

**B. Tech. Sem - VIII (Electronics) (2014 COURSE) (CBCS) :**  
**WINTER - 2018**  
**SUBJECT: BIOMEDICAL ENGINEERING**

Day: Wednesday  
Date: 14/11/2018

Time: 02.30 PM TO 05.30 PM  
Max Marks. 60

**W-2018-2637**

**N.B. :**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data, if necessary.

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**Q.1 a)** Draw and explain structure of cell. What are the functions of mitochondria? **(05)**  
**b)** What the stages of action potential? Describe it with neat diagram. **(05)**

**OR**

**Q.1** Define ECG. List the characteristics of normal ECG and draw the standard ECG signal. Discuss the relationship of atrial and ventricular contraction to the waves of electrocardiogram. **(10)**

**Q.2** Classify heart sounds and heart murmurs with frequency range. What is the use of microphone in phonocardiography? Mention the types of microphones with its principle. **(10)**

**OR**

**Q.2** Elaborate with diagrammatic representation, the procedure used to monitor blood pressure using sphygmomanometer. What are the other ways of monitoring B.P. **(10)**

**Q.3** What is the importance of ventilator? Why is called life-saving device? Explain schematic blocks of ventilator in detail. **(10)**

**OR**

**Q.3** What is natural pacemaker? Explain the importance of on-demand type of pacemaker. Also listed other types of pacemakers and their functions. **(10)**

**Q.4 a)** Are the equipments same in ICU & NICU? State the various instruments in both. **(05)**

**b)** Where the phototherapy unit is used? State the safety precaution need to be taken by user in hospital. **(05)**

**OR**

**Q.4** Draw the complete connections diagram for labeled Central Monitoring System in ICU and explain the parameters need to be monitored. **(10)**

**Q.5** In which department blood gas monitor is used. Explain block diagrams. **(10)**

**OR**

**Q.5 a)** State the advantages of auto analyser over other analytical instruments. **(05)**

**b)** Explain the function of spectrophotometer with neat diagram. **(05)**

**Q.6 a)** Distinguish between value based and microwaves diathermy machine. **(05)**

**b)** Draw the flow diagram of electrical current affects on human body in various amperage. **(05)**

**OR**

**Q.6** Explain all types of electrodes used in ESU machine with its uses while operating in operation theatre. **(10)**

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