



R20 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 3B1AN

B.Tech I Semester Regular Examinations, April 2022

CHEMISTRY

(Common to CSE, CSE(AI&ML), CSE(DS) & IT)

Maximum Marks: 70

Date: 05.05.2022 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Write the energy level diagram for N₂ molecule
- 2 Give an account of LCAO.
- 3 Calgon Treatment prevents scale formation in Boilers. Give reasons.
- 4 Which salts are responsible for temporary and permanent hardness of water?
- 5 What is standard electrode potential? Give its units.
- 6 Write a short note on calomel electrode.
- 7 S_N¹ reaction occurs with retention of configuration, why?
- 8 Write the structure and synthesis of paracetamol.
- 9 State and explain Lambert-Beer law?
- 10 What are Auxochromes and Chromophores? Give with suitable examples?

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 a) What is the role of doping in band structure 4M
b) Draw neatly, the molecular orbital diagrams of Butadiene and Benzene. 6M
OR
- 12 a) Draw the molecular orbital diagram O₂ molecule and predict the magnetic behavior of it? 4M
b) Explain the crystal field splitting of d- orbitals by the ligands in octahedral complex with coordination number 6. 6M
- 13 a) Explain the principle, process, advantages and limitations of ion exchange method of softening of water. 7M
b) What you understand by Reverse osmosis. 3M
OR
- 14 a) What is the interrelation of units of hardness? 4M
b) Explain the principle involved in the estimation of hardness of water by EDTA method. 6M

- 15 What is a fuel cell and mention its applications? Describe construction and working principle of Hydrogen-Oxygen fuel cell. 10M
- OR
- 16 a) How pH of a solution is determined by Glass electrode? Discuss. 5M
b) What is a battery? Explain the functioning of Li ion battery. 5M
- 17 a) Give the synthesis and pharmaceutical applications of Aspirin. 5M
b) What are Elimination reactions? Explain Dehydro halogenations of alkyl halides with suitable examples? 5M
- OR
- 18 a) What are the conformational isomers explain Analysis for n-Butane. 5M
b) Write a short note on Hydro-boration of olefins. 5M
- 19 a) Explain the different types of electronic transition. 6M
b) Write a note on Chemical shift? 4M
- OR
- 20 a) Write the basic principle of IR spectroscopy? Give various molecular vibrations in the technique. 6M
b) Explain the applications of UV-visible spectroscopy. 4M