

[Total No. of Questions - 18] [Total No. of Printed Pages - 3]
(2064)

14603

B. Tech 2nd Semester Examination

Engineering Chemistry (N.S.)

NS-103

Time : 3 Hours

Max. Marks : 100

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 : Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D of the question paper and all the subparts of the questions in section E.

SECTION - A

1. (i) Discuss the various factors affecting the conductance.
(ii) State and explain Kohlrausch's Law.
(iii) Discuss various applications of the concentration cell.
(iv) Give the difference between electrode potential and cell potential with example. (5+5+5+5=20)
2. (i) What is electrochemical series? How does it help in
(i) comparing the relative oxidizing or reducing powers of different elements (ii) predicting whether a metal will react with the acid to give hydrogen gas or not?
(ii) What are fuel cells? Describe hydrogen-oxygen fuel cell. (10+10=20)

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SECTION - B

3. (i) What do you understand by hard and soft water? Write what you know about softening of hard water? What are disadvantages of using hard water in laundry and in boilers?
- (ii) What do you understand by the terms BOD and COD?
(15+5=20)
4. What is corrosion? Describe the theory of corrosion and various factors affecting the corrosion. How can corrosion be prevented?
(2+8+10=20)

SECTION - C

5. (i) Explain the basic principle of IR and NMR spectroscopy.
- (ii) Discuss various applications of IR and NMR spectroscopy.
- (iii) Give difference between fluorescence and phosphorescence.
(4+10+6=20)
6. Write the notes on the followings:
- (i) Cracking
- (ii) Octane and Cetane number
- (iii) Petroleum fuels
- (iv) Gaseous fuels
- (v) Analysis of coals.
(5×4=20)

SECTION - D

7. (i) Describe the classification of polymers and types of polymerizations in detail.
- (ii) What are thermosetting and thermoplastic polymers? Discuss their various applications.

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- (iii) Give monomer units of Polystyrene, Teflon, Bakelite and synthetic rubber. (10+8+2=20)
- 8. (i) Give difference between fiber reinforced composites and particle reinforced composites.
- (ii) Discuss various applications of composites. (10+10=20)

SECTION - E

- 9. Write a note on producer gas.
- 10. 'Corrosion is an electrochemical phenomenon'. Explain.
- 11. Rusting of iron is quicker in saline water than in ordinary water. Explain.
- 12. Write a note on chromophore and auxochrome concept.
- 13. Explain coupling constant.
- 14. Describe the term elastomer.
- 15. Explain why electrolysis of aqueous solution of NaCl gives H_2 at the cathode and Cl_2 gas at the anode.
- 16. What is a Galvanic cell?
- 17. What is the difference between the e.m.f. and potential difference?
- 18. Write about various impurities present in water. 10×2=20