

**MANIPAL UNIVERSITY**  
**SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2015**  
**SUBJECT: RADIATION PHYSICS**  
**(2011 SCHEME)**

Monday, June 15, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

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**1. Answer all the questions:**

- 1A. Define Specific activity and derive an expression for the same.
- 1B. Explain Line focus principle and Heel effect.
- 1C. Explain alpha decay and beta decay.
- 1D. Write a short note on photoelectric effect
- 1E. Write about heel effect.
- 1F. i) An apparent focal spot of 1mm is projected from X-ray tube and the true focal spot is 5mm. Calculate the target angle.  
ii) If a radionuclide decays into 40% per hour, what is its half-life?  
(5 marks  $\times$  6 = 30 marks)

**2. Answer any FIVE of the following questions:**

- 2A. Write in detail about nuclear fusion and fission process giving examples for each.
- 2B. Write about working of scintillation detectors
- 2C. What are the different modes of decay? Explain each mode with example.
- 2D. Write in detail about the interaction of photons with matter
- 2E. Write in detail about free air ion chamber.
- 2F. Write in detail about rotating anode x-ray tube with neat labelled diagram  
(10 marks  $\times$  5 = 50 marks)



## MANIPAL UNIVERSITY

SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2015

SUBJECT: PRINCIPLES AND PRACTICE OF RADIOTHERAPY: PART – I  
(2011 SCHEME)

Wednesday, June 17, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

1. Answer Any FIVE questions from the following:

- 1A. Complications associated with cancer and its management
- 1B. Palliative and Curative Radiotherapy
- 1C. Discuss bladder protocol in carcinoma of the cervix
- 1D. Simulation procedure in Cranio Spinal Irradiation (CSI)
- 1E. Clinical signs and symptoms of cancer
- 1F. Physical effects of surgery and radiotherapy

(10 marks × 5 = 50 marks)

2. Answer all the following questions:

- 2A. Hypofractionation
- 2B. Shoulder retractor
- 2C. Disadvantages of Brachytherapy
- 2D. Tumor Node Metastases System of Cancer Staging
- 2E. Steps of Pain Management as per WHO ladder
- 2F. Reoxygenation and Redistribution

(5 marks × 6 = 30 marks)



**MANIPAL UNIVERSITY****SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2015****SUBJECT: PRINCIPLES AND PRACTICE OF RADIOLOGY  
(2011 SCHEME)**

Friday, June 19, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

**1. Answer any FIVE questions from the following:**

- 1A. Outline the construction and working principle of X-ray tube.
- 1B. Write about X-ray films in detail.
- 1C. Describe the steps and instrumentation for automatic film processing.
- 1D. Mention the constituents and functions of processing solutions.
- 1E. Give details about PACS and its use in health care.
- 1F. Explicate the Instrumentation for MRI.

(10 marks × 5 = 50 marks)

**2. Answer ALL questions.**

- 2A. Describe about the properties of X-rays and its use in diagnostic radiology.
- 2B. Explain the positioning and basic views for Pelvis.
- 2C. Write about the generations of CT.
- 2D. Describe about the various radiation protection measures used during routine radiography.
- 2E. Explain the various techniques used in DSA.
- 2F. Describe the reasons and remedy for exhaustion of processing solution.

(5 marks × 6 = 30 marks)



**MANIPAL UNIVERSITY****SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2015****SUBJECT: (A) HOSPITAL PRACTICE AND PATIENT CARE (B) RECORD KEEPING  
(2011 SCHEME)**

Monday, June 22, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

**SECTION – A : HOSPITAL PRACTICE AND PATIENT CARE (40 MARKS)****1. Answer any FOUR of the following questions:**

- 1A. Explain the types of informed consent and also write a short note on legal issues of medical records.
- 1B. Explain the professional attitude of a radiation technologists towards patients and other staff members of the departments.
- 1C. What are the lifting and moving techniques used for a cancer patient in radiotherapy?
- 1D. What are the procedure to be undertaken after a person has had an needle stick injury?
- 1E. What are the universal precaution to be undertaken in the hospital?

(10 marks × 4 = 40 marks)

**SECTION – B : RECORD KEEPING (40 MARKS)****Answer any FOUR of the following questions:**

- 2A. Define medical record analysis.
- 2B. Mention the value of medical records for research forms.
- 2C. State the merit and demerits of the alphabetical filing system. (2+4+4 = 10 marks)
- 3A. How problem oriented medical record can help in improvement in patient care?
- 3B. Write a short note on medical record form. (5+5 = 10 marks)
- 4A. Mention types of indexes and their use.
- 4B. Explain various method of numbering system in medical record management. (5+5 = 10 marks)
- 5A. Write a short note on middle digit filing system.
- 5B. Write a short note on Edwin Smith Papyrus. (5+5 = 10 marks)
- 6A. Describe the method of flow of IP and OP records in hospitals.
- 6B. Discuss advantages and disadvantages of computerization of medical records. (5+5 = 10 marks)





**MANIPAL UNIVERSITY****SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2015****SUBJECT: GENERAL AND APPLIED PATHOLOGY  
(2011 SCHEME)**

Wednesday, June 24, 2015

Time: 10:00-11:30 Hrs.

Max. Marks: 40

**✍ Answer ALL questions:**

1. Classify anaemia. Explain the clinical features, aetiology and basic investigations done in a case of vitamin B12 deficiency anaemia.

(2+2+2+2 = 8 marks)

2. Define inflammation. Describe the cellular events in acute inflammation.

(2+5 = 7 marks)

3. **Write short notes on:**

3A. Primary tuberculosis

3B. Types of shock with examples

3C. Hemophilia

3D. Factors influencing wound healing

3E. Characteristics of a malignant tumour

(5 marks × 5 = 25 marks)

