[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 6987 **D** **Your Roll No.....**

Unique Paper Code : 217167

Name of the Course : **B.Sc. Applied Physical Sciences – Analytical Chemistry**

Name of the Paper : ACPT – 101 – Analytical Chemistry – I

Semester : I

Duration : 3 Hours Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Answer any **five** questions.
3. Use of scientific calculator is **NOT** permitted.

1. (a) What are significant figures ?

   (b) Solve and then determine the number of significant figures in the following :

   (i) 3.10×4.520

   (ii) $0.687 \div 27.56$

   (c) Calculate the mean and standard deviation of the following set of analytical result 15.67, 15.69 and 16.03g.

   (d) What are the seven fundamental units of measurement ? Define them.

   (3,4,4,4)

2. (a) Define molar concentration. Differentiate between analytical molarity and equilibrium molarity.

   (b) Calculate the mass of urea (NH_2CONH_2), MW=60, required for making 2.5 Kg of 0.25 molal aqueous solution.

   (c) Calculate (i) molality (ii) molarity of KI if the density of 20% (w/w) aq. KI is 1.202g/mL.

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(d) Define Standard solution. (2+3,4,5,1)

3. (a) Give the procedure for calibration of burette.

(b) What do symbol TC and TD mean in volumetric glassware ?

(c) What do you mean by primary standards ? Is sodium hydroxide a primary standard ? Explain.

(d) Name any three common drying agents used in desiccators. (4,4,4,3)

4. (a) Give a flow diagram showing steps in quantitative analysis.

(b) Describe in detail any five factors that must be kept in mind while selecting a method of analysis.

(c) Calculate the uncertainty in the number of milli moles of chloride contained in 250 mL of the sample when three different aliquots of 25 mL are titrated with silver nitrate with the following results : 37.68, 38.62 and 37.75mL the molarity of the silver nitrate solution is 0.1168±0.0002M. (5,5,5)

5. (a) What is the purpose of Calibration curve ?

(b) What are constant errors ? Explain with the help of an example how a constant error become serious as the size of quantity measured decreases.

(c) What is pH meter ? Make a sketch of a glass electrode.

(d) Pipette should not be blown out by mouth. Comment. (4,4,4,3)

6. (a) What do you mean by the term accuracy and precision ?

(b) Explain Q test for bad data. Under what conditions it is applicable.

(c) Distinguish between qualitative and quantitative analysis.

(d) Suggest a way to minimize errors. (4,4,4,3)