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V—179—2017

FACULTY OF SCIENCES

B.Sc. (First Year) (First Semester) EXAMINATION

OCTOBER/NOVEMBER, 2017

(CBCS Pattern)

ANALYTICAL CHEMISTRY

Paper I (CCAC-I)

(General Concepts of Analytical Chemistry—I)

(MCQ+Theory)

(Saturday, 25-11-2017)   **Time : 10.00 a.m. to 12.00 noon**

Time—2 Hours   *Maximum Marks—40*

N.B. :—   (*i*)   *All* questions are compulsory.

     (*ii*)   Multiple Choice Questions (MCQs) should be attempted only on OMR answer-sheet.

     (*iii*)   Darken only one circle for the answer of an MCQ.

     (*iv*)   Negative marking system is applicable for MCQs.

     (*v*)   Circle once darkened is final. No change is permitted.

(MCQs)

1.   Select the *correct* answer from the following Multiple Choice Questions : 10

     (*i*)   Purely chemical methods called as ....

         (*a*)   Non-destructive method

         (*b*)   Instrumental method

         (*c*)   Neutron activation method

         (*d*)   Classical method

     (*ii*)   .... is science of chemical characterisation.

         (*a*)   Physical chemistry   (*b*)   Organic chemistry

         (*c*)   Analytical chemistry   (*d*)   Bio-organic chemistry

P.T.O.

   (*iii*)   The sample is uniformly spread on a square polythene sheet placed on table is known as ....

      (*a*)   Tabelling

      (*b*)   Hardening

      (*c*)   Rolling

      (*d*)   Coning and quartering

   (*iv*)   Split tube thief is used for sampling of ....

      (*a*)   Gas   (*b*)   Solid

      (*c*)   Liquid   (*d*)   Semi-liquid

   (*v*)   In the method of .... sampling every individual item has an equal chance of being selected.

      (*a*)   Random

      (*b*)   Non-random

      (*c*)   Systematic

      (*d*)   None of the above

   (*vi*)   A solution of known concentration is called ....

      (*a*)   Dilute solution

      (*b*)   Standard solution

      (*c*)   Buffer solution

      (*d*)   Normal solution

   (*vii*)   .... solution is every dilute.

      (*a*)   20 N   (*b*)   20%

      (*c*)   20 ppt   (*d*)   20 ppm

   (*viii*)   pOH = ...

      (*a*)   pH + 14   (*b*)   pH − 14

      (*c*)   14 − pH   (*d*)   14 + pH

(*ix*) Water is an example of .... ligand.

    (*a*) Monodentate   (*b*) Bidentate

    (*c*) Tridentate   (*d*) Tetradentate

(*x*) The number of donor groups coordianted around central metal is termed as ....

    (*a*) Atomic number

    (*b*) Mass number

    (*c*) Complex number

    (*d*) Co-ordination number

(Theory)

2. Answer any *two* of the following :   5×2=10

(*a*) Explain the role of analytical chemistry in the field of science.

(*b*) Write a note on complete and partial analysis.

(*c*) Explain the terms parts per thousand and parts per million.

(*d*) How is the gross sample reduced to a size suitable for analysis ?

3. Answer any *two* of the following :   5×2=10

(*a*) Define the terms :

    (*i*) Increment

    (*ii*) Gross sample

    (*iii*) Analytical sample

    (*iv*) Sample

    (*v*) Sampling procedure.

(*b*) Discuss the types of sampling.

(*c*) Write a note on analytical chemistry and analyst.

(*d*) Discuss the application of complexes in identification of metal ions.

P.T.O.

4. Answer any *two* of the following : 5×2=10

   (*a*) Discuss the difference between complex and chelates.

   (*b*) Explain the types of chelating agents.

   (*c*) What is volume fraction ? If 30 ml of ethyl alcohol is dissolved in 70 ml of distilled water calculate the volume fraction of ethyl alcohol and water.

   (*d*) Explain the mole concept.