	Sanjay Ghodawat University, Kolhapur Established as State Private University under Govt. of Maharashtra. Act No XL, 2017		2018-19
Year and Program:	**School of Science**	**Department of Chemistry**	
Course Code: CHS-508	**Course Title: Analytical Chemistry-II**	**Semester – Even (II)**	
Day and Date: Monday, 27th May., 2019	**End Semester Examination**	**Time: 3 hrs, Max Marks: 100** 10.30 am to 11.00 am	
PRN:	**Seat No:**	**Section A Marks out of 20:**	
Jr. Supervisor Sign:		**Student Sign:**	

Section A

Instructions: 1) All Questions are compulsory.
2) For MCQs mark tic (√) for correct answer. No marks for multiple tics (√).
3) Section A should be submitted to Jr Supervisor immediatcly after first 30 min.

	Q.1 Multiple choice questions.	**Marks 20**	level	CO
1	On which of the following concepts, polarography is based a) Cyclic reactions b) Exothermic reactions c) Reversible reactions d) Redox reactions		L2	1
2	Which of the following is used as working electrode in electroanalytical techniques? a) Dropping mercury electrode b) Glass electrode c) Calomel electrode d) Pt electrode		L1	1
3	Polarographic cells are not sensitive to which of the following gas? a) Carbon monoxide b) Carbon dioxide c) Nitrous oxide d) Oxygen		L3	1
4	Which detector in colorimeter consists of dynodes? a) Photovoltaic Cell b) Phototube c) Photomultiplier tube d) None of the above		L1	1
5	Which source is used in colorimeter? a) SiC b) Tungsten filament		L3	1

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c) LaB6
d) None of the above

6	Which of the following method can be used for the measurement of change in weight of the oxysalts? a) Thermoelectric analysis b) Wagner analysis c) Stockbarger analysis d) Thermal analysis	L2	1
7	The properties like melting point, solubility, color, etc changes on varying the a) Size b) Composition c) Surface properties d) None of the mentioned	L1	1
8	.....is used to get narrow beam of x-ray a) Collimeter b) Monochromator c) Detector d) Source	L2	2
9	The term nanotechnology was put forth by a) Norio Taniguchi b) Sumio Iijima c) Richard Feynman d) Eric Drexler	L1	2
10	Which sources are used in TEM? a) LaB6 and W filament b) SiC and W filament c) Hydrogen lamp and SiC d) None of the above	L2	2
11	.....is used to determine the final diameter of the electron probe in SEM a) Objective lense b) Collimeter lense c) Concave lense d) None of the above	L2	3
12	Coating the nano crystals with the ceramics lead to a) Corrosion b) Corrosion resistant c) Wear and tear d) Soft	L3	3

13	Which of the following is used in electron microscope? a) electron beams b) magnetic fields c) light waves d) electron beams and magnetic fields	L2	3
14	Liquid samples are introduced into the ICP spectrometer using ..... a) Nebulizer b) Curvette having glass windows c) Probe d) Laser ablation system	L5	4
15	The most common type of ion detector found in ICP system is..... a) Faraday cup collector b) Channeltron c) Micro-channel plate d) Flame ionization detector	L6	4
16	Who invented AAS? a) Alan Walsh b) Palmaer c) Bragg d) Zagorski	L1	4
17	Which flame used in atomization process in AAS? a) air acetylene b) hydrogen c) oxygen d) hydrogen and oxygen	L1	4
18	Which of the following is the function of the chopper in Atomic Absorption Spectroscopy? a) To split the beam into two b) To break the steady light into pulsating light c) To filter unwanted components d) To reduce the sample into atomic state	L5	4
19	What is the basis of FES? a) Measurement of intensity of absorb radiation b) Measurement of intensity of emitted radiation c) Measurement of intensity of reflected radiation d) None of the above	L2	4
20	In Atomic Absorption Spectroscopy, which of the following is the generally used radiation source? a) Tungsten lamp b) Xenon mercury arc lamp c) Hydrogen or deuterium discharge lamp d) Hollow cathode lamp	L1	4

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Section B

			Marks	level	CO
Q.2		**Solve any Two of the following**	**12**		
	a)	Explain in detail instrumentation of amperometry.	**6**	L3	1
	b)	Discuss factors affecting the current-voltage curve in polarography.	**6**	L2	1
	c)	Derive the equation for half wave potential.	**6**	L2	1
Q.3		**Solve any Two of the following**	**12**		
	a)	Describe determination of pKa value of an indicator.	**6**	L3	2
	b)	Explain double beam spectrophotometer in detail	**6**	L2	2
	c)	Discuss in detail Instrumental factors affecting TG curve.	**6**	L2	2
Q.4	**a)**	**Solve any Two from the following**	**12**		
	i)	Describe in detail instrumentation of Transmission electron microscopy (TEM).	**6**	L3	3
	ii)	Discuss in detail the instrumentation of X-ray Diffraction technique (XRD).	**6**	L3	3

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	iii)	Give the Comparative account of SEM and TEM.	6	L3	3
	b)	**Solve any Four from the following**	16		
	i)	Discuss the applications of Transmission electron microscopy (TEM).	4	L2	3
	ii)	Explain classification of nanonmaterials in detail.	4	L1	3
	iii)	Discuss the applications of nanomaterials in environmental sector.	4	L2	3
	iv)	Explain how to calculate optical band gap from UV-vis spectrophotometer.	4	L5	3
	v)	Describe in detail instrumentation of Scanning electron microscopy (SEM).	4	L2	3
Q.5	a)	**Solve any Two of the following**	16		
	i)	Explain the instrumentation of atomic absorption spectroscopy.	8	L4	4
	ii)	Give the detail account on interference in ICP-MS.	8	L4	4
	iii)	Describe the instrumentation of ICP-MS.	8	L4	4
	b)	**Write note on the following (any three)**	12		
	i)	Write a note on plasma torch in ICP analysis.	4	L6	4
	ii)	Discuss the difference between atomic absorption and flame emission spectroscopy (AAS and FES).	4	L3	4
	iii)	Write the application of atomic absorption spectroscopy (AAS)	4	L5	4
	iv)	Explain in brief any two detectors used in AAS.	4	L5	4

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