Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

Date: 17/12/2015

BE - SEMESTER - VI EXAMINATION - WINTER 2015

Subject Code:160302

Subject Name: Analytical and Optical Instrumentation Time: 2:30pm to 5:00pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. 0.1 (a) Explain beer-Lambert's law and also explain spectrophotometer with necessary 07 diagram. (b) Enlist the instruments used in Biochemistry & Microbiology laboratory. Describe 07 the needs of pathological measurements. Explain the principle of Transmission type oximetry and also explain vitro type 0.2 07 technique for measurement of arterial oxygen saturation. Define the principle of Chromatography and explain Gas Chromatography in 07 detail. OR **(b)** Describe the working principle of HPLC. 07 What is flame photometry? Draw & explain the block diagram of flame **Q.3** 07 (a) photometer. **(b)** Describe blood pCO2 measurement with its electrode construction. 07 OR Draw & Explain the block diagram of any two instruments which are involved in 0.3 **07** blood banking procedure. What is centrifugal force? Describe the application of it. **07 (b)** List the different types of blood cell counting methods and explain any one in **Q.4** 07 detail. 07 **(b)** Write short note with necessary diagram. (Any Two) 1. Hot air oven 2. ELISA reader 3. Electron microscope OR Draw and Explain endoscopy with its construction and also list the different types 07 **Q.4** (a) of endoscope. **(b)** Write short note with necessary diagram. (Any Two) 07 1. Incubator 2. Glucometer 3. Autoclave Define pO2 (partial pressure of oxygen). Explain different types of electrodes for **07 Q.5** (a) pO2 measurement. (b) Enlist different electrophoresis techniques. Describe any one in detail. 07 (a) Explain the importance of blood pH balance and explain pH meter in detail. Q.5 07 (b) Draw & explain the block diagram of auto analyzer with its application. 07
