

Short Answer Type Questions:

- Q.1 - Discuss six basic rule of formation of molecular orbital.
- Q.2 - Discuss why oxygen and boron molecules are paramagnetic.
- Q.3 - Define bond order and give their applications.
- Q.4 - Discuss the metallic bond on the basis of molecular orbital theory.
- Q.5 - What is liquid crystalline state? Discuss their applications.
- Q.6 - What is space lattice? Discuss it for a cubic system.
- Q.7 - Calculate the density of Mo which formed BCC structure in which the distance between the centres of closest atom is 274 pm. atomic mass of Mo is 95.94
- Q.8 - Define hydrogen bonding. Differentiate inter & intra molecular hydrogen bonding.
- Q.9 - Why the density of ice is lower than liquid water? Explain
- Q.10 - Discuss conducting property of graphite
- Q.11 - Discuss the structure and applications of fullerenes.
- Q.12 - Differentiate order and molecularity of a reaction.
- Q.13 - What is rate law? Discuss their importance
- Q.14 - For a first order reaction prove that the time required for the completion of 99.9% of reaction is about ten times the time taken for the completion of 50% of this reaction.
- Q.15 - Find the integrated rate equation for a reaction of:
- $$a + b \longrightarrow \text{Product}$$
- Q.16 - What is activation energy? Explain
- Q.17 - Discuss the construction of galvanic cell.
- Q.18 - Find the Nernst equation and discuss their applications.

- Q. 19. Why metals corrode. Explain.
- Q. 20. Discuss the mechanism of electrochemical corrosion.
- Q. 21. Discuss different methods to protection of metal from corrosion.
- Q. 22. Define phase and discuss with suitable example.
- Q. 23. Discuss the phase diagram of water.
- Q. 24. Discuss with suitable example of inductive & electromeric effect.
- Q. 25. Discuss the stability order of :
- $$\text{CH}_3\text{C}^-\text{H}_2 < \text{CH}_2=\text{C}^- < \text{CH}\equiv\text{C}^-$$
- Q. 26. Give the mechanism of S_N^1 & S_N^2 reactions.
- Q. 27. Give the mechanism of following name reactions
- (a) Aldol condensation (b) Cannizzaro reaction
- (c) Beckmann rearrangement.
- Q. 28. What do you mean the terms stereoisomers & diastereoisomers
- Q. 29. Discuss the conformations of n-butane.
- Q. 30. Define monomer. Classify polymers.
- Q. 31. Differentiate thermoplastics & thermosetting resins
- Q. 32. What is vulcanisation of rubber? Why it is used.
- Q. 33. Give the application of biodegradable polymers.
- Q. 34. What do you mean by titrimetric analysis give their uses.
- Q. 35. Discuss the applications of UV-visible and IR spectroscopy.
- Q. 36. What is fingerprint region. Discuss.
- Q. 37. What type of information we can get from signals obtained in NMR spectroscopy.
38. Discuss calgon process for removal of impurities present in boiler feed water

- Q. 39 - How zeolite treatment can perform. Discuss.
- Q. 40 - what is proximate and ultimate analysis of coal?
- Q. 41 - Discuss the construction and working of Bomb calorimeter.
- Q. 42 - what is biomass. explain
- Q. 43. How biogas is beneficial to environment. explain.

