

MANIPAL UNIVERSITY**FIRST YEAR B.Sc. M.I.T. DEGREE EXAMINATION – AUGUST 2007****SUBJECT: RADIATION PHYSICS**

Thursday, August 30, 2007

Time: 3 Hrs.

Max. Marks: 80

Answer any FIVE of the following.

- 1A. List the properties of X-rays.
1B. Explain in detail interactions of electrons with the target. (8+8 = 16 marks)
2. Explain the following types of detectors with a necessary diagram
2A. Ionization chamber
2B. Thimble chamber
2C. Condenser chamber
2D. Scintillation detector (3+3+4+6 = 16 marks)
- 3A. Describe an autotransformer with a schematic diagram.
3B. What is transformer? Write down the two laws of transformers.
3C. Discuss the efficiency of transformer and transformer rating. (5+5+6 = 16 marks)
4. Explain the following with a circuit diagram:
4A. Self rectified X-ray tube circuit.
4B. Half wave rectified circuit.
4C. Full wave rectified circuit. (5+5+6 = 16 marks)
5. Explain in detail methods of Radiation control with an example each. (16 marks)
- 6A. If the anode angle is 16 degree, actual focal area is 7.3mm and Effective focal area is 2mm then find out the loading gain using Line focus principle.
6B. If the voltage applied to tube is 100Kvp, then find out the minimum wavelength of X-rays emitted and thereby calculate the maximum energy of X-rays emitted. (6+10 = 16 marks)
- 7A. Write down the laws of electromagnetic induction.
7B. Discuss Fleming's Right Hand Rule.
7C. Self induction and Mutual induction. (6+2+8 = 16 marks)



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MANIPAL UNIVERSITY

FIRST YEAR B.Sc. M.I.T. DEGREE EXAMINATION – AUGUST 2007

SUBJECT: X-RAY DARK ROOM TECHNIQUES

Friday, August 31, 2007

Time: 3 Hrs.

Max. Marks: 80

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- ✍ Answer any FIVE questions.
 - ✍ Question number 1 is compulsory.
 - ✍ Each question carries 16 marks.

1. Write short notes on any FOUR of the following:

- 1A. Film base
- 1B. Fixing and developing process
- 1C. Base fog
- 1D. Phosphorescence and Fluresence
- 1E. Shelf life
- 1F. Cross over effect

✍ Write short note on any FOUR of the following:

- 2. Film construction.
- 3. Silver recovery.
- 4. Manual processing.
- 5. Dark room illumination.
- 6. Duplication of radiographs – principle and procedure.
- 7. Testing film screen contact.

