

B.Sc. Semester - 1 (CBCS) Examination
Feb/Mar. -2021 (OLD COURSE)
CHEMISTRY (CORE)

Time: 1:30 Hours**Marks: 42****Instructions:**

1. Figures to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

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- Q.1(A) Answer the following questions. (04)
1. State aufbau principle.
 2. Which metal ion is present in chlorophyll?
 3. Write definition of adsorption.
 4. What is the hybridization of carbon atom in diamond?
- Q.1(B) Answer any one out of two. (02)
1. Explain principal quantum number.
 2. Explain properties of diamond.
- Q.1(C) Answer any one out of two. (03)
1. Explain Heisenberg's uncertainty principle.
 2. Explain differences between chemical adsorption and physical adsorption.
- Q.1(D) Answer any one out of two. (05)
1. Explain hund's rule and pauli's principle.
 2. Write a note on factors affecting adsorption.
- Q.2(A) Answer the following questions. (04)
1. Draw structure of methane.
 2. Give definition of hybridization.
 3. Write electronic configuration of carbon atom.
 4. Write electronic configuration of hydrogen atom.
- Q.2(B) Answer any one out of two. (02)
1. Write a note on bonding molecular orbital (BMO).
 2. Write a note on sigma bond.
- Q.2(C) Answer any one out of two. (03)
1. Explain sp hybridization.
 2. Explain valance bond theory.
- Q.2(D) Answer any one out of two. (05)
1. Explain difference between valance bond theory (VBT) and molecular orbital theory ((MOT).
 2. Draw the energy level diagram of C₂ molecule and calculate it's bond order.
- Q.3(A) Answer the following questions. (04)
1. Give IUPAC name of CH₃ - CH₂ - CH₂ - CH₃.
 2. Give IUPAC name of CH₃ - CH₂ - OH.
 3. Define substitution reaction.
 4. Define hemolytic fission.
- Q.3(B) Answer any one out of two. (02)
1. Give definitions of Carbocation and carbanion.
 2. Give definitions of enantiomers and diastereomers.
- Q.3(C) Answer any one out of two. (03)
1. Explain SN¹ reaction.
 2. Explain inductive effect.

- Q.3(D) Answer any one out of two. (05)
1. Explain SN^2 reaction with mechanism.
 2. Explain rules for the determination of R and S nomenclature.
- Q.4(A) Answer the following questions. (04)
1. Define alkene.
 2. Define E^2 reaction.
 3. What is catalyst?
 4. What is enzyme catalyst?
- Q.4(B) Answer any one out of two. (02)
1. Explain Saytzeff's rule.
 2. Write characteristics of enzyme catalyst.
- Q.4(C) Answer any one out of two. (03)
1. Explain Markovnikov's rule with example.
 2. Write a note on heterogeneous catalysis.
- Q.4(D) Answer any one out of two. (05)
1. Explain E^1 reaction with mechanism.
 2. Write a note on acid-base catalyst.
- Q.5(A) Answer the following questions. (04)
1. What is order of reaction?
 2. What is rate of reaction?
 3. Give definition of activation energy.
 4. What is temperature coefficient?
- Q.5(B) Answer any one out of two. (02)
1. Give characteristics of first order reaction.
 2. Explain molecularity of reaction.
- Q.5(C) Answer any one out of two. (03)
1. Explain factors affecting rate of reaction.
 2. Explain collision theory.
- Q.5(D) Answer any one out of two. (05)
1. Explain third order reaction.
 2. Discuss any two methods for the determination of order of reaction.
