647510 **MSC3AnaC301x** **Seat No :_____**

M.Sc.(Chem.) Semester - 3 (*CBCS*) Examination
DEC/JAN. - 2020 - [NEW COURSE]
Instrumental Methods of Analysis (Core (New))

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

Instructions:

1. Figure 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**
(1)	What is Thomson's Scattering?	
(2)	Give brief account of EMR spectrum.	
Q.1 (b)	**Answer any two questions out of three.**	**10**
(1)	Derive Bragg's equation for path difference.	
(2)	Write a note on Laue's photographic plate method.	
(3)	Discuss applications and limitations of XRD technique.	
Q.2 (a)	**Answer the following question**	**4**
(1)	Give the principle and brief account of MRI technique.	
Q.2 (b)	**Answer any two questions out of three.**	**10**
(1)	Explain T_1 relaxation and T_2 relaxation in MRI.	
(2)	Explain basic instrumentation of MRI technique.	
(3)	Distinguish between NMR and MRI techniques.	
Q.3 (a)	**Answer the following question**	**4**
(1)	Write the calibration procedure for DSC.	
Q.3 (b)	**Answer any two questions out of three.**	**10**
(1)	Discuss applications of DSC technique.	
(2)	Explain instrumentation of TGA.	
(3)	Give an account of the sequential decomposition reaction that $CaC_2O_4H_2O$ undergoes in TGA.	
Q.4 (a)	**Answer the following question**	**4**
(1)	Give the name of elements which are suitable and not suitable for atomic absorbance spectroscopy technique.	
(2)	Why atomic absorbance technique is more superior than flame photometry?	
Q.4 (b)	**Answer any two questions out of three.**	**10**
(1)	Write a detailed note on hallow cathode lamp.	
(2)	Explain electrochemical atomization with diagram.	
(3)	Discuss about interferences of atomic absorbance spectroscopy.	
Q.5 (a)	**Answer the following question**	**4**
(1)	Draw the schematic diagram of laminar flow type burner.	
(2)	Enlist advantages and limitations of flame photometry	
Q.5 (b)	**Answer any two questions out of three.**	**10**
(1)	Write a note on total consumption burner.	
(2)	Explain the role of flame in flame photometry and also give the details of fuel and oxidants used in flame photometry.	
(3)	Discuss instrumentation of flame photometry.	

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