

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 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 the need for a biomedical instrument? With a neat block diagram explain the significance of each basic component in it. (8)
- b) Compare direct and indirect blood pressure measurement. What is Korotkoff sound in blood pressure measurement? (7)
- 2 a) A patient was subjected to non-invasive method of blood pressure measurement. Which is the method used? What is the principle behind the method and how is it done? (10)
- b) With a neat diagram explain carrier amplifier. (5)
- 3 a) What is ECG? With a neat sketch explain the various segments of an ECG waveform. (8)
- b) How does depolarisation and repolarisation occur in a cell? (7)

**PART B**

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

- 4 a) A person was found to have variation in the oxygen content in his blood. Which method would have helped him determine this? With a neat diagram explain any one type of this method. (8)
- b) Explain any one type of a dialyzer with a neat diagram. (7)
- 5 a) Define the term nerve conduction velocity. (2)
- b) Draw a figure showing how the electrodes are placed in a 10-20 system of placement of electrodes to perform the EEG analysis. (5)
- c) What is a cardiac defibrillator? With a neat diagram explain DC defibrillator. (8)
- 6 a) Explain with a neat diagram the respiratory system of a human body. (7)
- b) What is surgical diathermy? Explain the various electro surgery techniques available. (8)

**PART C**

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

- 7 a) List any four properties of X-ray. With a neat block diagram explain the working of a X-ray machine. (10)
- b) What is the principle behind NMR imaging? What are the advantages of NMR imaging? (10)
- 8 a) Explain about image reconstruction in CT scan. (7)
- b) Compare CT scan and X-ray imaging technique. (4)
- c) With a neat block diagram explain single channel ECG telemetry transmitter. (9)
- 9 a) With a neat block diagram explain basic pulse echo system. (10)
- b) What are the requirements of a real time ultrasonic imaging system? (3)
- c) What are the precautions taken to minimize electric shock hazards? (7)

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