MCH-001

P.G. DIPLOMA IN ANALYTICAL CHEMISTRY (PGDAC)

00762

Term-End Examination

June, 2013

MCH-001 : BASIC ANALYTICAL CHEMISTRY

Time : 3 hours   *Maximum Marks : 75*

Note :   *Answer **any five** questions. All questions carry **equal** marks.*

1. (a)   In an analysis the observed value is 6.64g   5
          compared with the accepted (true) value of
          6.38g.What is the relative error in parts per
          thousand ?

    (b)   In a chemistry laboratory, why is it essential   5
          to have a fume cupboard ? What else is
          required to ensure that the hazardous
          vapours are vented to the atmosphere from
          the laboratory ?

    (c)   With reference to the rate law in an enzyme   5
          catalysed reaction, explain Michaeli's
          constant.

2. (a)   What first aid should be provided to a   5
          victim after inhaling toxic gases and
          vapours ?

MCH-001   1   P.T.O.

(b) Calculate the pH of a solution which is prepared by dissolving 16 moles of sodium acetate in 400mL of 0.2M acetic acid.   5

(c) Why is potassium dichromate a primary standard ? What is its advantage over permanganate ?   5

3. (a) In complexometric titrations when EDTA can not be used. In such cases, how is the titration carried out .   5

(b) Give an example of the neutralisation titration of a weak acid versus weak base. Draw the titration curve for that .   5

(c) Write the general requirement of sampling of refuse samples.   5

4. (a) What are the symbols used for hazardous flammable liquids , flammable solids and poisonous and infectious substances ?   5

(b) How can compensation be made for the Mohr chloride titration error with reference to precipitation titrations ?   5

(c) Explain the meaning of DSC and TET, with reference to thermal methods.   5

5. (a) What are the different ways in which the percentage in liquid samples may be expressed ?   5

(b) What do you understand by biohazardous **5** substances ? Can they be further subdivided ? Give the details of the subdivisions.

(c) You are given a mixture of amines. How **5** can these be titrated separately ?

6. Write short notes on *any three* of the following : **15**

(a) Metallochromic indicators

(b) AAS

(c) Carcinogens

(d) Confidence Interval

7. (a) Explain turbidimetry and nephelometry. **5** What is the difference between these two methods ?

(b) Discuss the strategies that are to be followed **5** for masking and demasking for a mixture containing Mg , Zn and Cu.

(c) What are the problems faced in the **5** alkalimetric determination of weak acid in aqueous medium ? How can these problems be solved ?

8. (a) What do you mean by a pseudo first order **5** reaction ? Derive its rate law from the second order rate law.

(b) What are the two types of effects that can take place on the human body in case of accidents due to chemicals ?   5

(c) Name the substances which can be titrated directly with a standard iodine solution. Give examples to illustrate the difference between iodimetry and iodometry.   5