[94] SARDAR PATEL UNIVERSITY

M.Sc. (Chemistry)   Semester-2 (NC) Examination

Monday,   Date: 29-10-2018

Time: 10.00 a.m. to 01.00 p.m.

Subject: Analytical Chemistry   Paper: PS02ECHE01

[Total Marks: 70]

N.B.   (1) Figures to the right indicate full marks.
          (2) Attempt all questions.

Q. 1   **Select the correct answer from each of the following:**   **(08)**

1.   The result of the arithmetical operation 60.3 + 1.08 + 0.1234 expressed to the correct number of significant figures is :
(a) 61.5   (b) 61.50   (c) 61.503   (d) 6.1503×10^1

2.   _____ often used for research and pilot studies if time is constrained.
(a) prospective validation   (c) retrospective validation
(b) periodical validation   (d) partial validation

3.   In chromatography, _____ on the time axis may serve to identify the components of the sample.
(a) number of peaks   (c) area under the peaks
(b) position of peaks   (d) height of peaks

4.   Which one is based on Emission phenomenon methods
(a) FTIR   (b) AAS   (c) FES   (d) Above all

5. 2^{40} Bytes is SI prefixed as:
(a) Terabytes   (b) Gigabytes   (c) Petabytes   (d) Exabyte

6.   Principle of gas chromatography separation: $X/M = K \cdot C$ is _____.
(a) Law of Freaundlich   (c) Nernst distribution Law
(b) Henry's Law of partition   (d) Law of Langmuir

7.   The closeness of agreement between successive results obtained from heterogenous conditions with different operators using different equipment is called as
(a) reproducibility   (b) repeatability (c) confidence level (d) variance

8.   The glass is superior to quartz in the region _____, because of its greater change in refractive index with wavelength.
(a) 200-350 nm   (b) 350-380 nm   (c) 380-530 nm   (d) 530-750 nm

Q. 2   Answer the following: **(Any Seven)**   **(14)**

(i)   Discuss the principle of gas chromatography (GC).

(ii) Differentiate accuracy and precision.

(iii) Classify the analytical techniques based on principle and phenomenon.

(iv) How normal distribution curve use?

[P.T.O.]

(v) Write the five forms of electromagnetic radiations.

[vi] Define the term: Electrophoresis

[vii] 1 liter of 2 molar solution of C and 1liter of 4 molar solution of D take part in reaction C+D = P+Q. calculate concentration of P and Q at equilibrium where K=9.

[viii] Discuss the elements of quality system?

[ix] Enlist the five basic components of optical instruments.

3 [a] Answer the following: (6)

[i] Describe analytical techniques based on purpose of analysis.

[ii] Discuss in brief about aspects of validation.

[b] Write a short note on GMP and its components. (6)

OR

[b] Illustrate steps involved in total analysis process with suitable example.

4 [a] Answer the following: (6)

[i] Describe basic requirements of primary standard.

[ii] Differentiate accuracy and precision

[b] Answer the following: (6)

(i) The rules for representing SI units.

(ii) Determine the molarity and normality for complete and incomplete neutralization of a solution containing 18% H_3PO_4. (density: 1.100 g/cc and Mol. Wt. 98 g/mol)

OR

[b] In gas chromatography, the n-butanol peak areas in arbitrary units of each of five injections were 2550, 2730, 2835, 2915, 3070. Calculate (a) the standard deviation of the mean (b) the relative standard deviation of the mean (c) co-efficient of variation. (6)

5 [a] Discuss in details on Interaction of EMR with matter with suitable examples. (6)

[b] Discuss in detail on radiation sources **OR** monochromator used in optical instruments. (6)

6 [a] Answer the following: (6)

[i] Write the principle of paper chromatography and discuss the methods used for detection of spot in paper chromatography. (6)

[ii] Write application of HPTLC.

[b] Enlist various methods of separation along with their principle of working. (6)

OR

[b] Give the basic principle of gas chromatography and discuss in detail on the components of gas chromatograph. (6)