat flowchart to explain briefly sewage treatment. (5)

SECTION - C

5. (a) Write a short note on the following:

   (i) Nylon-6,6. (5)

   (ii) Nylon-6

   (b) What do you understand by carbon nanotubes? What are its applications? (5)

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

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

SECTION - D

7. (a) What is the mathematical form of Beer's-Lambert law. (5)

   (b) Draw neat and clean block digram of IR spectrophotometer. (5)

8. (a) What are the advantages of using TMS as internal standard in NMR spectroscopy? (4)

   (b) Define degree of freedom. How many normal vibrational modes can be expected for carbondioxide. (6)

SECTION - E (Compulsory)

9. Answer all the questions:

   (a) Define liquid junction potential.

   (b) Illustrate NMR spectra of ethanol.

[P.T.O.]

(c) Define molar absorptivity and absorptivity.

(d) Explain chemical shift.

(e) What are carbon credits?

(f) Differentiate: UV & IR Spectroscopy.

(g) What is glass transition temperature?

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

(i) Define chromophore and auxochrome.

(j) Define specific conductance. Mention its units.

(10×2=20)