

B.Sc. Semester - 1 (CBCS) Examination
Oct/Nov-2023 (Syllabus Year - 2016)
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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- Que.1(A) Answer the following question. (04)
1. State Hund's rule of maximum multiplicity.
 2. Which alkaline earth metal has highest polarizing power?
 3. Define Allotropy.
 4. Which term is used when adsorption & absorption occurred simultaneously?
- Que.1(B) Answer any one question. (02)
1. State the factor affecting the ionization potential.
 2. Discuss the metallic characteristics of s-block & p-block elements?
- Que.1(C) Answer any one question. (03)
1. Discuss the factor affecting on adsorption and its characteristic.
 2. Write a note on catenation.
- Que.1(D) Answer any one question. (05)
1. What is diagonal relationship? Explain diagonal relationship of beryllium with aluminium?
 2. Derive Langmuir Equation.
- Que.2(A) Answer the following question. (04)
1. Define bond order.
 2. Define Gerade and Ungerade Molecular orbitals.
 3. Draw the structure showing hybridization in C_2H_4 .
 4. Give the Shape of BF_3 molecule.
- Que.2(B) Answer any one question. (02)
1. Which are the conditions for LCAO method.
 2. Explain CO_2 is linear while SO_2 is angular.
- Que.2(C) Answer any one question. (03)
1. Give differences between BMO and ABMO.
 2. Explain sp^3d hybridization with example.
- Que.2(D) Answer any one question. (05)
1. Give Comparison between VBT and MOT.
 2. Draw the energy level diagram of NO molecule and calculate bond order, Bond length and magnetic property.
- Que.3(A) Answer the following question. (04)
1. Write alkyl halides in decreasing order of their bond length.
 2. Define conformational isomers.
 3. Define hyperconjugation.
 4. Write four examples of neutral electrophiles.
- Que.3(B) Answer any one question. (02)
1. Discuss inductive effect with suitable example.
 2. What is Elimination reaction? Give an example.
- Que.3(C) Answer any one question. (03)
1. Discuss the structure of carbene.
 2. Discuss Mesomeric effect with suitable example.

- Que.3(D) Answer any one question. (05)
1. Explain basic characteristic of amines.
 2. Explain SN^1 reaction in detail.
- Que.4(A) Answer the following question. (04)
1. Give the statements of saytzeff rule?
 2. What are paraffins?
 3. Define: Catalyst
 4. What are alkynes?
- Que.4(B) Answer any one question. (02)
1. Explain hydroboration oxidation of alkene.
 2. Discuss homogeneous and Heterogeneous catalysis with example.
- Que.4(C) Answer any one question. (03)
1. Explain Diels-Alder reactions.
 2. Discuss nucleophilic addition of cyanide and alcohol with alkynes.
- Que.4(D) Answer any one question. (05)
1. Give comparative study between E1 and E2 reactions.
 2. What is Catalysis? Discuss characteristics of enzyme catalyst.
- Que.5(A) Answer the following questions. (04)
1. Define: chemical kinetic.
 2. Define: rate law.
 3. Give Arrhenius equation.
 4. Give equation of rate constant of zero order reaction.
- Que.5(B) Answer any one question. (02)
1. Explain energy of activation.
 2. Give the difference between order of reaction and molecularity
- Que.5(C) Answer any one question. (03)
1. Explain: ostwald's isolation method for determination of order of reaction.
 2. Give characteristic of second order reaction.
- Que.5(D) Answer any one question. (05)
1. Describe activated complex theory of reaction rate.
 2. Derive the equation of rate constant for second order reaction (when concentration is different)
