

**GUJARAT TECHNOLOGICAL UNIVERSITY****Subject code: 160301****Subject Name: Diagnostic Instrumentation****Date: 16/05/2011****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) Draw building blocks of electrocardiograph. Explain each block in detail. **07**  
 (b) Which are different effects of artefacts on ECG recording? Explain in detail. **07**

- Q.2** (a) Explain direct methods of blood pressure measurement. Define the normal values of blood pressure of healthy human being. **07**  
 (b) Explain the principle of ultrasonic doppler shift method for blood flow measurement. **07**

**OR**

- (b) What is audiogram? Draw the bekesy audiometer diagram & explain in detail. **07**

- Q.3** (a) What is spirogram? Draw & explain the construction of basic spiograph. **07**  
 (b) Draw & explain schematic of x-ray image intensifier. **07**

**OR**

- Q.3** (a) Enlist different imaging techniques for ultrasound imaging. Explain any two in detail. **07**  
 (b) Write short note on :  
 1) Ultrasonography technique **04**  
 2) Endoscopy **03**

- Q.4** (a) Draw & explain schematic of rotating anode type x-ray tube. **07**  
 (b) Write short note on:  
 1) Holter recording **04**  
 2) Blood flow measurement by thermal convection **03**

**OR**

- Q.4** (a) Explain echocardiograph with its application. **07**  
 (b) Write short note on:  
 (a) Capsule endoscopy **04**  
 (b) Wedge spirometer **03**

- Q.5** (a) Draw the block diagram of electroencephalograph. Enumerate the functions of each block in detail. **07**  
 (b) A) Explain following terms: **04**  
 i) Total lung capacity      ii) Alveolar ventilation  
 iii) Tonometry              iv) Bronchoscopy  
 B) Enlist different heart sound with its origin. **03**

**OR**

- Q.5** (a) Explain echoencephalography technique in detail. **07**  
 (b) Explain electromagnetic blood flow meter in detail with its schematic. **07**

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