

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY  
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019**

**Course Code: AE 403**

**Course Name: BIOMEDICAL INSTRUMENTATION**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

- 1      “Phonocardiograph is used to measure the heart sounds”. Explain in detail about (5)  
phonocardiograph and its recording set up.
- 2      Briefly explain resting potential and action potential with the help of a neat (5)  
diagram.
- 3      Draw the circuit diagram of a pH meter and explain its working details. (5)
- 4      What is a hearing aid? How do hearing aids work? (5)
- 5      List and explain some applications of laser in medicine. (5)
- 6      Explain the problems related to implant telemetry. (5)
- 7      What is the principle of endoscopy? (5)
- 8      Write a short note on colorimeter and photometers. (5)

**PART B**

*Answer any three questions, each carries 10 marks.*

- 9      What is an electrode? Explain different types of surface electrodes. (10)
- 10     What are the requirements of a patient monitoring display? Explain one (10)  
monitoring display system.
- 11     a) “Heart, Blood vessels and blood are three major components in a cardiovascular (5)  
system”. Comment on this and explain its working with the help of a neat  
diagram.  
b) With a neat block diagram, explain the working of an ECG machine. (5)
- 12     a) Name the technique used to record the electrical activity produced by skeletal (6)  
muscles and describe the recording setup used in this technique.  
b) Elucidate on evoked potential response. (4)
- 13     a) “Respiratory system supplies the blood with oxygen and removes carbon dioxide (6)  
waste that cell produce”. Explain in detail by using the structure of respiratory  
system

- b) Explain in detail any one method used for respiratory rate measurement. (4)

**PART C**

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

- 14 a) What are the applications of X-rays in medical field? (9)  
b) Explain the basic principle of X-rays on the basis detailed diagram. (6)
- 15 a) With a neat diagram explain about spectrophotometer. (6)  
b) What do you meant by photometer? Explain about clinical flame photometer. (9)
- 16 a) Draw a block diagram of MRI system and explain the image reconstruction using it. (10)  
b) Justify the following statement: MRI is superior than other imaging systems. (5)
- 17 a) What is blood cell counting? Mention any two methods used for blood cell counting. (5)  
b) Draw and explain any two methods used for blood cell counting. (10)