Code No: **R41048** **R10** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

BIO-MEDICAL ENGINEERING

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1	a)	Describe the man-instrument with a neat sketch.	[8]
	b)	What are the different bioelectric potentials? Explain.	[7]
2	a)	What are biochemical transducers? Explain.	[8]
	b)	Describe the principle of operation of P_{O_2} electrode with platinum cathode.	[7]
3	a)	What are the different types of ECG recorders? Explain.	[8]
	b)	Draw the different ECG lead configurations and explain.	[7]
4	a)	Give the physiology of the respiratory system.	[8]
	b)	Describe the working principle of respiratory therapy equipment.	[7]
5	a)	What are the elements of intensive-care monitoring? Explain.	[8]
	b)	Describe how the hospital is organized for patient-care monitoring.	[7]
6	a)	Explain the working of ophthalmology instruments.	[8]
	b)	Describe the operation of tonometer.	[7]
7	a)	What are the principles of ultrasonic measurement?	[8]
	b)	Explain how the telemetry principle is used for ECG measurements during exercise.	[7]
8	a)	Describe the working of biopotential amplifiers.	[8]
	b)	What are the methods of accident prevention?	[7]

Code No: **R41048** **R10** **Set No. 2**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

BIO-MEDICAL ENGINEERING

(Open Elective)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1 a) What are the basic objectives of any medical instrumentation system? Explain. [8]

b) Write notes on the following bioelectric potentials: [7]

i. ECG
ii. EEG
iii. EMG

2 a) What are the transducers for biomedical applications? Explain. [8]

b) Distinguish between passive and active transducers. [7]

3 a) Draw the block diagram showing ECG building blocks. [8]

b) What are the abbreviations and color codes used for EKG electrodes? [7]

4 a) Explain how the lung function is measured. [8]

b) What are the most common parameters measured in spirometry? [7]

5 Write brief notes on

a) Internal pacemakers [8]

b) External pacemakers [7]

6 Write notes on the following terms:

a) Biomaterials [8]

b) Stimulators [7]

7 a) Write notes on X-ray and radio-isotope instrumentation. [8]

b) Write notes on telemetry for emergency patient monitoring. [7]

8 a) What are the various shock hazards from electrical equipment? [8]

b) What are the physiological effects of electrical shock? [7]

Code No: **R41048** **R10** **Set No. 3**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

BIO-MEDICAL ENGINEERING
(Open Elective)

Time : 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1	a)	Describe the cross section of a depolarized cell during an action potential.	[8]
	b)	What is action potential? Describe the process of propagation of action potential.	[7]
2	a)	Give the examples of electrodes. What is the basic principle of transducer?	[8]
	b)	Write notes on i) Pulse sensors ii) Respiration sensors	[7]
3	a)	Draw the different EKG lead configurations.	[8]
	b)	Describe the working principle of magnetic blood flow meter.	[7]
4		Write notes on the following:	
		a) Plethysmograph	[8]
		b) Ventilators	[7]
5	a)	Draw the circuit diagram of DC defibrillator and explain its operation.	[8]
	b)	What are the radio frequency applications for therapeutic use?	[7]
6	a)	Explain the working of audiometers and hearing aids.	[8]
	b)	What are electrophysiological tests? Expalin.	[7]
7	a)	What are the different implantable units? Explain.	[8]
	b)	What are the different physiological parameters adaptable to biotelemetry?	[7]
8	a)	Explain how the isolated power distribution system is used to prevent shock hazards.	[8]
	b)	Write short notes on monitors and recorders.	[7]

Code No: **R41048** **R10** **Set No. 4**

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

BIO-MEDICAL ENGINEERING

(Open Elective)

Time : 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1	a)	Explain the following terms: i) Resting potential ii) Action potential	[8]
	b)	What are the components of man-instrument system?	[7]
2	a)	Give the transduction principle of a transducer.	[8]
	b)	What are the transducers with digital output? Explain.	[7]
3	a)	Describe the working principle of magnetic blood flow meter.	[8]
	b)	What are different methods of direct BP measurement? Explain.	[7]
4		Write notes on the following:	
		a) Spirometry	[7]
		b) Nebulizers	[8]
5	a)	What is fibrillation? Describe the working principle of defibrillators.	[8]
	b)	What are the elements of intensive-care unit? Explain.	[7]
6	a)	What are clinical laboratory instruments? Explain.	[8]
	b)	Describe how eye pressure is measured.	[7]
7	a)	What do you mean by ultrasonic imaging? Expalin.	[8]
	b)	Write notes on MRI.	[7]
8	a)	Describe the working principle of biopotential amplifiers.	[8]
	b)	What are the different types of recorders? Explain.	[7]