

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018**

**Course Code: EC365**

**Course Name: BIOMEDICAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks*

- |  | Marks |
|--|-------|
| 1 a) What is bio-electric potential? Explain with necessary illustration.                | (6)   |
| b) With necessary illustration, explain any two basic ECG lead configurations.           | (9)   |
| 2 a) Explain the construction of any two of them with necessary illustration:            | (8)   |
| i) Microelectrodes                      ii) Skin surface electrodes                      |       |
| iii) Needle electrodes   |       |
| b) What is an isolation amplifier? What is its significance? Illustrate any one methods. | (7)   |
| 3 a) Explain electro conduction system of the heart with illustration.                   | (8)   |
| b) Explain the working of ultra sonic blood flow meter, with illustration.               | (7)   |

**PART B**

*Answer any two full questions, each carries 15 marks*

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|---|-----|
| 4 a) What is plethysmograph? Explain full body plethysmograph with illustration.  | (7) |
| b) What is dialysis? Explain any one type of dialyzer with necessary illustration.  | (8) |
| 5 a) With necessary illustration, explain the placement of electrodes for recording EEG signal.                                   | (7) |
| b) Explain the following with illustration:   | (8) |
| i) Flame photometer                      ii) Spectrophotometer  |     |
| 6 a) What is a pacemaker? What is its significance? Explain the working with illustration of an atrio-synchronous pacemaker.      | (7) |
| b) What is diathermy? With a neat block schematic diagram, explain the working and applications of surgical diathermy equipments. | (8) |

**PART C**

*Answer any two full questions, each carries 20 marks*

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|---|-----|
| 7 a) Draw the block schematic of CT scan system and explain.  | (7) |
| b) Explain NMR with necessary illustration.   | (5) |
| c) Illustrate and explain the components of bio telemetry system, also write the application of telemetry in medicine.        | (8) |
| 8 a) Explain the principle of image reconstruction in CT scan.  | (5) |
| b) Explain with illustration the basic pulse echo system.   | (6) |
| c) Compare and contrast, A-Scan, B-Scan and M-Scan, with illustration.  | (9) |
| 9 a) Explain the sub-systems of NMR imaging system with necessary illustration.   | (5) |
| b) Explain how electric shock is hazardous to human body. What changes it will bring in the body, when the current increases. | (7) |
| c) With the help of necessary sketches, explain single channel telemetry system for ECG and temperature monitoring.           | (8) |

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