

UNIT –III ASSIST DEVICES**1 Give two important factors that demand internal pace maker's usage. [A/M2005]**

The two important factors that demand internal pace maker's usage are

- (i) Type and nature of the electrode used
- (ii) Nature of the cardiac problems.
- (iii) Mode of operation of the pacemaker system.

2 Classify Pacing modes[N/D 2007]

Based on the modes of operation of the pacemakers, they can be classified into five types. They are:

- i) Ventricular asynchronous pacemaker(fixed rate pacemaker)
- ii) Ventricular synchronous pacemaker
- iii) Ventri defibrillator inhibited pacemaker (demand pacemaker)
- iv) Atrial synchronous pacemaker
- v) Atrial sequential ventricular inhibited pacemaker

3 Distinguish between Internal and External pacemakers. [M/J 2007]

S.No	Internal Pacemakers	External Pacemakers
1.	The pacemaker is a surgically implanted when if the skin near chest or abdomen, with its output's leads is connected directly to the heart muscle.	The pacemaker is placed outside the the body. It may be in the form of watch or in the pocket, from that one terminal will go in the heart through the vein
2.	It requires open chest minor surgery to place the pacemaker	It does not require open chest surgery
3.	It is used for temporary heart regularity	It is used for permanent heart regularity
4.	There is no safety for the pacemaker, particularly in case of child carrying the pacemaker	There is 100% safety for circuit from the external disturbances.

4 What are the batteries used for implantable pacemaker?[N/D 2012]

The batteries used for implantable pacemakers are (i)Mercury cell (ii) Lithium cells (iii)Nuclear

5 What types of electrodes are used in a defibrillator? [A/M 2005]

The electrodes used in a defibrillator are

- (i)Internal electrodes - Spoon shaped
- (ii)External electrodes -Paddle shapped

6 What are the three types of exchangers used in HEMODIALYSIS system? [M/J 2005]

The three types of exchangers used in HEMODIALYSIS systems are i) Parallel Flow dialyzer

(ii) Coil Hemodialyser

(iii) Hollow Fiber modialyser

7 What is meant by fibrillation?[M/J 2009][A/M 2010]

The condition at which the necessary synchronizing action of the heart is lost is known as fibrillation. During fibrillation the normal rhythmic contractions of either atria or the ventricles are replaced by rapid irregular twitching of the muscular wall.

8 Calculate the energy stored in 16 μ F capacitor of a DC defibrillator that is charged to a potential of 5000 Vdc.

Given Data:

$$C = 16\mu\text{F}$$

$$V = 5000$$

$$E = (1/2) CV^2$$

$$= (1/2) \times 16 \times 10^{-6} \times 25 \times 10^6$$

$$= 200 \text{ Joules}$$

9. What is heart lung machine?

The machine can provide extra corporal circulation to the patient is known as heart lung machine.

10. What is Dialysis?

Dialysis is a process by which the waste products in the blood are removed and restoration of normal pH value of the blood is obtained.

11. What is the use of proportioning pump?

It is used to mix the pure water with dialysate. Usual ratio of water and concentrate is 34:1.

12. Differentiate two types of dialysis.

S.No	Extra Corporeal Dialysis	Intra Corporeal Dialysis
1.	Blood is purified by an artificial kidney machine. In which blood is taken out from the body and waste products diffuse through a semi permeable membrane which is continuously rinsed by a dialysing solution	The peritoneal cavity in our body is used as semi permeable membrane and by passing the dialysate into it, waste products are removed from the blood by diffusion
2.	More effective for separating the waste products	Less effective
3.	Complex and risk, because blood is taken out from the body	Simple and risk free
4.	Dialysing time is about 3 to 6 hours	Dialysing time is about 9 to 12 hours

13. Write the principle of hemodialysis.

Blood is purified by an artificial kidney machine in which blood is taken out from the body and waste products diffuse through a semi-permeable membrane which is continuously rinsed by a dialysing solution.

14. Distinguish a defibrillator from a pacemaker.

Defibrillator	pacemaker
It is an electronic device that creates a sustained myocardial depolarization of a patient heart in order to stop the fibrillation	It is an device capable of generating artificial pacing impulses and delivering them to the heart.

15. what are pacemakers?

Pacemakers means electrical pulse generator for starting and/or maintaining the normal heart beat. The output of pacemaker is applied either externally to the chest or internally to the heart.

PART B**1. Explain the different types of pacemakers?, Explain with relevant diagrams, the principles of an demand pacemaker. (A/M 2010)**

- Definition of pacemakers
- Internal Pacemakers
- External pacemakers.
- Primary and secondary pacemakers
- Artificial pacemakers

2. Explain the different types of pacing modes?(A/M 2011)

- Fixed rate pacemaker
- Standby pacemaker
- Demand pacemaker
- Atrial synchronous pacemaker
- Atrial synchronous ventricular inhibited pacemaker.

3. Explain D.C defibrillator with neat diagram. (A/M 2011), (N/D 2011)

- Introduction
- Fibrillation
- Atrial and ventricular fibrillation
- Electrodes used in defibrillators
- How to treat fibrillation problems
- Circuit diagram of D.C defibrillator
- Explanation of block diagram

4. Draw and explain heart lung machine model. (N/D 2006)

- Heart-lung machine model block diagram
- Working
- Heat exchanger
- Filter block
- Blood pumps(Pulsatile and Nonpulsatile pumps)

- h) Oxygenators
- i) Types(Membrane, Liquid-liquid, Film Oxygenators)

5. Explain the two types of Dialysis.(N/D 2006)

- a) Functions of kidney
- b) Artificial kidney
- c) Dialysis
- d) Heamo dialysis
- e) Peritonal dialysis