

**B.Sc. Semester - 1 (CBCS) Examination**  
**Feb/Mar. -2021 (NEW 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.

Q.1(A) **Answer the following question.** (04)

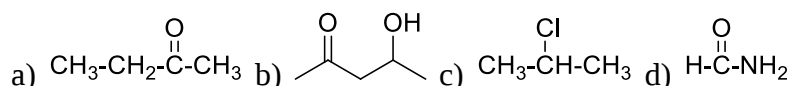
- (1) Explain metallic character of S and P block elements.

Q.1(B) **Answer any two questions out of three.** (10)

- (1) What is ionic radius? Discuss Pauling method for determination of ionic radius.
- (2) Draw MOT diagram of N<sub>2</sub> molecule and calculate its bond order, bond length, HOMO & LUMO orbitals and Magnetic property.
- (3) Explain Valence bond theory

Q.2(A) **Answer the following question.** (04)

- (1) Give IUPAC name of the following:



Q.2(B) **Answer any two questions out of three.** (10)

- (1) Explain Relative strength of carboxylic acid.
- (2) Explain Markovnikov's and Anti-Markovnikov's rule with suitable example.
- (3) Discuss E<sub>1</sub> Vs E<sub>2</sub> reaction.

Q.3(A) **Answer the following question.** (04)

- (1) Explain factor affecting adsorption with its characteristic.

Q.3(B) **Answer any two questions out of three.** (10)

- (1) Derive equation of rate constant for second order reaction (When concentration is same).
- (2) Explain Collision theory of reaction rate.
- (3) What is heterogeneous catalysis? Discuss the theories of heterogeneous catalysis with examples.

Q.4(A) **Answer the following question.** (04)

- a) Discuss types of Organic reactions.
- b) Give difference between Inductive and mesomeric effect.

Q.4(B) **Answer any two questions out of three.** (10)

- (1) What is Diagonal relationship? Discuss diagonal relationship of Li with Mg.
- (2) What are reactive Intermediates? Give name of each and discuss carbocation in detail.
- (3) Describe the methods for determination of order of reaction.

Q.5(A) **Answer the following question.** (04)

- (1) State difference between molecularity and Order of reaction.

Q.5(B) **Answer any two questions out of three.** (10)

- (1) Explain sp<sup>3</sup>d<sup>2</sup> hybridization with example.
- (2) Discuss in detail SN<sup>2</sup> Vs SN<sup>1</sup> reactions.
- (3) Explain Freundlich adsorption isotherm and its limitation.