[43] SEAT No._____ No. of Pages: [02]

SARDAR PATEL UNIVERSITY
M.Sc. CHEMISTRY
Semester –II, External Examination
November 23, 2019 Saturday
Time: 10:00 am - 01:00 pm
Analytical Chemistry [PS02ECHE01]

Total Marks – 70

N.B. Figures to the right indicate full marks:

Q.1 Answer the following multiple choice questions. [08]

1 The wave nature of electromagnetic radiation is supported by.....
(a) Scattering (b) Interference (c) Absorption (d) Emission

2 Which of the following separation techniques is dependent on difference in volatility?
(a) Distillation (c) Crystallization
(b) Magnetic separation (d) Fractional distillation

3 Which of the following is a source used in UV-visible spectroscopy?
(a) Laser (b) Tube-light (c) Sodium vapour lamp (d) Tungsten lamp

4 In liquid-liquid chromatography, the stationary phase is non-polar and mobile phase is polar, the chromatography known as.....Chromatography.
(a) Normal phase (b) Reverse phase (c) Bonded phase (d) None of these

5 ..... is device that resolve radiation into its component wavelengths and permits the radiation of any desires portion of the spectrum from the reminder.
(a) Source (b) Detector (c) Monochromator (d) Sample cell

6 Which is not basic SI unit?
(a) Candela (b) Joule (c) Kilogram (d) Meter

7 Which of the following is an example of QA?
(a) Verification (b) Software testing (c) Validation (d) Documentation

8 Full name of AOCS is .....
(a) American oil chemist society (c) African organic chemist society
(b) American oil chemical Society (d) American organic chemist society

Q.2 Answer the following questions. (Any seven) [14]

1 Explain the Crompton effect.
2. How Vitamin C can be determined by following total steps of analysis?
3 What is the principle of Osmosis and Precipitation?
4 Define the term: Accuracy and Precision.
5 Give the application of Thin layer chromatography.
6 What are the essential requirements for sample container used in optical instrument?
7 Explain the classification of analytical techniques based on purpose of analysis.
8 Recognise the number of the significant figures in the following :
(i) 0.00003740 (ii) 0.0890 (iii) 5.30040 (iv) 0.987
9 Define Electromagnetic radiation and also write five forms of EMR.

(1) (P.T.O)

Q.3

(A) Explain the term verification and validation with its categories and aspects. [06]

(B) What is calibration? Discuss the calibration of volumetric apparatus. [06]

OR

(B) Answer the following.

(i) Discuss in detail about the selecting method in total steps of analysis. [03]

(ii) Write a short note on primary and secondary standard solutions. [03]

Q.4

(A) Calculate the mean, standard deviation and coefficient of variance for following sets of data: (i) 241.5, 244.7, 237.5, 252.9, 242.9 [06]

(ii) 3.27, 3.26, 3.24, 3.24, 3.28, 3.23

(B) Discuss the types of errors in detail. [06]

OR

(B) Answer the following.

(i) Write a note on : the rules of representing SI Unit. [03]

(ii) 0.2025 N solution of Na_2CO_3 is prepared in a 500 mL volumetric flask, and it's 50 mL is withdrawn by a pipette. Next 6.045gm of same anhydrous reagent and water are add to mark. Determine the normality of resultant solution. [03]

Q.5

(A) Give complete account on Detector used in optical instrument. [06]

(B) Write a note on wavelength selector in optical spectroscopy and draw neat and labelled diagram of Littrow mounted prism and Elebert monochromator. [06]

OR

(B) Derive the equation for Lambert and Beer's law with its deviation. Discuss the reason for the deviation. [06]

Q.6

(A) Explain principle of Paper chromatography and give detail about types of paper chromatography. [06]

(B) Discuss in brief: (i) Partition chromatography [06]

(ii) Electrophoresis

OR

(B) Classify the chromatographic techniques and explain the detailed instrumentation of Gas chromatography with function of various components. [06]

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