

## MANIPAL UNIVERSITY

MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2013

SUBJECT: PAPER I: BASIC SCIENCES IN RELATION TO RADIOTHERAPY

Tuesday, April 02, 2013

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL questions.

✍ Draw neat labeled diagrams wherever necessary.

1. Describe the anatomy and lymphatic drainage of Esophagus. Discuss the management of carcinoma of cervical esophagus.

(20 marks)

2. What are the dose limiting factors in radiotherapy? Discuss in detail.

(20 marks)

3. Write in detail about anatomy of nasopharynx. How do you stage carcinoma of nasopharynx? Enumerate clinical syndromes associated with carcinoma of nasopharynx.

(20 marks)

4. Write short notes on the following:

4A. Therapeutic ratio

4B. Cell cycle

4C.  $\alpha/\beta$  ratio

4D. TDF

(10×4 = 40 marks)



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MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2013

SUBJECT: PAPER II: PHYSICS, NUCLEAR MEDICINE AND STATISTICS

Wednesday, April 03, 2013

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

1. Discuss the generation, physical characteristics and clinical applications of electron and beam therapy.  
(20 marks)
2. Describe the various quality assurance tests done on a Linear Accelerator.  
(20 marks)
3. **Describe:**
  - 3A. Various methods used for field shaping in radiation treatment.
  - 3B. Guide lines for field matching in radiotherapy.  
(20 marks)
4. **Write short notes on the following:**
  - 4A. Post films
  - 4B. Lung correction in radiotherapy
  - 4C. Bolus materials
  - 4D. P-Value  
(10×4 = 40 marks)



## MANIPAL UNIVERSITY

## MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2013

SUBJECT: PAPER III: CLINICAL RADIOTHERAPY AND CANCER CHEMOTHERAPY

Thursday, April 04, 2013

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL questions.

✍ Draw neat labeled diagrams wherever necessary.

1. Describe the staging of carcinoma of prostate. Mention the role of radiation therapy in this disease.

(20 marks)

2. Describe the pathophysiology and management of:

2A. Malignant pleural effusion

2B. Malignant Ascites

2C. Skeletal Metastases

(20 marks)

3. Classify bone tumors. Discuss in detail about management in

3A. Osteosarcoma

3B. Ewing's Tumour

(20 marks)

4. Write short notes on the following:

4A. Bone Marrow Transplant

4B. Gemcitabine

4C. Cutaneous T cell lymphoma

4D. Anastrozole

(10×4 = 40 marks)



## MANIPAL UNIVERSITY

MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2013

SUBJECT: PAPER IV: RECENT ADVANCES IN RADIATION ONCOLOGY

Friday, April 05, 2013

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

1. Describe the recent advances in radiation therapy with respect to beam modifying and beam directing devices.  
(20 marks)
2. Discuss the pathological classification staging and management of Non Hodgkin's Lymphoma (High Grade).  
(20 marks)
3. Describe the management of Ewing's sarcoma of Tibia.  
(20 marks)
4. **Write short notes on the following:**
  - 4A. Phase II Clinical trial
  - 4B. PACS system
  - 4C. Retinoblastoma
  - 4D. Technitium 99m

(10×4 = 40 marks)

