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: 2

First Year B.Sc.
COURSE CODE: CHE12101
COURSE NAME: Basics in Analytical Chemistry
(Semester lI)

Program: B.Sc. **Credits: 2**
Program Specific: B.Sc. Chemistry **Time: 2 Hours**
Course Type: Major **Max. Marks: 30**
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 =05]**

i) What is meant by ppm?
ii) Define Molarity.
iii) What are the different types of organic compounds?
iv) Define the term chromatography.
v) Define the term qualitative analysis.

Q2) Answer the following (Attempt any 5/7) **[5 X 2 = 10]**

i) Draw a neat labeled diagram of calomel electrode.
ii) Enlist the applications of pH meter.
iii) Indicate how many significant figures are present in each of the following.

a) 2.012 b) 201×10^4

iv) Calculate the number of moles of citric acid present in solution containing 5 gm of pure citric acid. [Given: molar mass of citric acid = 192.124 gm mol-1

v) Define the terms ppb and ppt.

vi) In the separation of compounds of Zn and Ca by TLC, the respective spots were obtained at 10 cm and 15 cm from the base line with solvent front at 25 cm. Calculate R_f value for each compound.

vii) What are the applications of HPLC?

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Q3) Answer the following (Attempt any 2/4) **[2 X 5 = 10]**

i) Write a note on Sublimation.

ii) An organic compound on analysis gave 73.47 % of carbon, 10.20 % hydrogen and 16.33% oxygen. Calculate its empirical formula and molecular formula if its molar mass is 98 gm $mole^{-1}$. [Given molar mass of C=12 gm $mole^{-1}$, O=16 gm $mole^{-1}$, and H= 1 gm $mole^{-1}$]

iii) Calculate the p- function of each ion in given compounds.

a) 0.02 M NaBr b) 0.04 M $BaBr_2$

iv) Give the classification of Chromatography.

Q4) Answer the following (Attempt any 1/2) **[1 X 5 = 05]**

i) Write a note on thin layer chromatography (TLC).

ii) A 250 mL aqueous solution contains 45.1 mg of a pesticide. Express the pesticide's concentration in weight to volume percent and part per million.

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