





ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE - 2009

THERAPEUTIC EQUIPMENT

SEMESTER - 6



Time : 3 Hours]

[Full Marks : 70

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10
- i) For which one of the following you must need a pacemaker ?
- a) Atrial fibrillation b) Ventricular fibrillation
- c) Temporary problems of heart d) None of these.
- ii) For mono-polar internal pacing electrode the cathode is placed at
- a) Heart inside b) Heart outside
- c) Chest surface d) None of these.
- iii) How many internodal tracts are there to connect the S.A. node with the A.V. node ?
- a) 3 b) 4
- c) 2 d) 1.
- iv) The frequency for short wave diathermy is
- a) 26·12 MHz b) 26·14 MHz
- c) 27·14 MHz d) 27·12 MHz.



v) Which laser is used in photocoagulation process of retina ?

- a) Argon Pulsed Ruby
- b) Nd-YAG CO₂
- c) d)



vi) In a capacitive type of defibrillator dual pulse is used to reduce required

- a) energy b) voltage
- c) pulse duration d) none of these.

vii) To eliminate the long tail of discharge pulse of capacitive defibrillator we need

- a) Silicon Controlled Rectifier b) Source for Current & Resistor
- c) Silicon Controlled Resistor d) Silicon Controlled Reactor.

viii) In the *n*-type ventilator the pressure created at the surrounding chest surface is

- a) positive b) negative
- c) one atmospheric d) all of these.

ix) In the defibrillator the capacitor used for discharge of pulse is

- a) polar b) non-polar
- c) both polar and non-polar d) none of these.

x) In critical care unit which equipment is not required ?

- a) Cardiac monitor b) Defibrillator
- c) Ventilator d) Anaesthesia machine.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.



3 × 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 × 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 discuss about the Gas-Laser action.
 - b) With block diagram, discuss about the ultrasonic lithotripter.
 - c) Why is the Li-Iodide battery preferable for pacemaker than the other power sources ?
- 5 + 5 + 5



10. a) Write down the operating principle of ultrasonic lithotripter. 5 + 5 + 5
- b) Draw and discuss the mechanism of cardioverter.
- c) Discuss about different types of stimulator. 5 + 5 + 5
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 × 5
- a) Baby Incubator
- b) Application of Laser in surgery
- c) Pacemaker Nomenclature
- d) Neonatal ventilator
- e) Microwave diathermy.

END