Roll No: | | | | | | | | | | | | | |

BTECH
(SEM V) THEORY EXAMINATION 2023-24
BIO-MEDICAL INSTRUMENTATION

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

Q no.	Question	Marks
a.	What is transducer	2
b.	Define Bio electric potential	2
c.	What is electrode.	2
d.	What is the use of blood flow meter?	2
e.	Explain central nervous system.	2
f.	Explain somatic sensory nervous system.	2
g.	Point out the advantages of MRI scan	2
h.	Write the application of X ray in medical field.	2
i.	Define telemetry.	2
j.	Write note on Shock hazards.	2

SECTION B

2. Attempt any *three* of the following:

a.	With a neat block diagram illustrate the biomedical instrumentation system.	10
b.	Draw an ECG of a normal person, labelling the critical features and explain the working of an ECG machine	10
c.	Design the 10-20 electrode system used in EEG. Describe its characteristics lead system and recording methods	10
d.	Explain the production of X-rays and draw the block diagram of X-ray machine.	10
e.	Discuss the Elements of intensive care unit.	10

SECTION C

3. Attempt any *one* part of the following:

a.	Describe the action of piezoelectric transducer as arterial pressure sensor	10
b.	What are the characteristic features to be considered while selecting a transducer?	10

4. Attempt any *one* part of the following:

a.	Discuss the Skin surface and needle electrodes.	10
b.	What is blood pressure? How is it measured?	10

5. Attempt any *one* part of the following:

a.	Discuss the Temperature measurements using infrared sensors.	10
b.	Explain the Ultrasonic method of Blood flow measurement.	10

6. Attempt any *one* part of the following:

a.	With neat block diagram explain the principle of operation and working of MRI system.	10
b.	Describe principle of computerized Axial Tomography and compare it with conventional X-Ray imaging system.	10

7. Attempt any *one* part of the following:

a.	Discuss how the various physiological parameters can be monitored and telemetered and usage of telemetry as an emergency tool.	10
b.	State the need for defibrillator. Describe the schematic of implantable defibrillator	10