



AR-003-047103

Seat No. _____

BVOC (PHAR ANA) (Sem. I) (CBCS) Examination

March / April – 2016

BVPAQA-103 : Core Fundamental

Analytical Chemistry (PA-1)

Faculty Code : 003

Subject Code : 047103

Time : 3 Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory and carry equal marks.
(2) Draw diagram and / or scheme wherever necessary.

- 1 (a) Answer the following Multiple Choice Questions : **10**
- (1) According to _____ concept, in the complexes, metal is acid and ligand is base.
(a) Arrhenius (b) Lewis
(c) Bronsted (d) Sorenson
 - (2) _____ is used in direct method of diazotization titrations.
(a) KNO_2 (b) NaNO_2
(c) NaNO_3 (d) NaCl
 - (3) Which of the following reagent is used as precipitating reagent in gravimetric analysis ?
(a) H_2S (b) CH_3CN
(c) K_2CrO_4 (d) All of above
 - (4) Adrenaline can be assayed by _____ titration.
(a) Redox (b) Complexometric
(c) Non-aqueous (d) All of above
 - (5) Freshly prepared solution of _____ is used as indicator in iodometry titrations.
(a) Starch (b) Phenolphthalein
(c) Glucose (d) NaNO_2

- (6) Basic ingredients of Karl Fisher reagents are _____
- I_2
 - SO_2
 - Buffer and solvent
 - All of above
- (7) Solution of crystal violet in glacial acetic acid is used as indicator in _____ titrations.
- Precipitation
 - Redox
 - Non-aqueous
 - Acid-base
- (8) Kjeldahl Method is used to estimate _____ in the given sample.
- % of Oxygen
 - % of Carbon
 - % of Water
 - % of Nitrogen
- (9) Methyl orange is an example of _____ indicators.
- Neutralization
 - Redox
 - Precipitation
 - Gravimetric
- (10) Errors occurring due to non-calibrated instruments are considered as _____ errors.
- Relative
 - Absolute
 - Determinate
 - Indeterminate

(b) Answer the following multiple choice questions : **20**

- (1) To prepare 1000 ml standard solution of 0.01 M EDTA (Na_2H_2Y), _____ gm of EDTA is required.
- 3.7225 gm
 - 0.931 gm
 - 0.37225 gm
 - 0.3175 gm
- (2) In Fajan's method, _____ is used as an indicator; while in Mohr's method _____ is used as an indicator.
- Fluorescein, K_2CrO_4
 - $CaCrO_4$, K_2CrO_4
 - Ferric Alum, AgCl
 - Ferric Oxide, Muroxide
- (3) Protogenic solvents are _____, and Protophilic solvents are _____
- Proton donor, proton acceptor
 - Proton acceptor, electron donor
 - Proton acceptor, proton donor
 - Basic, Non-aqueous

- (4) Phenolphthalein shows _____ in 0.1M H_2SO_4 solution and _____ in 0.1M NaOH solution.
- Pink color, color less
 - Color less, pink color
 - Pink color, red color
 - Yellow color, Orange color
- (5) Complexes of bivalent metal ions with EDTA are stable in _____ medium and complexes of trivalent metal ions with EDTA are stable in _____ medium.
- Acidic, neutral
 - Neutral, Basic
 - Acidic, Basic
 - Basic, acidic
- (6) Instrumental error and operational errors are considered as _____ error, while accidental error are considered as _____ error.
- Determinate, Indeterminate
 - Indeterminate, Determinate
 - Absolute, Relative
 - Indeterminate, True
- (7) What will be molarity and normality of a solution containing 29.4 gm H_3PO_4 in 1.5 litre solution?
- 0.6 M, 0.2 N
 - 0.2 M, 0.6 M
 - 0.6 M, 0.6 N
 - 0.2 M, 0.2 N
- (8) Crystal Violet solution in glacial acetic acid is used as indicator in the titration of bases like _____ against _____.
- Pyridine, KMnO_4
 - NaOH, Boric Acid
 - Pyridine, HClO_4
 - Phenol, Na_2CO_3
- (9) In the complexometric titration by EDTA, Zn^{+2} and Mg^{+2} can be titrated by _____ titration while Al^{+3} and Co^{+3} can be titrated by _____ titration.
- Direct, Back
 - Direct, Redox
 - Back, Direct
 - None of these
- (10) In the non-aqueous titrations, CH_3COOH is considered as _____ solvent while dioxane is considered as _____ solvent.
- Protic, levelling
 - Protophilic, Amphoprotic
 - Levelling, aprotic
 - Aprotic, Levelling

2 Answer any 4 out of the following 6 questions : **[20]**

- (1) Explain types of errors with suitable examples.
- (2) Explain Fajan's method of precipitation with diagram.
- (3) Write a detailed note on solvents for non-aqueous titration with examples.
- (4) (i) Explain applications of relative supersaturation.
(ii) Differentiate between lyophilic and lyophobic colloids.
- (5) Explain conditions of precipitation for gravimetric analysis.
- (6) Write a detailed note on : Starch as an indicator.

3 Answer any 4 out of the following 6 questions. **20**

- (1) Enlist advantages of non-aqueous titrations. Describe any one example of non-aqueous assay determination.
 - (2) Write a note on Karl Fisher Titration method.
 - (3) Define and classify Buffers. Explain mechanism of basic buffer solution with example.
 - (4) (i) Differentiate: post-precipitation and co-precipitation.
(ii) Enlist any 5 precipitating agents.
 - (5) Enlist and briefly explain various methods of EDTA titrations.
 - (6) Explain titration of weak acid and strong base with figure.
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