

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER-EXAMINATION – MAY- 2012****Subject code: 160302****Date: 11/05/2012****Subject Name: Analytical & Optical Instrumentation****Time: 10:30 am – 01:00 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) Describe the advantages of Picoscale blood cell counter over Coulter counter. **04**
(b) What are the benefits of Auto Pipettes for fluid volume measurements? **03**
(c) Explain the principle used in Pulse oximetry. Explain the instrumentation of pulse oximeter. **07**
- Q.2** (a) Enlist the instruments used in Biochemistry & Microbiology laboratory. **07**
Describe the needs of pathological measurements.
(b) Introduce different types of radiation sources used in spectrophotometry. **07**
- OR**
- (b) Explain the components of proximal tip of the endoscope. **07**
- Q.3** (a) Explain the principle of photometry based Alcohol Detector. Draw the block diagram of the instrument. **07**
(b) Define chromatography. Explain the principle used in gas chromatography. **07**
- OR**
- Q.3** (a) Draw & explain the construction of hot air oven. Which sensors are necessary in the construction? Justify your answer. **07**
(b) Describe the working principle of HPLC. **07**
- Q.4** (a) Give a brief explanation of flame photometer with block diagram. **07**
(b) What is centrifugal force? Describe the application of it. **07**
- OR**
- Q.4** (a) Explain Semi Auto analyzer. What is the difference between Semi Auto analyzer & Auto analyzer? **07**
(b) What is Phase contrast microscopy? Explain the instrumentation of the equipment. **07**
- Q.5** (a) Briefly describe the principle of Gel Electrophoresis. **07**
(b) Which instruments are involved in blood banking procedure? Draw & Explain the block diagram of any two instruments. **07**
- OR**
- Q.5** (a) What is the need of blood gas measurements? Explain the fiber optic based blood gas sensor. **07**
(b) Explain the electrode used for blood pCO₂ measurement. **07**
