647510 **MscanaCC1040** **Seat No :_____**

M.Sc.(Chem.) Semester - 1 (*CBCS*) Examination
Jan/Feb.-2022 [NEW COURSE]
ANALYTICAL CHEMISTRY (CORE)

Time: 1:30 Hours **Marks: 42**

Instructions:

1. Figures to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

Q.1 (a)	**Answer the following question**	**4 Marks**
(1)	Define the following terms: (a) Molality, (b) Molarity, (c) Normality, (d) Formality	4
Q.1 (b)	**Answer any two questions out of three**	**10 Marks**
(1)	Discuss preparation of following buffer solutions. (a) 1 Lit. of 10 mM potassium hydroxide solution. (b) 250 mL of 15% (w/w) gallic acid solution.	5
(2)	Give an account of mole fraction with suitable example.	5
(3)	Discuss following preparations with calculation. (a) 100 mL, 250 ppm stock solution of Aspirin in methanol. (b) 25, 50, 75 and 100 ppm of Aspirin sample solutions from above stock solution. (10 mL each)	5
Q.2 (a)	**Answer the following question**	**4 Marks**
(1)	Differentiate between classical and instrumental methods of analysis.	4
Q.2 (b)	**Answer any two questions out of three**	**10 Marks**
(1)	Give an account analytical chemistry and enlist basic functions of analytical chemist.	5
(2)	Write a detailed note on classification of analytical techniques.	5
(3)	Enlist instrumental methods of analysis with brief justification and applications.	5
Q.3 (a)	**Answer the following question**	**4 Marks**
(1)	Briefly explain types of titrations.	2
(2)	Define Homogeneous and Heterogeneous solutions with suitable example.	2
Q.3 (b)	**Answer any two questions out of three**	**10 Marks**
(1)	Write a note on redox titration with suitable example.	5
(2)	Discuss Volhard's reverse titration method for Halogens.	5
(3)	Discuss various solvents for non-aqueous titration.	5
Q.4 (a)	**Answer the following question**	**4 Marks**
(1)	Briefly discuss classification of water pollutants with example.	4
Q.4 (b)	**Answer any two questions out of three**	**10 Marks**
(1)	Discuss various segments of atmosphere in detail.	5
(2)	Elucidate organic and inorganic particulate matter.	5
(3)	Give an account of NOx as gaseous pollutant.	5
Q.5 (a)	**Answer the following question**	**4 Marks**
(1)	Explain estimation of H_2S present in air.	4
Q.5 (b)	**Answer any two questions out of three**	**10 Marks**
(1)	Explain detection of chloride and iron in water.	5
(2)	Discuss various method for analysis of SOx in air.	5
(3)	Discuss methods for sampling of gaseous pollutants.	5

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