B.Sc. IN MEDICAL IMAGING TECHNOLOGY (BMIT)

Term-End Examination

December, 2016

00243

BAHI-031 : BASICS OF RADIOLOGICAL PHYSICS

Time : 3 hours   *Maximum Marks : 70*

Note : Attempt any five questions from Part A. Part B consists of one question which is compulsory.

PART A

Answer any five questions. Each question carries 8 marks.

1. How are X-rays produced and what are the important properties of X-rays ?   *4+4=8*

2. Describe in detail about the three important methods of interaction of X-rays with matter.   *8*

3. Why is rectification required in an X-ray circuit ? Explain the functioning of full wave rectifier circuit with solid state diodes.   *3+5=8*

4. What is meant by radioactivity ? What are the important properties of the particles and radiation emitted during radioactivity process ? Briefly write about the exponential radioactive decay.   *4+4=8*

5. What is meant by maximum permissible dose ? Mention the recommended dose limits for a radiation worker. Define stochastic and non-stochastic effect with examples. *2+3+3=8*

6. What are the transformer losses and how are they minimised in the circuits ? *3+5=8*

7. Define exposure and absorbed dose and mention their units. Briefly write about the working of an ionization chamber. *2+2+4=8*

8. Describe in detail about the various factors affecting the quality and intensity of X-rays. *8*

PART B

9. Write short notes on any *five* of the following. Each note carries 6 marks. *5×6=30*

   (a) Characteristic X-rays

   (b) Cooling in X-ray Tube

   (c) Transformer

   (d) Beta Decay

   (e) Self and Mutual Induction

   (f) Shielding Materials

   (g) Thermoluminescent Badge

   (h) Radioisotopes in Medicine

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