

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING – SEMESTER-IV EXAMINATION – SUMMER-2015

Subject Code:3341704

Date: 12/05/2015

Subject Name:Biomedical Instrumentation

Time: 10:30 AM TO 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.
4. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.

Q.1 Answer any seven out of ten. **14**

1. List the sources of biopotentials in the human body.
2. Define biopotential.
3. List any four ICU instruments
4. List four biological systems of human body.
5. Draw enthoven triangle.
6. Define X rays with two important properties.
7. State any four properties of ultrasound waves.
8. State the application of electrosurgical machine in the hospital.
9. State the normal values of body temperature, respiration rate, blood pressure and heart rate.
10. List any four pathological test instruments for medical diagnosis

Q.2 (a) Match the following **03**

	(INSTRUMENT) A	(DEPARTMENT) B
1	DEFIBRILLATOR	UROLOGY DEPARTMENT
2	CAUTRY MACHINE	ICU
3	HEMODYLISIS MACHINE	OPERATION THEATER

OR

(a) Classify medical instruments based on different applications. (any three) **03**

(b) Draw block diagram of bio- feedback instrumentation. **03**

OR

(b) Draw block diagram of EMG machine. **03**

(c) Explain the working of sphygmo-manometer and its application. **04**

OR

(c) Draw block diagram of Hemo-dialysis machine. **04**

(d) Describe working of a Muscle Stimulator **04**

OR

(d) Describe working of a Defibrillator Machine. **04**

Q.3 (a) Draw block diagram of an ultrasonic foetal monitor **03**

OR

(a) List the types of Transducers used in Ultrasonic foetal monitor **03**

	(b) List the electrodes of a Defibrillator Machine with sketches.	03
	OR	
	(b) Draw the block diagram of an auto analyzer	03
	(C) Describe auto analyzer	04
	OR	
	(c) Describe working of an echo-cardio graph..	04
	(d) State the applications of ultrasound.	04
	OR	
	(d) Draw block diagram of an echo-cardio graph..	04
Q.4	(a) Plot the ECG waveform	03
	OR	
	(a) Plot the EMG waveform	03
	(b) Explain generation of an X-ray	04
	OR	
	(b) Draw block diagram of CT scan and label it.	04
	(c) Draw and explain generalized block diagram of medical instrumentation system.	07
Q.5	(a) Describe working of an electro-surgery machine	04
	(b) Explain LVDT transducer in short.	04
	(c) List any three temperature transducers	03
	(d) List any three diagnostic medical equipments and its application.	03
