### THERAPEUTIC EQUIPMENT (SEMESTER - 6)

#### CS/B.Tech(BME)/SEM-6/BME-601/09



1.	Signature of Invigilator			d	2000	YEarnin	, suits	_ <b>e</b>		<u>a</u>
2.	Reg. No. Signature of the Officer-in-Charge									
	Roll No. of the Candidate					<u> </u> 		 	_	

CS/B.Tech(BME)/SEM-6/BME-601/09 ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE - 2009 THERAPEUTIC EQUIPMENT (SEMESTER - 6)

Time: 3 Hours | [Full Marks: 70

#### INSTRUCTIONS TO THE CANDIDATES:

- 1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
- 2. a) In **Group A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.
  - b) For **Groups B** & **C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group B** are Short answer type. Questions of **Group C** are Long answer type. Write on both sides of the paper.
- 3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
- 4. Read the instructions given inside carefully before answering.
- 5. You should not forget to write the corresponding question numbers while answering.
- 6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
- 7. Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.
- 8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
- 9. Rough work, if necessary is to be done in this booklet only and cross it through.

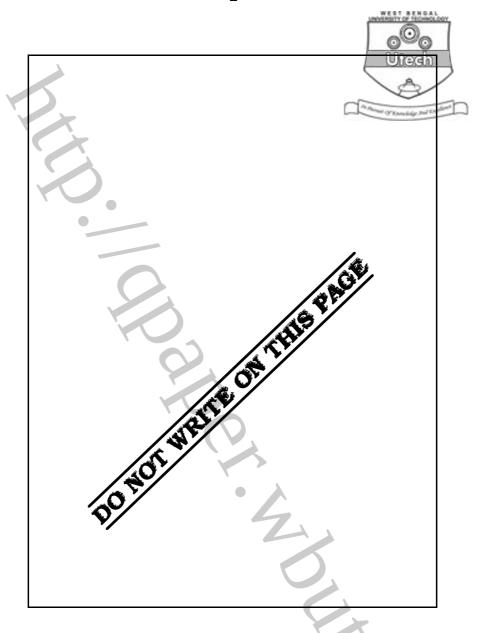
No additional sheets are to be used and no loose paper will be provided

# FOR OFFICE USE / EVALUATION ONLY Marks Obtained Group - A Group - B Group - C Question Number Marks Obtained Obtained

Head-Examiner	Co-Ordinator /	Scrutineer

6622 (03/06)







## THERAPEUTIC EQUIPMENT

SEMESTER - 6

Time: 3 Hours]	[ Full Marks : 70
GROUP – A	
(Multiple Choice Type Questions	)

			GROU	r – A		
			( Multiple Choice	Type Q	uestions)	
1.	Choo	ose th	e correct alternatives for the fol	lowing	:	10 × 1 = 10
	i)	For	which one of the following you r	nust ne	ed a pacemaker?	
		a)	Atrial fibrillation	b)	Ventricular fibrillation	
		c)	Temporary problems of heart	d)	None of these.	
	ii)	For	mono-polar internal pacing elec	trode tl	ne cathode is placed at	
		a)	Heart inside	b)	Heart outside	
		c)	Chest surface	d)	None of these.	
	iii)	How ?	many internodal tracts are the	re to co	onnect the S.A. node with	the A.V. node
		a)	3	b)	4	
		c)	2	d)	1.	
	iv)	The	frequency for short wave diathe	rmy is		
		a)	26·12 MHz	b)	26·14 MHz	
		c)	27·14 MHz	d)	27·12 MHz.	

**6622 ( 03/06 )** 

#### CS/B.Tech(BME)/SEM-6/BME-601/09

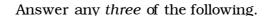
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v)	Whi	Which laser is used in photocoagulation process of retina?							
	a)	Argonb)	Pulse	ed Ruby					
	c)	Nd-YAG	d)	CO 2 Proposition and confident					
vi)	In a	a capacitive type of defibrillator of	lual pu	lse is used to reduce required					
	a)	energy	b)	voltage					
	c)	pulse duration	d)	none of these.					
vii)	То	eliminate the long tail of dischar	ge puls	se of capacitive defibrillator we r	need				
	a)	Silicon Controlled Rectifier	b)	Source for Current & Resistor					
	c)	Silicon Controlled Resistor	d)	Silicon Controlled Reactor.					
viii)	In t	he $n$ -type ventilator the pressure	e create	ed at the surrounding chest sur	face is				
	a)	positive	b)	negative					
	c)	one atmospheric	d)	all of these.					
ix)	In t	he defibrillator the capacitor use	ed for d	lischarge of pulse is					
	a)	polar	b)	non-polar					
	c)	both polar and non-polar	d)	none of these.					
x)	In c	critical care unit which equipmer	nt is no	ot required ?					
	a)	Cardiac monitor	b)	Defibrillator					
	c)	Ventilator	d)	Anaesthesia machine.					



#### 5 **GROUP – B**

#### ( Short Answer Type Questions )





 $3 \times 5 = 15$ 

- 2. Write the process for analysis of a pacing circuit with its algorithm.
- 3. Write the significance of strength duration curve in physiological system.
- 4. Draw the block diagram of an anaesthesia machine and explain in brief.
- 5. Draw and discuss the different kinds of waveform used in a muscle stimulator.
- 6. How can you test an electro-surgery machine?

#### **GROUP - C**

#### (Long Answer Type Questions)

Answer any three of the following.

- $3 \times 15 = 45$
- 7. a) How can you control the pulse width and pulse duration of a pacemaker?
  - b) Draw the circuit diagram with explanation of a dual peak delay line capacitor type defibrillator. Why is it more advantageous than a normal capacitive type defibrillator?
  - c) Draw and discuss the block diagram of an implantable defibrillator.

$$5 + (4 + 2) + 4$$

- 8. a) With schematic diagram, discuss the basic part of a ventilator.
  - b) With schematic diagram, discuss the different electrodes used in a defibrillator.
  - c) Discuss about the basic properties of Laser.

5 + 5 + 5

- 9. a) Briefly discus about the Gas-Laser action.
  - b) With block diagram, discuss about the ultrasonic lithotriptor.
  - c) Why is the Li-Iodide battery preferable for pacemaker than the other power sources? 5+5+5



5 + 5 + 5

- 10. a) Write down the operating principle of ultrasonic lithotripter.

  b) Draw and discuss the mechanism of cardioverter.

  c) Discuss about different types of stimulator.

  11. a) Discuss the working principle of surgical diathermy.
  - b) What do you know about short wave diathermy?
    - c) What are the basic requirements for implantable pacemaker? 5 + 5 + 5
- 12. Write short notes on any *three* of the following:  $3 \times 5$ 
  - a) Baby Incubator
  - b) Application of Laser in surgery
  - c) Pacemaker Nomenclature
  - d) Neonatal ventilator
  - e) Microwave diathermy.

**END**