

M.Sc.(Chem.) Semester - 3 (CBCS) Examination
Oct/Nov. -2019 - [NEW COURSE]
Instrumental Methods of Analysis (Core (New))

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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- Que-1(A) What is Bragg's law of X ray diffraction? Explain with suitable diagram. (04)
- Que-1(B) Answer any two questions out of three. (10)
- (1) Draw a schematic diagram of X – ray tube and explain generation of X – rays.
 - (2) How X – ray Diffraction is useful? Explain with its applications.
 - (3) What is the difference between powder XRD and Single Crystal XRD? Discuss interpretation of diffraction pattern with suitable example.
- Que-2(A) What is the principle of magnetic resonance imaging? Explain: How does an MRI produce an image? (04)
- Que-2(B) Answer any two questions out of three. (10)
- (1) How does magnetic resonance angiography work?
 - (2) Draw a proton NMR of one diamagnetic compound with its spectral interpretation.
 - (3) Give clinical applications of MRI imaging techniques.
- Que-3(A) Draw a schematic diagram of TGA and DTA instruments. (04)
- Que-3(B) Answer any two questions out of three. (10)
- (1) Describe various factors that may be affect thermal analysis.
 - (2) Draw a thermogram of DTA analysis and explain it.
 - (3) Give applications of thermal analysis techniques.
- Que-4(A) Give principle of AAS and give classification of atomic spectroscopic methods. (04)
- Que-4(B) Answer any two questions out of three. (10)
- (1) Discuss advantages and disadvantages of AAS technique.
 - (2) Explain atomization process in AAS analysis.
 - (3) Discuss the instrumentation of Atomic Emission Spectroscopy.
- Que-5(A) How does flame photometry work? (04)
- Que-5(B) Answer any two questions out of three. (10)
- (1) Give applications and limitations of flame photometry.
 - (2) What is the difference between photometer and spectrophotometer? Draw a suitable diagram.
 - (3) Why calibration of flame photometer is important? Explain sample preparation of various samples for flame photometric analysis.
