

S-465

Total Pages : 3

Roll No.

MSCCH-508

Physical Chemistry-II

M.Sc. Chemistry (MSCCH)

2nd Semester Examination, 2022 (Dec.)

Time : 2 Hours]

Max. Marks : 70

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION-A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

(2×19=38)

1. What are the main postulates of Langmuir adsorption isotherm? Derive Langmuir adsorption isotherm, and Why is Langmuir adsorption isotherm obeyed only under low pressure and moderate temperature?

2. (a) What are liquid crystal? Discuss their classification.
(b) What is the total energy of hydrogen atom according to Schrödinger wave equation.
3. (a) What is Schrödinger wave equation derive it and explain its significance?
(b) What do you mean by normalization of wave function?
4. Why is harmonic oscillator linear? What is the Potential Energy of linear harmonic oscillator?
5. (a) Define the classification of Polymers by various ways?
(b) Write down the various applications of Polymers?

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only. (4×8=32)

1. What is Compton effect? How does Compton effect occur?
2. Write a short notes on :
 - (a) Eigen-values.
 - (b) Eigen-function.

3. Write any one method to determining the molecular weight of Polymer.
 4. Differentiate adsorption from absorption and give examples of both.
 5. Prove that adsorption is always exothermic in nature.
 6. (a) An electron is confined in one dimensional box of length 1 \AA . Calculate its ground state energy in electron volts (eV).
(b) Write the Physical significance of ψ and ψ^2 ?
 7. (a) Why He^+ , Li^{2+} are known as Hydrogen like atom.
(b) What are the main postulates of quantum mechanics.
 8. How do you find the zero-point energy? Is zero-point energy infinite?
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