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| **Scheme of Valuation/Answer Key**  (Scheme of evaluation (marks in brackets) and answers of problems/key) | | | | | |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  FIFTH SEMESTER B.TECH DEGREE EXAMINATION, JULY 2019 | | | | | |
| **Course Code: EC365** | | | | | |
| **Course Name: BIOMEDICAL ENGINEERING** | | | | | |
| Max. Marks: 100 | | |  | Duration: 3 Hours | |
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| **PART A** | | | | | |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | | | Marks |
| 1 | a) | Explain about electrode-electrolyte interface and the electrical activity associated with one contraction in a muscle.  Electrode Electrolyte interface  Graph with explanation | | | (5)  (5) |
|  | b) | Explain direct blood pressure measurement.  Diagram-3 marks  Explanation-2 marks | | | (3)  (2) |
| 2 | a) | What is a microelectrode ?Explain any two  Diagram-3 marks  Explanation of two types- | | | (3)  3 marks each |
|  | b) | Explain ultrasonic blood flow meters with neat diagram  Diagram  Explanation | | | (2)  (3) |
| 3 | a) | With suitable diagram explain electro conduction system of heart.  Diagram  Explanation | | | (5)  (5) |
|  | b) | Draw the unipolar lead systems .  Diagrams  Explanation | | | (2.5)  (2.5) |
|  | | | | | |
| 4 | a) | Explain 10-20 electrode system with suitable diagram .  Diagrams  Explanation | | | (5)  (5) |
|  | b) | Explain about spectrophotometer .  Diagrams  Explanation | | | (2.5)  (2.5) |
| 5 | a) | What are different respiratory parameters ? Explain  Minimum 5 parameters-  **Equations** | | | (7)  1 mark each  (2) |
|  | b) | What is meant by nerve conduction velocity. What is its significance  Definition  Diagram of Neuron | | | (2)  (1) |
|  | c) | Explain ventilator parameters?  5 parameter- | | | 1mark each |
| 6 | a) | What is the difference between haemodialysis and peritoneal dialysis  Diagrams  Any 5 differences | | | (5)  1mark each |
|  | b) | Explain about ventricular defibrillation  Diagrams  Explanation | | | (2)  (3) |
|  | | | | | |
|  | | | | | |
| 7 | a) | How ultrasonic wave propagates throughtissues?  Diagrams-3 marks  Equations-2 marks  Explanation-3 marks | | | (3)  (2)  (2) |
|  | b) | Explain X-Ray imaging  Principle-3 marks  Diagrams-3 marks  Explanation-2 marks | | | (3)  (3)  (2) |
|  | c) | Explain basic approaches to protection against shock?  Four approaches | | | 1 mark each |
| 8 | a) | Explain about micro shock hazards  Types -3 marks  Diagrams and graph-3 marks  Causes-2 marks | | | (3)  (3)  (2) |
|  | b) | Draw the diagram of Single channel telemetry and explain  Block diagram  Explanation of each block | | | (4)  (4) |
|  | c) | What is real time ultrasonic imaging ?  Principle-2marks  Equations-2 marks | | | (2)  (2) |
| 9 | a) | Explain the biological effects of NMR imaging  Principle of NMR-3 marks  Effects-4 marks | | | (3)  (4) |
|  | b) | What is basic pulse echo system.  Principle-3 marks  Diagrams-2 marks | | | (3)  (2) |
|  | c) | What are macroshock hazards  Types  Diagrams and graph  Causes | | | (3)  (3)  (2) |
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