**14EI702**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular / Supplementary) DEGREE EXAMINATION** | | | |
| **January, 2021** | **Electronics & Instrumentation Engineering** | | |
| **Seventh Semester** | **Biomedical Instrumentation** | | |
| **Time:** Three Hours | | **Maximum :** 60 Marks | |
| *Answer ALL Questions from PART-A.* | | | (1X12 = 12 Marks) |
| *Answer* ***ANY FOUR*** *questions from PART-B.* | | | (4X12=48 Marks) |
| **Part - A** | | | |

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| 1 | Answer all questions | | (1X12=12 Marks) | |
|  | a) | Draw a typical ECG waveform and Synchronize them | |  |
|  | b) | What is meant by an in vitro measurement? | |  |
|  | c) | What is the difference between active transducer and passive transducer | |  |
|  | d) | What are the advantages of floating type skin surface electrode | |  |
|  | e) | What is electrode potential | |  |
|  | f) | When to use Microelectrodes | |  |
|  | g) | What are the various types of blood pressure measurement | |  |
|  | h) | List the methods available to detect and analyse heart sounds | |  |
|  | i) | What is the use of Plethysmograph | |  |
|  | j) | List the different methods of blood cell counters | |  |
|  | k) | What is the use of Pacemakers | |  |
|  | l) | Write the applications of MR Imaging | |  |
| **Part - B** | | | | |
| 2 | a) | Write a brief note on Man-Instrument System | | 6M |
|  | b) | Explain the generation of action potential with neat diagram | | 6M |
|  | | | | |
| 3 | a) | Write a short note on physiology of cardiovascular system | | 6M |
|  | b) | Write a detailed note on bio electric potentials | | 6M |
|  | | | | |
| 4 | a) | Discuss various types of Needle electrodes used in biomedical instrumentation | | 6M |
|  | b) | Write a brief note on different types of ECG recorders | | 6M |
|  | | | | |
| 5 | a) | Write a short note on Electro myographic measurements | | 6M |
|  | b) | Write a brief note on various types of ECG lead configurations | | 6M |
|  | | | | |
| 6 | a) | With a neat sketch explain the blood pressure measurement using Electrosphygmomano meter | | 6M |
|  | b) | Explain in detail about measurement of cardiac output using Fick’s method | | 6M |
|  | | | | |
| 7 | a) | Write a short note on measurement of heart sounds | | 6M |
|  | b) | Explain the blood flow measurement by Thermal Convection method | | 6M |
|  | | | | |
| 8 | a) | With a neat sketch explain the operation of Internal Pacemaker | | 6M |
|  | b) | Explain the measurement of blood PO2 and PCO2 | | 6M |
|  | | | | |
| 9 | a) | Write a short note on Blood Gas Electrodes | | 6M |
|  | b) | Explain the building blocks of Magnetic Resonance Imaging system | | 6M |

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