

MANIPAL UNIVERSITY**SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2013****SUBJECT: RADIATION PHYSICS**

Wednesday, June 12, 2013

Time: 10:00-13:00 Hrs.

Max. Marks: 80

1. Answer ALL the questions:

- 1A. Describe the structure of an atom and its components.
- 1B. Write a short note on fluorescence and phosphorescence with example.
- 1C. Define radioactivity and derive the equation $A = A_0 e^{-\lambda t}$.
- 1D. Discuss about continuous and characteristic spectrum of radiation.
- 1E. Define absorbed dose and exposure.
- 1F. Write a short note on Thermo luminescence detectors.

(5×6 = 30 marks)

2. Answer any FIVE of the following questions:

- 2A. Derive the general equation for law of successive disintegration and explain secular equilibrium.
- 2B. Describe in detail the construction and working of an X-ray tube with a schematic diagram. Also mention the advantage of rotating anode X-ray tube over stationary anode X-ray tube.
- 2C. Discuss about the interaction of charged particles with matter.
- 2D. What are the dosimetric quantities and units?
- 2E. Write in detail about the elementary principles of scintillation detectors.
- 2F. Draw the V-I characteristics curve of gas filled detectors and explain each region in detail.

(10×5 = 50 marks)



MANIPAL UNIVERSITY**SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2013****SUBJECT: PRINCIPLES AND PRACTICE OF RADIOTHERAPY: PART – I**

Friday, June 14, 2013

Time: 10:00-13:00 Hrs.

Max. Marks: 80

1. Answer any FIVE questions from the following:

- 1A. What is the rationale for combining multiple treatments in cancer? Enumerate the differences between the three main modalities of cancer therapy.
- 1B. Describe in brief on the hematopoietic and gastrointestinal syndromes of acute radiation sickness.
- 1C. What is the importance of staging in cancer? Write in brief on the TNM staging system.
- 1D. What are the different methods of delivering radiotherapy treatment? What are their advantages and disadvantages?
- 1E. Classify pain. How is a patient with cancer suffering from pain managed?
- 1F. What are altered fractionation schedules? Write in brief on any two altered fractionation regimes.

(10×5 = 50 marks)

2. Answer ALL questions from the following:

- 2A. Cancer cachexia syndrome
- 2B. Bone metastasis
- 2C. Radiation induced kidney damage
- 2D. What are the common causes of death in a patient with cancer?
- 2E. How is a patient with bone metastasis managed?
- 2F. Describe the different ways by which cancer spreads.

(5×6 = 30 marks)



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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2013

SUBJECT: PRINCIPLES AND PRACTICE OF RADIOLOGY

Monday, June 17, 2013

Time: 10:00-13:00 Hrs.

Max. Marks: 80

1. Answer any FIVE questions from the following:

- 1A. Explain CT artifacts.
- 1B. Explain instrumentation of MRI.
- 1C. Describe about PACS in detail.
- 1D. Write the construction and working of rotating anode X ray tube.
- 1E. Explain characteristic curve in detail.
- 1F. Write the projections taken for shoulder joint.

(10×5 = 50 marks)

2. Answer ALL questions from the following:

- 2A. Describe transport mechanism in automatic processor.
- 2B. Write positioning for forearm AP and lateral view.
- 2C. List the properties of X rays.
- 2D. Write a note on X ray cassettes.
- 2E. Write a note on construction of X ray film.
- 2F. Write positioning for chest PA view.

(5×6 = 30 marks)



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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2013

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

Wednesday, June 19, 2013

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. Describe the steps to be taken in case you are pricked with a needle that has been used on a patient positive for hepatitis B.
- 1B. Write on the protein, carbohydrate and lipid requirements and on calorific requirements of patients with cancer receiving treatment.
- 1C. What are the differences in the care of ileostomy from that of colostomy?
- 1D. Enumerate and describe the different urinary conduits.
- 1E. What is the importance of informed consents? Explain the process of informed consent.

(10×4 = 40 marks)

SECTION – B : RECORD KEEPING (40 MARKS)

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

- 2A. Define numbering system.
- 2B. What are the three types of numbering system and also mention the advantages and disadvantages of each.
- 2C. Write a short note on confidentiality of medical records.

(2+4+4 = 10 marks)

- 3A. Write the merits and demerits of middle digit filing system.
- 3B. Explain briefly medical records found in Primitive Egyptian Medicine.

(5+5 = 10 marks)

- 4A. Write the format of request for X-ray examination.
- 4B. What are the processes involved in computerization of medical records?

(4+6 = 10 marks)

- 5A. Mention goals and objectives of medical records.
- 5B. What are the basic rules for the handling of medical records?

(5+5 = 10 marks)

- 6A. Expand and explain SOMR.
- 6B. Expand POMR and explain the advantages of POMR.

(4+6 = 10 marks)



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MANIPAL UNIVERSITY

SECOND YEAR B.Sc. M.R.T. DEGREE EXAMINATION – JUNE 2013

SUBJECT: GENERAL AND APPLIED PATHOLOGY

Monday, June 10, 2013

Time: 10:00-11:30 Hrs.

Max. Marks: 40

✍ **Answer ALL questions:**

1. Define leukemia. Classify acute leukemias. Add a note on the clinical features of acute leukemia.

(1+4+3 = 8 marks)

2. Define neoplasia. Write the differences between benign and malignant tumours.

(2+5 = 7 marks)

3. **Write short notes on:**

3A. Secondary tuberculosis

3B. Definition and examples of atrophy and hypertrophy

3C. Aetiology and clinical features of vitamin B12 deficiency anaemia

3D. Healing by second intention

3E. Fate of thrombus

(5×5 = 25 marks)

