

[20]

SARDAR PATEL UNIVERSITY
M.Sc. - Chemistry
Semester – II, External Examination
April 19, 2018 Thursday
Time: 10:00 am - 01:00 pm
Analytical Chemistry [PS02ECHE01]

N.B. Figures to the right indicate full marks

[Total Marks – 70]

Q.1 Select the correct answer from the following.

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- How much of NaOH is required to neutralise 1500ml of 0.1N HCl?
(a) 4g (b) 40g (c) 6g (d) 60g
- Which of the following is primary standard?
(a) $K_2Cr_2O_7$ (b) $Na_2S_2O_3 \cdot 5H_2O$ (c) NaOH (d) $KMnO_4$
- The number of significant figures in 60.0001 are
(a) 5 (b) 6 (c) 3 (d) 2
- Near Ultraviolet region of the electromagnetic spectrum is generally lies between.....
(a) 300-500 nm (b) 400-750 nm (c) 200-400 nm (d) 10-200 nm
- In chromatography, the stationary phase supported on a solid can be a.....
(a) liquid or gas (b) solid or liquid
(c) solid only (d) liquid only
- How is wave number of EMR related to wavelength?
(a) it is directly proportional to wavelength (b) it is not related to wavelength
(c) it is equal to wavelength (d) it is reciprocal of wavelength
-type of chromatography is used for structural analysis.
(a) column chromatography (b) paper chromatography
(c) partition chromatography (d) affinity chromatography
- Validation aims to make sure that data is sensible, reasonable and
(a) allowable (b) accurate
(c) accessible (d) authentic

Q.2 Write the answer of the following in short.(Any Seven)

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- Define electromagnetic radiation. Name five forms of electromagnetic radiations.
- Give the full name of BIS, U.S.P, ASTM, EPA.
- Write the application of thin layer chromatography.
- Write Difference between accuracy and precision.

C.P. T.O.)

5. Define the term: i) Qualitative analysis ii) analyte
6. Explain photoelectric effect.
7. Write a note on normal distribution curve.
8. Give principle of column chromatography.
9. What are the most popular methods of producing monochromatic radiation?

- Q.3 (A) Explain the term GMP and enlist components. 06
- (B) Illustrate steps involved in total analysis process with suitable example. 06

OR

- (B) 1. What is calibration? Describe calibration of spectrophotometer in brief. 03
2. Explain the classification of analytical technique based on method followed. 03

- Q.4 (A) Answer the following 06
1. How many grams of water and 36% solution of hydrochloric acid should be used to prepare 1000gm of 20% solution.
 2. Prove that the propagation of error in $Y = a^2$ is not equal to that of in $Y = a \times a$. take $a = 2(\pm 0.2)$.

- (B) Define concentration and write detail about concentration units. 06

OR

- (B) 1. Discuss the rules for representing SI units. 03
2. The following results were obtained in the replicate determination of the lead content of a blood sample: 0.752, 0.756, 0.752, 0.751 and 0.760 ppm Pb. Calculate the mean, the standard deviation and the coefficient of variation for the data. 03

- Q.5 (A) Give the brief account of source used in optical spectroscopy and draw neat and labeled diagram of Littrow mounted prism and Elbert monochromator. 06
- (B) Derive the equation for Lambert's and Beer's law with its deviation. Discuss the reason for the deviation. Also write basic components used in optical spectroscopy. 06

OR

- (B) Write a note on detector used in optical spectroscopy. 06

Q.6 (A) Give schematic diagram of gas chromatography and write it's components and working. **06**

(B) Discuss various methods of development in paper chromatography. Give detail of detection method used in paper chromatography. **06**

OR

(B) 1. Explain the normal phase and reverse phase chromatography. **03**

2. justify the term: i) Electrophoresis **03**

ii) Osmosis

iii) Crystallization

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