

B.Sc. Semester - 1 (CBCS) Examination
Nov/Dec - 2022 (NEW COURSE)
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) Answer the following question. (04)

- (1) Draw energy level diagram of B_2 molecule and calculate its bond order and magnetic moment.

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

- (1) Explain – Aufbau rule and Pauli's Principle for electron configuration.
- (2) Write a note on principle quantum number and spin quantum number.
- (3) Explain valence bond theory with limitations.

Q. 2 (a) Answer the following question. (04)

- (1) Write a note on SN^1 reaction.

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

- (1) Write a note on SN^2 reaction with mechanism and examples.
- (2) Write a note on carbocation.
- (3) Write a note on inductive effect.

Q. 3 (a) Answer the following question. (04)

- (1) Explain differences between chemisorption and physisorption.

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

- (1) Explain - Factors affecting rate of the reaction.
- (2) Define the terms – Adsorption, absorption, adsorbent, adsorbate, sorption.
- (3) Explain – homogeneous and heterogeneous catalysis.

Q. 4 (a) Answer the following question. (04)

- (1) Explain differences between bonding molecular orbital and anti-bonding molecular orbital.

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

- (1) Explain - gerade and ungerade molecular orbital
- (2) Write a note on carbanion.
- (3) Write a note on applications of adsorption.

Q. 5 (a) Answer the following question. (04)

- (1) What is E^2 reaction ? Explain its mechanism.

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

- (1) Explain the Heisenberg's uncertainty principle.
- (2) Explain preparation of alkane by Wurtz reaction.
- (3) Write a note on activation energy.
