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



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

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| **Code :** | **15EI2036** | **Duration :** | **3hrs** |
| **Sub. Name :** | **RADIATION AND NUCLEAR MEDICINE** | **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. | Explain the different types of modern x-ray tubes and its application. | CO1 | 10 |
| b. | Discuss on the Bremsstralung spectrum in the production of X-rays. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Explain the characteristic spectrum in the production of X-Rays. | CO1 | 10 |
| b. | Elaborate on the construction and working of the X-ray tube with a neat diagram. | CO1 | 10 |
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| 3. | a. | Explain the working of a CT scanner in detail. | CO1 | 12 |
| b. | Describe the role of a collimator in a X-ray machine and explain its types. | CO1 | 8 |
| **(OR)** | | | | |
| 4. | a. | Examine the importance of charge coupled device detector in digital radiography. | CO1 | 10 |
| b. | Explain the construction and working operation of image intensifier with necessary diagrams. | CO1 | 10 |
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| 5. | a. | Discuss on the principle and working of ionization chamber and list out its advantages & disadvantages. | CO2 | 10 |
| b. | Illustrate the direct and indirect effects of radiation with pictorial representation. | CO2 | 10 |
| **(OR)** | | | | |
| 6. | a. | Show the working of the Gamma camera and its components with suitable diagrams. | CO2 | 10 |
| b. | Draw the block diagram and explain the system components, working and advantages of PET scanning system. | CO2 | 10 |
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| 7. | a. | Explain the components and working of photomultiplier tube in the scintillation detector with a suitable diagram. | CO2 | 10 |
| b. | Determine the energy of gamma radiation using Pulse Height Analyser. | CO2 | 10 |
| **(OR)** | | | | |
| 8. | a. | Explain the hazard caused due to Ingested radioactivity. | CO3 | 10 |
| b. | Discuss the construction and operation of Geiger Muller Tubes. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the procedure adopted in Brachy Therapy for the treatment of cancer. | CO3 | 12 |
| b. | Elaborate the methodologies involved in treatment planning and dosage in radiotherapy. | CO3 | 8 |