

**MANIPAL UNIVERSITY****MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2016****SUBJECT: PAPER I: BASIC SCIENCES, RADIOLOGY, STATISTICS, NUCLEAR MEDICINE**

Monday, April 18, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Describe the relation of LET, RBE and OER with a diagram. (15 marks)

2. Discuss the role of hyperthermia as a modality in cancer management. (15 marks)

3. **Write short notes on:**

3A. Manchester system

3B. Log rank test

3C. Potential doubling time

3D. Leukoplakia

3E. Deterministic effect of radiation

3F. Alkylating agents

3G. Effect of radiation on parotids

3H. Birads categorisation of mammographic findings

3I. Hypofractionation

3J. Amifostine

(7 marks × 10 = 70 marks)



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## MANIPAL UNIVERSITY

### MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2016

#### SUBJECT: PAPER II: RADIATION PHYSICS, RADIOTHERAPY

Tuesday, April 19, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL questions.**

✍ **Long Essay:**

1. List the indications of Craniospinal irradiation. Discuss the management of medulloblastoma. (15 marks)

2. Discuss the role of SBRT in malignant diseases. (15 marks)

3. **Write short notes on:**

3A. Edge effect

3B. Role of wedges in radiotherapy

3C. Radioimmunotherapy

3D. Lambert Eaton syndrome

3E. TPS

3F. Pontine Glioma

3G. Burkitt's lymphoma

3H. Isodose curves

3I. Beta emitters

3J. Attenuation coefficient

(7 marks × 10 = 70 marks)



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## MANIPAL UNIVERSITY

### MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2016

#### SUBJECT: PAPER III: CHEMOTHERAPY, CLINICAL ONCOLOGY

Wednesday, April 20, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Discuss the management of stage IIBX Hodgkin disease, nodular sclerosis. (15 marks)

2. Discuss the management of multiple myeloma. (15 marks)

3. **Write short notes on:**

3A. Prophylactic cranial irradiation

3B. Advantages and disadvantages of Pre vs Post Op RT

3C. Trastuzumab

3D. Management of mediastinal NSGCT

3E. Lymphangitis carcinomatosa

3F. Intrathecal chemotherapy

3G. Von Hippel Lindau syndrome

3H. Bortezomib

3I. Metronomic chemotherapy

3J. Chordoma

(7 marks × 10 = 70 marks)



**MANIPAL UNIVERSITY****MD (RADIOTHERAPY) DEGREE EXAMINATION – APRIL 2016****SUBJECT: PAPER IV: RECENT ADVANCES**

Thursday, April 21, 2016

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essay:**

1. Explain the rationale for accelerated whole breast radiotherapy. Write on the technique of external beam radiotherapy planning for a 35 year old patient with pT1cNoMo carcinoma right breast following breast conservation surgery.

(15 marks)

2. Write in brief the steps involved in the planning of a patient for 3D Conformal Radiotherapy.

(15 marks)

3. **Write short notes on:**

3A. Brown Roberts Wells frame

3B. Benefits and indications for proton beam therapy

3C. Management of a cT3NoMo carcinoma of the anal canal

3D. Advantages of High Dose Rate brachytherapy

3E. Technique of hemibody radiation

3F. Sentinel lymph node biopsy techniques for breast cancer

3G. Indications and technique of Autologous hematopoietic stem cell transplantation

3H. Write briefly on the following volumes: ITV, PRV and RVR

3I. Involved site radiotherapy in lymphomas

3J. Treatment of stage IB seminoma

(7 marks × 10 = 70 marks)

