Reg.No. _____

Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 15EI2016 **Semester : V**
Sub. Name : MEDICAL THERAPEUTIC EQUIPMENT **Duration : 3hrs**
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Portray and describe the various blocks of a pacemaker which works on demand and whose pulses are inhibited as long as the natural R waves are present.	CO1	**10**
	b.	Membrane oxygenators provide more effective oxygenation. Justify with a neat diagram.	CO1	**6**
	c.	Mention the use of Refractory period control circuit in a pacemaker.	CO2	**4**
		(OR)		
2.	a.	Descibe the working of Heart-Lung machine with a neat block diagram. Give the significance of settling chamber and Heat exchanger.	CO1	**10**
	b.	What is an implantable pacemaker? Explain the basic requirements of an implantable pacemaker.	CO2	**8**
	c.	Draw the shape of the pacemaker pulses. Mention the pulse to space ratio. The pulses should be negatively going pulses. Justify	CO2	**2**
3.	a.	Why do we require a synchronization function in a defibrillator? Draw the block diagram of the synchronized d.c defibrillator and explain its working.	CO2	**12**
	b.	Ilustrate with a graph the woking of "Synchronised Intermittent Mandatory Ventilation (SIMV).	CO1	**5**
	c.	Estimate the Tidal Volume (VT), of a patient whose respiratory rate is 18cycles/sec and the Minute volume is 4lit/breath.	CO2	**3**
		(OR)		
4.	a.	Discuss in detail the design and operation of Pressure limited Ventilator system.	CO1	**10**
	b.	Suggest a suitable defibrillator for patients who are at a higher risk of ventricular fibrillation. Briefly describe it's working.	CO2	**10**
5.	a.	Discuss in detail the design and operation of Surgical Diathermy Machine.	CO1	**10**
	b.	Draw the type of waveforms generated for Cutting, Coagulation and Blending. Define each of the surgical procedures.	CO2	**7**
	c.	Define Hemostasis Mode of electro surgery.	CO1	**3**
		(OR)		
6.	a.	Enumerate the various types of electrodes used with surgical diathermy? What are the hazards associated with the use of electro surgery units?	CO2	**8**
	b.	Compare and contrast the two types of electrosurgical techniques - Mono-polar and Bi-polar with neat illustrations.	CO1	**7**
	c.	Differentiate the terms: Electrotomy, Coagulation, Fulguration, dessication and Blending with neat diagrams.	CO2	**5**
7.	a.	Describe the working mechanism of Lithotriptor System with a neat schematic of its various components.	CO1	**10**
	b.	Discuss in detail the design and operation of different types of electrodes used in Shortwave Diathermy with neat diagrams.	CO1	**10**
		(OR)		

8.	a.	Analyse the necessity of the three different circuits used in every Ultrasound Therapy Unit. Describe the two different techniques of administering therapeutic ultrasound.	CO1	**10**
	b.	Comment on the specifications of the electronic stimuli used in a bladder stimulator.	CO2	**5**
	c.	Suggest a suitable stimulator for treatment of chronic ventilator insufficiency. Mention the origin of phrenic nerve.	CO2	**5**
		Compulsory:		
9.	a.	Describe the working of CO2 laser. Explain its applications in medical practice. What are the precautions which should be taken while working with the lasers?	CO3	**12**
	b.	Discuss in detail the design and operation of Microwave Diathermy Machine. Draw the different types of applicators used.	CO1	**8**

ALL THE BEST