

MANIPAL UNIVERSITY
SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2012
SUBJECT: RADIATION PHYSICS: PART – I

Monday, June 11, 2012

Time: 10:00-13:00 Hrs.

Max. Marks: 80

1. Answer all the questions:

- 1A. Write about line focus principle. (5 marks)
- 1B. Write about filters used in x ray tubes. (5 marks)
- 1C. Define inverse square law and derive the same (5 marks)
- 1D. Define the following terms with units
i) Exposure
ii) Half-life
iii) Mean life (2+2+1 = 5 marks)
- 1E. Write briefly about the difference between fluorescence and phosphorescence. (5 marks)
- 1F. What would be the radiation level at 10cm from a 370MBq source of Co-57? Exposure rate for Co-57 is 0.212×10^{-4} mGy/hr/MBq at 1meter. (5 marks)

2. Answer any FIVE of the following questions:

- 2A. Derive the general equation for law of successive disintegration and explain secular equilibrium.
- 2B. Write in detail about rotating anode x-ray tube with neat labelled diagram.
- 2C. Write in detail about different Atom models.
- 2D. Write in detail interaction of photons with matter.
- 2E. What are the different modes of decay? Explain each mode with example.
- 2F. Write in detail working of a semiconductor detector.

(10×5 = 50 marks)



MANIPAL UNIVERSITY**SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2012****SUBJECT: PRINCIPLES AND PRACTICE OF RADIOTHERAPY: PART – I**

Wednesday, June 13, 2012

Time: 10:00-13:00 Hrs.

Max. Marks: 80

1. Answer any FIVE questions from the following:

- 1A. Write in brief on the genetic basis for development of cancer. How can cancers be prevented?
- 1B. Mention the different steps of a typical radiotherapy planning process. Write in detail on treatment simulation.
- 1C. Write short notes on hematological syndrome and cerebrovascular syndromes.
- 1D. What are the common medications used for pain relief?
- 1E. What are the principles involved in multidisciplinary approach to cancer treatment? Write in brief on neoadjuvant and adjuvant therapy.
- 1F. What is the role of staging in cancer management? Write in brief of staging system for cancer.

(10×5 = 50 marks)

2. Write short notes on the following:

- 2A. Opioids in cancer pain.
- 2B. TD 5/5 of any 5 organs.
- 2C. Effects of radiation on lungs.
- 2D. Prevention of cancer.
- 2E. Different methods of treatment with radiotherapy.
- 2F. Curative and palliative intent of treatment.

(5×6 = 30 marks)



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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2012

SUBJECT: PRINCIPLES AND PRACTICE OF RADIOLOGY

Friday, June 15, 2012

Time: 10:00-11:30 Hrs.

Max. Marks: 40

✍ **Answer any FOUR.**

✍ **Each question carries TEN marks.**

1. Draw a neat labeled diagram of rotating anode x ray tube and explain.
2. Explain Elbow AP and lateral projections.
3. Explain the construction of x ray cassette with labeled diagram.
4. Explain different types of magnets.
5. Write a note on Instrumentation of computed tomography.



MANIPAL UNIVERSITY**SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2012****SUBJECT: RADIATION PROTECTION, STANDARDS AND REGULATIONS**

Monday, June 18, 2012

Time: 10:00-11:30 Hrs.

Max. Marks: 40

✍ **Answer any FOUR of the following questions:**

- 1A. Write a short note on radiation effect on cell.
- 1B. Write a short note on TLD badge.

- 2A. The measured output a Telecobalt machine is 200 RMM. What will be the exposure rate at 1meter if lead sheets of thickness 6cm are interposed between the unit and the detector?
- 2B. Define TVL .What is the relation between TVL and HVL? Derive the same.

3. Discuss the factors to be taken into account for calculating the wall thickness of teletherapy installation.

4. What are the emergency situations in a cobalt teletherapy unit? What are the steps to be taken in such a situation?

5. Explain the three principles of Radiological protection. What is the annual dose limits prescribed by ICRP for occupational and public exposure? Do these include the exposures due to natural background radiation and medical exposure?

(10×4 = 40 marks)



MANIPAL UNIVERSITY

SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2012

**SUBJECT: A: HOSPITAL PRACTICE AND PATIENT CARE
B: RECORD KEEPING**

Wednesday, June 20, 2012

Time: 10:00-13:00 Hrs.

Max. Marks: 80

SECTION – A : HOSPITAL PRACTICE AND PATIENT CARE (40 Marks)

✍ Answer any FOUR of the following questions:

1. What is meant by Universal Precautions? What would you do if you have a needlestick injury?
2. Write a short note on Cardiopulmonary resuscitation.
3. Write briefly about Confidentiality of patient information.
4. Enumerate the nutritional requirements for a cancer patient.
5. Enumerate the different types of urinary diversions, and explain in brief about them.

(10×4 = 40 marks)

SECTION – B : RECORD KEEPING (40 Marks)

✍ Answer any FOUR of the following questions:

- 6A. Define TRACER CARD in medical record management.
 - 6B. How medical records are useful for physicians in hospitals?
 - 6C. What do you mean by comprehensive or unit record system?
- (2+4+4 = 10 marks)
- 7A. Write briefly about POMR with example.
 - 7B. Name two main re-organizers of Ayurveda system of medicine and their contribution in history of medicine.
- (6+4 = 10 marks)
- 8A. Write format of admission and discharge form.
 - 8B. Write short notes on legibility and completeness in medical record management.
- (6+4 = 10 marks)
- 9A. How confidentiality of a medical record can be maintained in hospitals?
 - 9B. What are the various physical facilities required for the maintenance of medical records?
- (5+5 = 10 marks)
- 10A. Write sample sequence of middle digit filing system.
 - 10B. Write about few tips in developing new medical record forms.
- (5+5 = 10 marks)



MANIPAL UNIVERSITY
SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2012
SUBJECT: GENERAL AND APPLIED PATHOLOGY

Friday, June 22, 2012

Time: 10:00-11:30 Hrs.

Max. Marks: 40

1. Define inflammation and mention the types of inflammation with examples. Describe the cellular events in acute inflammation.

(1+2+5 = 8 marks)

2. Define shock. What are different types of shock? Explain the pathogenesis of septic shock.

(1+2+4 = 7 marks)

3. Write short notes:

3A. Aetiology and lab investigations of iron deficiency anaemia.

3B. Lepromatous leprosy.

3C. Types of necrosis.

3D. Spread of tumors.

3E. Clinical features and lab diagnosis of acute myeloid leukemia.

(5×5 = 25 marks)

