18CHU02/14CHU02

PSG COLLEGE OF ARTS & SCIENCE

(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2019

(First Semester)

Branch - CHEMISTRY

ANALYTICAL CHEMISTRY

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 x 1 = 10)

1 Which of the following is not carcinogenic?
(i) Diazomethane (ii) Thiourea
(iii) Naphthylamine (iv) ethanol

2 The container having_____ should be cooled in ice and then opened.
(i) Ammonia (ii) Ester (iii) Aniline (iv) Phenol

3 Identify the interfering radical which is removed by dry heating.
(i) Oxalate (ii) Borate (iii) Fluoride (iv) Phosphate

4 The reagents used to prevent the interference of other ions while testing a specific ion is called as
(i) Organic reagents (ii) inorganic reagents
(iii) Masking reagents (iv) Oxidizing agents

5 Which of the following should not be used as primary standard in titrimetric analysis?
(i) Sodium carbonate (ii) Oxalic acid
(iii) Potassium permanganate (iv) Ferrous sulphate

6 The colour of phenolphthalein indicator in basic medium is_____ .
(i) Colourless (ii) Pink (iii) Orange (iv) Yellow

7 Name the inorganic precipitant to precipitate aluminium.
(i) NH_4OH (ii) Oxine (iii) antranilic acid (iv) $BaCl_2$

8 The high solubility of AgCl in $KN0_3$ solution is due to_____effect.
(i) common ion (ii) neutral salt
(iii) masking (iv) solubility product

9 Hexachloroethane is purified by_____ method.
(i) Sublimation (ii) Distillation
(iii) Recrystallisation (iv) Drying

10 Which of the following should not be heated directly over Bunsen flame during distillation?
(i) ethanol (ii) ester (iii) turpentine (iv) aldehyde

SECTION - B (25 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 5 = 25)

11 a Describe the safety limits of vapour concentrations of chemicals handled in laboratory.

OR

b List out the advantages of using standard joint apparatus.

12 a Based on the solubility product explain why Cu^{2+} is precipitated as cupric sulphate in the acidic medium whereas Zn ' is precipitated as ZnS in the

13 a Explain the principle behind redox titrations.

OR

b Illustrate the theory of acid-base indicators using methyl orange and phenolphthalein.

14 a Explain post precipitation with examples. What is the remedy to this problem?

OR

b Explain anion and cation release methods of precipitation from homogeneous solution.

15 a What are desiccants? Explain the types and efficiency of various desiccants.

OR

b Write short notes on azeotropic distillation.

SECTION -C (40 Marks)

Answer **ALL** questions

ALL questions carry' **EQUAL** Marks (5 x 8 = 40)

16 a Summarize the calibration of various volumetric apparatus.

OR

b Discuss in detail about the hazards in laboratory while working with chemicals and glass wares.

17 a Enumerate the applications of complexation and redox reactions.

OR

b Discuss the following techniques used in semimicro qualitative analysis.
i) Filtration ii) Centrifugation iii) Evaporation

18 a Give a detailed account on the estimation of Fe with K_2Cr_207 using external and internal indicators.

OR

b i) Explain the different modes of expressing concentration of a solution.
ii) How do you prepare 1 litre solution of sodium hydroxide with N/10 concentration?

19 a i) Discuss the conditions for precipitations from a solution.
ii)What is meant by digestion of precipitate? Explain its importance in gravimetric analysis.

OR

b Explain the different types of organic precipitants. Give the advantages and disadvantages of using it.

20 a Discuss briefly the theory of steam distillation and its experimental arrangement.

OR

b. Describe in detail about principle, technique and applications of sublimation.

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END