Code No: RT32045A **R13** SET - 1

III B. Tech II Semester Regular/Supplementary Examinations, April - 2018

BIO-MEDICAL ENGINEERING

(ECE and EcomE)

Time: 3 hours Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What are the basic objectives of any instrumentation system?	[4M]
	b)	Discuss the electrode theory.	[4M]
	c)	What are the common accessories used in respiratory equipment?	[3M]
	d)	Draw any one ECG lead configuration.	[4M]
	e)	What is the use of Hemodialysis machine?	[4M]
	f)	What is the use of nebulizers and aspirators?	[3M]

PART -B

2	a)	Draw the block diagram of man-instrument system and explain.	[8M]
	b)	What are the difficulties encountered in biomedical signal acquisition and analysis? Explain.	[8M]
3	a)	Discuss about the Transducers with Digital Output	[8M]
	b)	Draw the diagram of floating type skin surface electrode and explain.	[8M]
4	a)	Describe the ECG recorder principles.	[8M]
	b)	Describe the working principle of magnetic blood flow meter.	[8M]
5	a)	Describe the anatomy of vision.	[8M]
	b)	Distinguish between internal and external pacemakers.	[8M]
6	a)	What is ultrasonic imaging? Explain.	[8M]
	b)	Write notes on radio isotope instruments.	[8M]
7	a)	Discuss about Isolated Power Distribution System	[8M]
	b)	Write short notes on different display monitors	[8M]

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Code No: RT32045A **R13** SET - 2

III B. Tech II Semester Regular/Supplementary Examinations, April - 2018

BIO-MEDICAL ENGINEERING

(ECE and EcomE)

Time: 3 hours Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What are the different biomedical transducers?	[3M]
	b)	What is polarization?	[4M]
	c)	Draw the typical electrode placement in EEG measurement.	[3M]
	d)	List the color codes used for ECG electrodes?	[4M]
	e)	What is the difference between internal and external pacemakers?	[4M]
	f)	List the methods of accident prevention.	[4M]

PART -B

2	a)	What are resting and action potentials? Explain.	[8M]
	b)	Illustrate the cross section of a depolarized cell.	[8M]
3	a)	Discuss in detail about Active transducers	[8M]
	b)	Write notes on pH electrode.	[8M]
4	a)	Write notes on lung volumes and capacities.	[8M]
	b)	Describe the mechanism of respiration.	[8M]
5	a)	What are the different patient monitoring equipment? Explain.	[8M]
	b)	Explain how the hospital is organized for patient-care monitoring.	[8M]
6	a)	Explain how telemetry is used for ECG measurements during exercise.	[8M]
	b)	Write notes on MRI.	[8M]
7	a)	Explain the working principle of bio-potential amplifiers.	[8M]
	b)	Explain how the isolated power distribution system is used to prevent shock hazards.	[8M]

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Code No: RT32045A **R13** SET - 3

III B. Tech II Semester Regular/Supplementary Examinations, April - 2018

BIO-MEDICAL ENGINEERING

(ECE and EcomE)

Time: 3 hours Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	List the physiological systems of the body.	[3M]
	b)	Define the piezoelectric effect.	[3M]
	c)	What is the use of stimulators?	[4M]
	d)	What are the different types of ECG recorders?	[4M]
	e)	Define fibrillation.	[4M]
	f)	Define macro-shock.	[4M]

PART -B

2	a)	What are the problems encountered in measuring a living system? Explain.	[8M]
	b)	What are the static characteristics of medical instrument system?	[8M]
3	a)	What are the basic types of biopotential electrodes? Explain.	[8M]
	b)	Explain the basic configuration of reference electrode.	[8M]
4	a)	What are the characteristics of blood flow? Explain.	[8M]
	b)	Describe the ECG recorder principles.	[8M]
5	a)	Distinguish between internal and external pacemakers.	[8M]
	b)	Explain the operation of DC defibrillator circuit.	[8M]
6	a)	What are the ultrasonic applications of therapeutic use?	[8M]
	b)	What is the need for biotelemetry? Explain.	[8M]
7	a)	What are the methods of prevention of shock hazards? Explain.	[8M]
	b)	What are the components of biotelemetry system? Explain.	[8M]

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Code No: RT32045A **R13** SET - 4

III B. Tech II Semester Regular/Supplementary Examinations, April - 2018

BIO-MEDICAL ENGINEERING

(ECE and EcomE)

Time: 3 hours Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	Define the term biometrics.	[3M]
	b)	List different pressure transducers.	[3M]
	c)	What is plethysmography?	[4M]
	d)	What is the use of Einthoven triangle?	[4M]
	e)	What is diathermy?	[4M]
	f)	What is the difference between micro shock and macro shock?	[4M]

PART -B

2	a)	What are the elements of man-instrument system? Explain.	[8M]
	b)	Describe the characteristics of biosignals.	[8M]
3	a)	Write notes on blood gas electrodes.	[8M]
	b)	Explain the term transducer and further explain about Transduction Principles.	[8M]
4	a)	What are the different types of ECG recorders? Explain.	[8M]
	b)	Explain the working principle of ventilators.	[8M]
5	a)	Distinguish between ac and dc defibrillation.	[8M]
	b)	Describe the working principle of tonometer.	[8M]
6	a)	Explain how telemetry is used for emergency patient monitoring.	[8M]
	b)	Explain the principle of ultrasonic measurement.	[8M]
7	a)	What are the physiological effects of electrical current?	[8M]
	b)	What are the methods of prevention of shock hazards? Explain.	[8M]

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