

B.Sc. Semester - 5 (CBCS) Examination

Oct/Nov. - 2021(Old Course)

INORGANIC AND INDUSTRIAL CHEMISTRY(CORE)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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- Q. 1 (A) Explain High Spin and Low Spin complexes with examples. [04]
- Q. 1 (B) Answer the following (Any Two) [10]
- (1) Describe: d-orbital splitting in Tetrahedral(T_d) complexes.
 - (2) Describe: d-orbital splitting in Octahedral(O_h) complexes.
 - (3) Explain: Factor affecting on d-orbital splitting energy (Δ_o).
- Q. 2 (A) Answer the following: [04]
- Calculate 18 electrons & EAN for following metal carbonyl:
- (1) $Ni(CO)_4$
 - (2) $Mn(CO)_5$
- Q. 2 (B) Answer the following (Any Two) [10]
- (1) Draw the full structure; find the number of bridge CO & non-bridge CO in $Co_2(CO)_8$
 - (2) Discuss: Linear & bent NO with examples.
 - (3) Discuss: Preparation of various metal carbonyls.
- Q. 3 (A) Answer the following: [04]
- Write a note on degeneracy
- Q. 3 (B) Answer the following (Any Two) [10]
- (1) Write note on: High silica glass and fiber glass.
 - (2) Explain manufacturing process of glass.
 - (3) Derive equation of wave function for particle moving in one dimensional box and show quantization of energy from that.
- Q. 4 (A) Answer the following: [04]
- (1) Explain properties of cement.
- Q. 4 (B) Answer the following (Any Two) [10]
- (1) Explain: Dry process and Wet process for cement.
 - (2) Explain setting and hardening of Portland cement.
 - (3) Explain: RCC and Concrete.
- Q. 5 (A) Answer the following. [04]
- (1) Explain the function of secondary plant nutrients.
- Q. 5 (B) Answer the following (Any Two) [10]
- (1) Explain manufacture of Ammonium Nitrate by prilling method.
 - (2) Explain manufacture of Normal super phosphate with flow diagram.
 - (3) Explain the manufacture of Ammonium Sulphate.
