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AG—117—2018

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

OCTOBER/NOVEMBER, 2018

(CBCS Pattern)

ANALYTICAL CHEMISTRY

Paper CH-542/4

(Analytical Methods)

(Thursday, 29-11-2018)

Time : 2.00 p.m. to 5.00 p.m.

Time—Three Hours

Maximum Marks—75

N.B. :— (i) All questions carry equal marks.

(ii) Use of logarithmic table/calculator is allowed.

(iii) Figures on right shows marks.

1. Answer any *three* : 15

(a) Discuss in brief usage of organic precipitants in gravimetric analysis.

(b) How will you determine salinity of given water sample ?

(c) Write composition of normal human blood.

(d) How will you determine calcium in a given food sample ?

(e) Calculate titer value for estimation of ferrous ion in a redox titration of the metal ion with standard 0.1 N KMnO_4 solution.

(AW : Fe = 55.845 g/eq)

2. Answer any *three* : 15

(a) Explain in brief usage of metallochromic indicators in complexometric titrations.

P.T.O.

- (b) How will you determine nitrate in a given water sample ?
- (c) Explain in brief spectrophotometric analysis of drugs.
- (d) How will you determine carbohydrates in given food sample ?
- (e) Calculate conversion factor for estimation of potassium as potassium oxide. (AW : K = 39.0983 amu; AW : O = 15.9994 amu)
3. (a) Calculate pH values in a titration of 10 mL 0.1 M $\text{HCl}_{(aq)}$ with 20 mL 0.1 M $\text{KOH}_{(aq)}$ at :
- (i) half equivalence point
- (ii) equivalence point and
- (iii) one and half equivalence point of the titration. 8

Or

Discuss in detail analysis of soil for potassium content in it.

- (b) What are drugs ? Explain the terms narcotic and non-narcotic drugs with suitable examples. 7

Or

Discuss in brief analysis of pesticide residues on food grains and fruits.

4. (a) Explain theory of acid-base indicator with suitable example. 8

Or

How will you determine lead content in a given polluted water sample ?

- (b) What is clinical analysis ? Describe in detail clinical analysis of blood glucose. 7

Or

Discuss in brief adulteration and contamination of food stuff.

5. (a) Select the *correct* alternative :

5

(i) Which acid is present in food stuff like green chillies ?

- (a) ascorbic acid
- (b) lactic acid
- (c) citric acid
- (d) all of the above

(ii) Constant boiling point HCl is used as a primary standard in titrations.

- (a) neutralization
- (b) redox
- (c) complexometric
- (d) none of the above

(iii) Which of the following is a very valuable resource of calcium in soil ?

- (a) urea
- (b) lime
- (c) ash
- (d) all of the above

(iv) Morphine is a drug.

- (a) analgesic
- (b) antipyretic
- (c) anti-inflammatory
- (d) none of the above

P.T.O.

- (v) Which of the following acid is present in butter ?
- (a) butyric acid
 - (b) lactic acid
 - (c) citric acid
 - (d) all of the above
- (b) Write short notes on any *two* : 10
- (i) Types of precipitates
 - (ii) Analysis of soil for magnesia content
 - (iii) Hardness of water.