



R20 Regulation

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code:3B1AN

B.Tech I Semester Supplementary Examinations, March/April 2023

CHEMISTRY

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

Maximum Marks: 70

Date:10.04.2023 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.
 2. 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 What is the magnetic nature of 'N₂' molecule?
- 2 What is meant by Doping in case of Semiconductors?
- 3 What is meant by Hardness of water?
- 4 What is reverse osmosis?
- 5 Write the overall reaction of lead – acid storage battery
- 6 What is electro chemical series? Write any 2 Applications?
- 7 What is Markovnikov's rule?
- 8 What are diastereomers? Explain with one example.
- 9 What is selection rule in IR spectroscopy?
- 10 Define auxochrome and chromophore?

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 A) Explain the postulates of MOT theory? 5M
B) Construct molecular orbital energy level diagram of F₂ & O₂ molecule 5M
OR
- 12 A) Explain the crystal field splitting of d orbital of a transition metal in octahedral complex. 5M
B) Explain the effect of doping on conductance of semiconductors? 5M
OR
- 13 A) Explain the ion exchange process in the softening of water. 5M
B) Define carbonate and non-carbonate hardness of water. 5M
OR
- 14 A) Explain the treatment of potable water? 5M
B) Explain in detail about boiler corrosion? 5M
- 15 Explain the construction and working of the Glass electrode and how can we determine the PH Of unknown solution by using glass electrode? 10M

OR

- 16 A) What are Secondary Batteries? Explain their working with Suitable example. 5M
B) Explain about fuel cells? Mention their applications. 5M
- 17 A) Explain About Nucleophilic substitution reactions. 5M
B) Explain the synthesis of Aspirin and their therapeutic agent application. 5M
- OR
- 18 Explain the conformational analysis of n-butane? 10M
- 19 A) Explain the principle of NMR spectroscopy 5M
B) Write the application UV-visible spectroscopy 5M
- OR
- 20 A) Explain the electronic transitions in UV- Spectroscopy? 5M
B) Explain the NMR application of magnetic resonance imaging (MRI). 5M