

# 17672

15116

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) **Attempt any THREE of the following:** **12**
- (i) List any four technical specifications of pacemaker.
- (ii) Draw a circuit diagram of dc defibrillator and also state the need of defibrillator.
- (iii) State the troubleshooting procedural steps of ventilator.
- (iv) Draw a block diagram of bedside monitor and state its two advantages.
- b) **Attempt any ONE of the following:** **6**
- (i) State the difference between ac and dc defibrillator. Draw a simple circuit diagram for charging of dc defibrillator.
- (ii) State the types of dialyzers. Draw a block diagram and explain the working principle of haemodialyzer machine.

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**2. Attempt any FOUR of the following:**

- a) State the types of pacemakers and explain the difference between internal and external pacemakers. (any two points of difference)
- b) List any four technical specifications of the baby incubator.
- c) Explain the different modes of ventilator.
- d) Explain the concept of Infusion pump and Balloon pump.
- e) Draw a block diagram of heart lung bypass machine and explain its working.
- f) State the importance of:
  - (i) Endocardial
  - (ii) Myocardial
  - (iii) Unipolar and bipolar leads.

**3. Attempt any FOUR of the following:****16**

- a) Draw a block diagram of synchronous pacemaker and state the function of each block.
- b) Draw a block diagram of cardioverter and state the function of each block.
- c) State the need of:
  - (i) Nebulizer
  - (ii) Suction apparatus
  - (iii) Anaesthesia apparatus
  - (iv) Respirator
- d) State the condition in which central monitor is used. Describe it with neat diagram.
- e) Discuss the need of Artificial Kidney.

4. a) **Attempt any THREE of the following:** **12**
- (i) Give application area of the following electrodes
    - (1) Endocardial leads
    - (2) Myocardial leads
    - (3) Unipolar leads
    - (4) Bipolar leads.
  - (ii) State the concept of respiration and apnoea.
  - (iii) State the causes of the following faults of bedside monitor.
    - (1) ECG wave not displayed properly
    - (2) Pulse not displayed
    - (3) Temperature varies frequently
    - (4) Blood pressure not displayed.
  - (iv) Draw a labelled block diagram of Nebulizer and state the function of each block.
- b) **Attempt any ONE of the following:** **6**
- (i) State the troubleshooting procedural steps of defibrillator (any six points)
  - (ii) State the need of:
    - (1) Oxygenator
    - (2) Artificial heart pump
    - (3) Heat exchangerand draw a block diagram of Haemodialysis machine.

- 5. Attempt any FOUR of the following:** **16**
- a) State and explain the need of cardiac pacemaker.
  - b) Draw a block diagram of microprocessor based ventilator.
  - c) Explain the procedure carried out for control of drug delivery system.
  - d) Explain the Biphasic and Monophasic defibrillator.
  - e) Discuss how one can identify the need of heart-lung bypass machine for the patient.
  - f) List the technical specifications of Nebulizer.
- 6. Attempt any FOUR of the following:** **16**
- a) State the maintenance steps carried out for ventilator.
  - b) State the difference between fixed and demand type pacemaker.
  - c) Draw a block diagram of programmable microprocessor based infusion pump.
  - d) Draw a circuit diagram of temperature control and indicator used in baby incubator. Explain its operation.
  - e) State the meaning of Cardiac Arrhythmia. State the significance of Tachycardia and Bradycardia.
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