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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec– 2017**

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| **Code :** | **15EI2032** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BIOELECTRIC PHENOMENA** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Outline the features of sodium-potassium pump. | CO1 | 4 |
| b. | Write the equation for calculation of diffusion potential when the membrane is permeable to several different ions. | CO1 | 4 |
| c. | Explain in detail about the physical structure of the cell and its functions. | CO1 | 12 |
| (OR) | | | | |
| 2. | a. | Summarize the principle of transport of substances through cellular membrane. | CO1 | 10 |
| b. | Describe the various characteristic features of cardiac muscle and their action potential. | CO2 | 10 |
|  |  |  |  |  |
| 3. | a. | Recognize the various components involved for an ECG signal recording. | CO3 | 12 |
|  | b. | Prioritize the steps for an electrical conduction of human heart. | CO2 | 8 |
| (OR) | | | | |
| 4. |  | List the various causes of cardiac arrhythmia and explain the features of different arrhythmias. | CO2 | 20 |
|  |  |  |  |  |
| 5. |  | Design a system through block diagram for recording human brain activity and differentiate their wave patterns. | CO3 | 20 |
| (OR) | | | | |
| 6. | a. | Highlight the features of electroneurogram for measurement of bio potentials. | CO3 | 10 |
|  | b. | Signal conditioning unit is an essential unit for recording bio signals. Justify your answer with an example. | CO3 | 10 |
|  |  |  |  |  |
| 7. | a. | Write short notes on electrical activity of Gastrointestinal Smooth Muscle. | CO1 | 10 |
|  | b. | Point out the importance of digestion and absorption in the Gastrointestinal Tract. | CO1 | 10 |
| (OR) | | | | |
| 8. | a. | Compare and contrast the features of  i. Electroretinogram ii. Electroocculogram | CO3 | 16 |
| b. | Identify and sketch the functional blocks involved for recording muscle activity. | CO3 | 4 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Draw the diagram for electrode tissue interface for surface electrodes with electrode jelly and highlight the features of metal electrolyte interface. | CO3 | 14 |
|  | b. | Write short notes on polarization phenomenon as applicable to bio electric electrodes. | CO3 | 6 |

ALL THE BEST