Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16, NEP 2020 (Autonomous)
End Semester Examination: April 2024

***Total No. of Questions**: 4* ***Total No. of Pages**: 02*

First Year B.Sc. Blended
COURSE CODE: CHM 201
Semester II

Program: B.Sc. Blended
Program Specific: B.Sc. Blended (Chemistry) **Max. Marks: 30**
Name of the Course: Inorganic and Physical Chemistry **Credits: 2**
Course Type: Discipline Specific Course (DSC) - Major **Time: 2 hrs**
Paper: I **SET:A**

Instructions to the candidate:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Draw a well labeled diagram wherever necessary.*

Q1] Answer the following. **[5 X 1= 5]**

i) Define the term Atomic Spectra.
ii) What is the threshold frequency?
iii) What is a holoenzyme and prosthetic group? What is the cofactor in Hemoglobin ?
iv) What is glycosidic linkage?
v) What is a lipoprotein?

Q2] Answer the following (Any 5) **[5 X 2 =10]**

i) Explain Heisenberg's Uncertainty Principle.

ii) Draw the neat labeled diagram of Hydrogen spectra and its transition at different energy levels.

iii) Give the time independent Schrodinger equation for particle in one dimension box and explain the terms involved in it.

iv) Give formulae for each of the following coordination compounds.
   a) dichlorobis(ethylenediamine)platinum(IV) nitrite
   b) bis(ethylenediamine)dinitro platinum(IV) chloride

v) Explain the primary, secondary and tertiary structure of a protein and explain how they differ from the quaternary structure of protein.

vi) What is a phosphodiester linkage? Explain with a suitable diagram.

vii) Explain the term 'lipid'. Give in detail the formation of mono,di and triglycerides from Palmitic acid (16:0).

P.T.O.

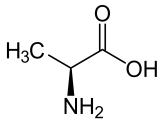
Q3] Answer the following. (Any 2) **[2 X 5 = 10]**

i) Differentiate nuclear fusion and nuclear fusion.

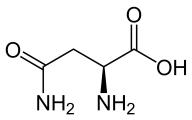
ii) Explain the photoelectric effect with a neat labeled diagram.

iii) Write the different forms of the Nernst equation and explain the terms involved in it.

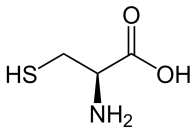
iv) Draw the oligopeptide ala-$(asn)_3$-cys-ala and express it in the zwitter ionic form.



Ala



Asn



Cys

v) Explain the term 'epimer' and draw the C-2 and C-4 epimers of D-Glucose and assign the names, also express them in the pyranose forms.

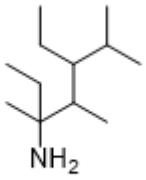
Q4] Answer the following (Any 1) **[5 X 1 = 5]**

i) Find the wavelength of the CO_2 molecule at a velocity of 440 ms^{-1}.

[Given : m = 7.304 × 10^{-26} kg, h = 6.62 ×10^{-34} J s]

ii) Find out the chiral centers and assign R/S notations based on the CIP rules.

1.



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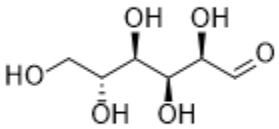

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