CAH 551

IV Semester M.Sc. Degree Examination, September/October 2022
(CBCS : 2016-17 Syllabus)
ANALYTICAL CHEMISTRY
Applied Analysis

Time : 3 Hours   Max. Marks : 70

Instructions : *Answer Part – **A** and **any four** from Part – **B**. Figures to the right indicate marks.*

PART – A

1. Answer **all** the following sub-divisions :   **(9×2=18)**

   a) List the sources of impurities in pharmaceutical products.

   b) Write the chemical name of paracetamol and give its structure.

   c) What are expectorants ? Give an example.

   d) Explain how the analysis of urea content in a urine sample helps in the diagnosis of the disease.

   e) 25 mL of urine sample consumed 2.4 mL of 0.012 N $AgNO_3$ for potassium chromate end point. Calculate the amount of chloride present in the urine sample per liter. (Given : Equivalent weight of chloride = 35.5 amu)

   f) Give any two biochemical effects of Hg. Mention the antidote used during mercury poisoning.

   g) A 10.0 g of dal sample was dried at 105°C for 3 hours to obtain concurrent weight of 9.6 g. Calculate the % moisture content in dal sample.

   h) How added water in milk is determined ? Explain.

   i) Differentiate between additives and adulterants in food sample with an example for each.

PART – B

Answer **any four full** questions :

2. a) Explain the importance and functions of quality control in finished pharmaceutical products.

   b) Write the structure of Vitamin C and explain the procedure for its determination.

   c) What are anti-inflammatory agents ? Describe the procedure for the assay of primaquine phosphate. **(5+4+4=13)**

3. a) Explain the importance and deficiency of Vitamin A. With the help of chemical reactions, explain the procedure for its determination.

   b) Write the structure and use of aspirin. A 250 mg tablet sample of aspirin was dissolved and diluted to 100 mL in standard flask. 10 mL of the diluted aspirin solution consumed 2.5 mL 0.02 N NaOH for phenolphthalein end point. Calculate the percentage purity of the given aspirin sample. (Molecular weight of aspirin = 180g/mol)

   c) Give the IUPAC name of Chloromecytin and describe the procedure for its determination. **(5+4+4=13)**

4. a) Mention the importance and function of haemoglobin in blood. Explain the procedure for its assay.

   b) Discuss the biological significance of monoaminoxide and give the procedure for its analysis.

   c) Write a note on sample collection and preservation of physiological fluids. **(5+4+4=13)**

5. a) Write the biochemical effects of stimulants and explain the procedure for their determination.

   b) List the sources of organophosphates and account on the mode of action of organophosphates in humans.

   c) What inference creatinine calcium phosphate in the urine sample provides during the diagnosis of disease ? Explain the procedure for its determination. **(5+4+4=13)**

6. a) Mention the composition of milk. Why dye reduction test is carried out and explain its procedure.

   b) In order to find the calcium content in milk sample, 10 mL of EDT A solution was standardized with 0.022 M MgSO$_4$ for Eriochrome Black-T (EBT) end point. Then, 25 mL of milk sample was analysed for calcium by titrating it with standardized 2.5 mL EDTA solution for EBT end point. Calculate the amount of Ca as CaO present in milk. (Molecular weight of CaO = 56 amu)

   c) Why monosodium glutamate is added to food samples ? With the help of chemical reactions, explain the procedure for its determination.   **(5+4+4=13)**

7. a) What is the composition of edible oils ? Explain the principle and procedure employed for the analysis of groundnut oil.

   b) What is the significance of saponification value ? To 2.0 g of oil sample, 25 mL 0.2 N KOH was added and titrated with 12 mL 0.2 N HCl for phenolphthalein end point. If the blank titration of 25 mL 0.2 N KOH solution consumed 24 mL of 0.2 N HCl for phenolphthalein end point, calculate the saponification value of the given oil. (Equivalent value of KOH = 56.1)

   c) Write a short note on the effects and analysis of pesticide residues in food samples.   **(5+4+4=13)**

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