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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree (R,S) Examination May 2024 (2019 Scheme)



Course Code: EET312

Course Name: BIOMEDICAL INSTRUMENTATION

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|--|-----|
| 1 | What are microelectrodes? List any two applications. | (3) |
| 2 | What is Sodium-Potassium pump? | (3) |
| 3 | Explain the significance of Einthoven triangle? | (3) |
| 4 | Draw typical ECG waveform. | (3) |
| 5 | What is EMG? | (3) |
| 6 | What is Pneumograph? | (3) |
| 7 | Explain the principle of operation of MRI Scanning. | (3) |
| 8 | Name the non-invasive technique used to treat kidney stone. Explain the treatment procedure. | (3) |
| 9 | Explain the functions of different cells in blood. | (3) |
| 10 | Define Let-go current range? | (3) |

PART B

Answer one full question from each module, each carries 14 marks.

Module I

- | | | |
|----|--|------|
| 11 | a) Explain the generation of resting potential, action potential and the propagation of action potential with the action potential waveform. | (10) |
| | b) Explain the working of any one transducer for measuring temperature | (4) |

OR

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|----|---|------|
| 12 | a) Explain with neat diagram the working of heart and cardiovascular system | (10) |
| | b) Explain different heart valves? | (4) |

Module II

- | | | |
|----|---|------|
| 13 | a) Explain in detail the <i>Korotkoff method</i> for measuring Blood Pressure. Also define systolic & diastolic pressure. | (10) |
| | b) Explain the working of electromagnetic blood flow meter | (4) |

OR

- 14 a) Explain different leads used in ECG measurement. (10)
b) What is *Plethysmography*? Name *any two* Plethysmographs. (4)

Module III

- 15 a) What is the purpose of measurement of nerve conduction velocity? How is it measured? (7)
b) Draw and explain different *EEG waveforms* and state its *frequency* (7)

OR

- 16 With neat diagram explain different *respiratory* parameters and explain *any one* method to measure these parameters. (14)

Module IV

- 17 a) With neat diagram explain the working of X-ray machine. (10)
b) Which part of haemodialysis machine is called artificial kidney? Also explain its structure. (4)

OR

- 18 a) What is fibrillation? Explain different types of defibrillators. (10)
b) Distinguish between internal & external pacemaker. (4)

Module V

- 19 a) With neat block diagram explain the working of Heart-Lung machine. (10)
b) Explain the working of Spectrophotometer. (4)

OR

- 20 a) Explain the working principle of an infant incubator with block diagram? (7)
b) With an example explain the working of tele-medicine system (7)
