

MANIPAL ACADEMY OF HIGHER EDUCATION
MD (RADIOTHERAPY) DEGREE EXAMINATION – MAY 2021

PAPER I

Monday, May 03, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

1. Write in brief on the anatomy and lymphatic drainage of the stomach. How will you evaluate a patient diagnosed of adenocarcinoma of the gastroesophageal junction?
2. Why is hyperthermia considered as complimentary to ionizing radiotherapy? How is it optimally implemented in conjunction with ionizing radiation?
3. Explain how the absorption of ionizing radiation is measured and quantified.
4. What are the advantages and disadvantages of a Linear accelerator over telecobalt teletherapy unit?
5. Explain the concepts of sublethal and potentially lethal damage, and how they are different.
6. Explain the concept and utility of Half-value-layer. What is meant by beam hardening? How is the HVL determined for a poly-energetic beam?
7. Describe in brief the mammalian cell-survival curve. How is it determined?
8. What is meant by Linear Energy Transfer, and how is it reported? What are shortcomings of LET?
9. What is meant by Total Mesorectal Excision in surgery for rectal cancer? What are the factors that need to be reported in the adequate pathological evaluation of a TME specimen?
10. How is radiation induced infertility different between females and males? How is ovarian ablation done using radiotherapy?

(10 marks × 10 = 100 marks)



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PAPER II

Tuesday, May 04, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

1. Discuss the benefits, disadvantages, indications and techniques of elective node radiotherapy in prostate cancer.
2. How are ependymomas classified? Write briefly on the role of radiotherapy in the management of ependymomas.
3. Write the indications and techniques of adjuvant radiotherapy in parotid tumors.
4. When will you consider intraluminal brachytherapy in a patient with carcinoma esophagus? Write briefly on the technique of executing an ILRT treatment.
5. When will you consider radiotherapy over surgery for management of malignant spinal cord compression? What are the different fractionation schedules and techniques used?
6. What are the early and long-term consequences of craniospinal irradiation in a pediatric population?
7. How will you manage swallowing-related problems in a patient with head and neck cancer being planned for radiotherapy?
8. What are the deterministic consequences of radiotherapy exposure to the kidney?
9. Write on the role of external beam radiotherapy in the management of patients with pancreatic cancers.
10. How will you choose between brachytherapy and external beam radiotherapy for a patient with carcinoma lip being considered for definitive radiotherapy?

(10 marks × 10 = 100 marks)



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PAPER III

Wednesday, May 05, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

1. How are chemotherapy drugs classified according to their emetogenic potential? How will you reduce the risk of emesis in a patient with cervical cancer, to be treated with concurrent cisplatin along with radiotherapy?
2. Write on the role of chemotherapy in the management of a patient with non-metastatic gastric cancer.
3. A 60 year old well-preserved man with no comorbidities has been recently diagnosed to have adenocarcinoma prostate, clinically staged as T2N0M0, Gleason 7 with a baseline PSA of 18 ng/mL. Outline his further management.
4. What are the symptoms and signs of hypercalcaemia? How will you manage a patient with hypercalcaemia?
5. How is medulloblastoma classified? Outline the management of a 12 year old boy with recently diagnosed classical medulloblastoma, CSF negative, post gross total resection.
6. Write in brief on the indications and technique of Hyperthermic Intraperitoneal chemotherapy in ovarian cancer.
7. How will you manage a 50 year old well-preserved male patient with stage IIA Follicular Lymphoma?
8. Elaborate on the concept of 'total pain'. How is hospice-care different from hospital care?
9. How is choriocarcinoma risk-stratified? How will you manage a patient with low-risk choriocarcinoma?
10. Write in brief on the importance of patient's performance score assessment in oncology.

(10 marks × 10 = 100 marks)



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PAPER IV

Thursday, May 06, 2021

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

1. Differentiate between type I and type II errors in statistics. What do you understand by statistical power of a study? What factors affect the power of a study?
2. Write in brief on the concept of total neoadjuvant therapy in carcinoma rectum.
3. Write in brief on the management of a patient with incidentally detected stage I adenocarcinoma of the lung, medically inoperable.
4. Elaborate on Risk stratification of early endometrial cancer including molecular profiling. How will you plan adjuvant treatment for a patient with stage I endometrial carcinoma?
5. Write in brief on the role of PET-CT in radiotherapy treatment planning.
6. Write in brief on liver-directed therapy options available for management of hepatocellular carcinoma.
7. What is the impact of tobacco consumption on cancer? Write in brief on the benefits of tobacco cessation.
8. Explain the mechanism of action of PD-1 and PD-L1 inhibitors. What are their common toxicities?
9. Compare the various strategies that could be employed for motion management in radiotherapy for prostate cancer.
10. What are the ideal requirements for a screening test? How will you recommend on screening for a lady with no family history of cancer?

(10 marks × 10 = 100 marks)

