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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **16EC3001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BIOLOGICAL EFFECTS OF MICROWAVES** | **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. | Discuss in detail about Ionizing radiations. | CO1 | 15 |
| b. | Label different frequency ranges in EM spectrum. | CO1 | 05 |
| **(OR)** | | | | |
| 2. | a. | Demonstrate the principle of Terrestrial radiation. | CO1 | 12 |
| b. | Interpret the characteristics of microwave. | CO1 | 08 |
|  |  |  |  |  |
| 3. | a. | Write the different types of microwave generators. Explain the construction and working of reflex klystron. | CO1 | 10 |
| b. | Describe the principle of Cells and cell membrane. Also explain the effects of radiation on cells. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Appraise the principle of Magnetron with relevant structure. | CO1 | 10 |
| b. | Elaborate the effects of microwave radiation biological tissues. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Recommend the standard value of Specific Absorption rate (SAR). Discuss how radiated power is absorbed by the human body with the help of validation test using flat phantom. | CO2 | 10 |
| b | Outline the radiation effects on eye and draw the internal structure. | CO2 | 10 |
| **(OR)** | | | | |
| 6. | a. | Examine the effect of Cancer, when human health status is affected by occupational exposure. | CO2 | 10 |
| b. | Discuss about neurophysiologic stress when the human body is exposed to microwave radiation. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | Appraise the radiation effects on living matter. | CO1 | 10 |
| b. | Elaborate the functions of cardiovascular regulation system and discuss its effects on radiation. | CO2 | 10 |
| **(OR)** | | | | |
| 8. | a. | Discuss the microwave radiation effects on skin. | CO2 | 10 |
| b. | Build the Biopsychosocial model for cognitive functioning. | CO2 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Summarize the following:   1. Control and prevention of health hazards 2. Safe exposure limits | CO3 | 20 |