



MBG-003-1011004

Seat No. _____

B. Sc. (CBCS) (Sem. I) Examination

November / December – 2016

Chemistry : C-101

(New Course)

Faculty Code : 003

Subject Code : 1011004

Time : **2.30** Hours]

[Total Marks : **70**

Note:

**This question Paper contains five questions. All are compulsory
Figures to the right indicate full marks**

Q1 A Answer the following

4 Marks

1. State Pauli's Exclusion principle
2. What is catenation?
3. Which is the term used when adsorption and absorption occur simultaneously
4. Write the electronic configuration of Cr.

Q1 B Answer in brief (Any one out of two)

2 Marks

1. Explain the trend in ionization potential across a period.
2. State the factors affecting electron affinity

Q1 C Answer in detail (Any one out of two)

3 Marks

1. Derive Langmuir equation with modification in equation at very low pressure and high pressure.
2. Give anomalous behavior of Li.

Q1 D Answer Any one out of two

5 Marks

1. Give the difference between Physical and Chemical Adsorption
2. Give diagonal relationship of Be & Al

Q2 A Answer the following

4 Marks

1. Define covalent bond.
2. What are gerade molecular orbitals?
3. What is magnetic property of O₂ molecule?
4. State the type of hybridization of silicon in SiH₄?

Q2 B Answer in brief (Any one out of two)

2 Marks

1. Explain: Bond angle of H₂O is smaller than that of NH₃
2. Give difference between BMO and ABMO

- Q2 C Answer in detail (Any one out of two)** **3 Marks**
1. Draw molecular orbital energy level diagram of N_2 molecule.
 2. Explain sp^3d hybridization with a suitable example
- Q2 D Answer Any one out of two** **5 Marks**
1. Give comparison of MO theory and VB theory.
 2. Write a short note on VSEPR
- Q3 A Answer the following** **4 Marks**
1. Give the IUPAC name for $CH_3-CH_2-COOCH_3$
 2. Arrange the following in increasing order of acidity : CH_3COOH , $Cl-CH_2COOH$, $HCOOH$
 3. What is electromeric effect?
 4. What is a carbanion?
- Q3 B Answer in brief (Any one out of two)** **2 Marks**
1. Explain: the types of organic reagents.
 2. Explain Homolytic and Heterolytic fission with examples showing curly arrow notations.
- Q3 C Answer in detail (Any one out of two)** **3 Marks**
1. Write CIP rules to determine configuration.
 2. Explain with example EZ notations for geometric isomers
- Q3 D Answer Any one out of two** **5 Marks**
1. Give the difference between S_N^1 and S_N^2 with reaction mechanisms.
 2. Explain with examples the various types of organic reactions
- Q4 A Answer the following** **4 Marks**
1. Give an example of Wurtz –Fittig reaction
 2. Write an equation showing the reaction between propyne and HBr
 3. Give with reaction any one example of heterogeneous catalysis.
 4. Give an example of Enzyme catalysis.
- Q4 B Answer in brief (Any one out of two)** **2 Marks**
1. Explain difference between Saytzeff and Hoffman eliminations.
 2. Explain Diel's Alder reaction with one example.
- Q4 C Answer in detail (Any one out of two)** **3 Marks**
1. Give characteristics of Catalysis
 2. Write any three reactions of alkenes
- Q4 D Answer Any one out of two** **5 Marks**
1. Give a comparison between $E1$, $E2$ and $E1cb$ reactions
 2. Write short note: Theories of Catalysis.

Q5 A Answer the following **4 Marks**

1. How does the rate of a reaction change with an increase in temperature?
2. Define: Activation energy
3. Write units of second order reaction.
4. Write the name of any two methods to determine the order of reaction.

Q5 B Answer in brief (Any one out of two) **2 Marks**

1. State the limitations of the collision theory
2. Give the difference between Molecularity and order of reaction.

Q5 C Answer in detail (Any one out of two) **3 Marks**

1. In a second order reaction in 500 seconds 20% of the reaction is complete. Find the time required for the completion of 60% of the reaction.
2. Derive half life time of first order reaction

Q5 D Answer Any one out of two **5 Marks**

1. Define and derive second order reaction.
2. Explain Absolute Reaction Rate (Transition state Theory).
