

[Total No. of Questions - 18] [Total No. of Printed Pages - 3]
(2063)

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B.Tech 2nd Semester Examination

Engineering Chemistry (NS)

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 question in section E.

SECTION - A

1. (i) Write notes on (a) Molar conductance, (b) Transport number, (c) Hydration of ions, (d) Calomel Electrode and (e) thermal analysis.
- (ii) Discuss various applications of the concentration cell.
- (iii) Describe Nernst equation in detail. **(10+5+5=20)**
2. (i) Discuss the various factors affecting the conductance.
- (ii) What are primary cells, secondary cells and fuel cells? Explain one example of each. **(10+10=20)**

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SECTION - B

3. What is corrosion ? Describe the theory of corrosion and various factor affecting the corrosion. How can corrosion be prevented?
(2+12+10=20)
4. (i) Discuss in detail about BOD and COD.
(ii) Write short notes on : (i) Degree of hardness (ii) water softening. (10+10=20)

SECTION-C

5. Explain the basic principle of IR and NMR spectroscopy. Discuss various applications of IR and NMR spectroscopy. (6+14=20)
6. (i) Discuss the classification of fuels.
(ii) Discuss various methods for analysis of Fuels.
(iii) Write a note on shielding-deshielding effect. (5+10+5=20)

SECTION-D

7. What are polymers? How are they classified? Explain types of polymerizations. Discuss some important applications of commercial polymers. (2+5+5+8=20)
8. (i) Comment upon structural difference between thermosetting and thermoplastic polymers.
(ii) Discuss various applications of composites. (10+10=20)

SECTION-E

9. Write a note on gaseous fuel.
10. Write a note on water gas and producer gas.
11. Discuss various methods of sewage treatment.
12. Explain briefly the reaction during the rusting of iron.
13. Give difference between fluorescence and phosphorescence.
14. Write a note on Bakelite and Urea formaldehyde resins.
15. What do you understand by standard electrode potential?
16. How does molar conductance of a strong electrolyte vary with its concentration in solution?
17. What do you know about the relaxation processes in NMR spectroscopy ?
18. Write a note on Absorption Law in UV-Visible spectroscopy.

(10×2=20)