

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER – VI (OLD).EXAMINATION – WINTER 2016**

**Subject Code: 160302****Date: 26/10/2016****Subject Name: Analytical & Optical Instrumentation****Time: 02:30 AM to 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Enlist the general characteristics of Analytical and Optical techniques on priority basis. Define generalized approach towards achieving those characteristics. **07**
- (b) Draw and explain the Electromagnetic Spectrum with sources and applications of each band. **07**
- Q.2** (a) Explain various types of optical filters used in spectrophotometry. **07**
- (b) Explain various types of microscopes and their applications. **07**
- OR**
- (b) Enlist limitations of coulter counter. Which method would you suggest to overcome this limitations? **07**
- Q.3** (a) Describe flame photometry and its uses. **07**
- (b) Write a brief note on polymeric Chain Reaction. **07**
- OR**
- Q.3** (a) Write a brief note on HPLC. **07**
- (b) Explain the design of mass spectrometry. **07**
- Q.4** (a) Write a brief note on Endoscopy. **07**
- (b) Draw and explain calomel electrode in detail. **07**
- OR**
- Q.4** (a) Enlist the advantages of autoclave over hot air oven. **07**
- (b) Explain the instrument and process used for serum albumin test. **07**
- Q.5** (a) Enlist and briefly explain the types of Electrophoresis. **07**
- (b) State and explain the beer – Lambert’s law and its applications. **07**
- OR**
- Q.5** (a) List the equipment used for in-vivo measurement. Explain any two in detail. **07**
- (b) Explain the construction of pH electrode in detail. **07**

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