Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
(Autonomous)
End Semester Examination: Jan.2022
Faculty: Science and Technology

Program: (BSc Biotech 04) **Semester: I** **SET: A**
Program (Specific): B. Sc. Biotechnology **Course Type: CC theory**
Class: F.Y. B.Sc. **Max.Marks: 35**
Name of the Course: Fundamentals of Chemistry
Course Code: 22-BBT-101 **Time: 2 hr**
Paper: I

Instructions to the candidate:

1) ***There are 4 sections in the question paper. Write each section on separate page.***
2) ***All Sections are compulsory.***
3) ***Figures to the right indicate full marks.***
4) ***Draw a well labelled diagram wherever necessary.***

SECTION: A

Q1) Explain Any <u>Five</u> of the following. **5**

i) Redox reaction.
ii) Carbanion
iii) Isobaric Process
iv) Endothermic reaction
v) Oxidation state
vi) Nucleophile

SECTION: B

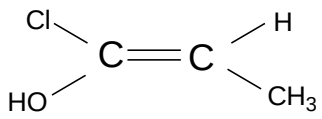
Q2) Answer Any <u>Five</u> of the following. **10**

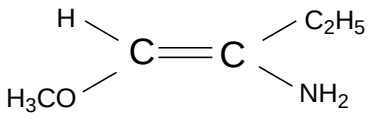
i) Determine equivalent of $KMnO_4$ when it act as oxidizing agent in acidic medium.

ii) What are alkynes?

iii) Assign E/Z

a) b)





iv) What is Bioenergetics?

v) Discuss importance of Carnot cycle

vi) What are types of orbital overlaps?

SECTION: C

Q3) Answer Any <u>Two</u> of the following. **8**

i) Discuss the term tautomerism with suitable example.

ii) Explain sp^3 hybridization.

iii) Give the difference between Aerobic respiration and anaerobic respiration.

iv) Balance the following Equation by ion electron method.

$$H_2S + HNO_3 \longrightarrow NO + S + H_2O$$

SECTION: D

Q4) Attempt any <u>Two</u> of the following **12**

i) What is conformational isomerism? Discuss the conformations of ethane with energy profile.

ii) Heat supplied to a Carnot engine is 1897.8 how much useful work can be done by the engine which works between 0°C and 100 °C?

iii) Discuss Daltons Atomic Theory.

iv) Identify the products.

i) $CH_3 - CH = CH-CH_3 \xrightarrow[KMnO_4]{alk} A$

ii) $CH_3-CH_2-Mg-Br \xrightarrow{H_2O} B$

iii) $CH_3- C \equiv C-H \xrightarrow{KNH_2} C$

iv) $CH_3 -CH= CH_2 \xrightarrow{HBr} D$

v) $CH_3 -CH_2-C \equiv C^-Na^+ \xrightarrow{CH_3Br} E$