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1357_2012_1_S153

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Feb / Mar 2012

Time: Three Hours **Max. Marks: 60 Marks**

RADIOTHERAPY (Part– I – B)

Radiation Biology, Applied Anatomy and Pathology & Principles of Radiotherapy (RS - 2)

Q.P. CODE: 1357 & 1358

Your answers should be specific to the questions asked. Draw neat labeled diagrams wherever necessary

Use separate answer books for section A and section B

Q.P. Code: 1357– Section A – Radiation Biology, Applied Anatomy and Pathology (30 Marks)

LONG ESSAYS (Answer any One) **1 x 10 = 10 Marks**

1. What are the newer Radiation Modalities, Describe in details about IMRT?
2. Describe in details Anatomy, Pathology and staging of Cancer of Breast.

SHORT ESSAYS (Answer any Two) **2 x 5 = 10 Marks**

3. OER (Oxygen Enhancement Ratio).
4. Characteristic of Malignant Tumours.
5. Linear Energy Transfer.

SHORT ANSWERS (Answer any Five) **5 x 2 = 10 Marks**

6. Radiation Carcinogenesis.
7. ALARA Principle.
8. Effect of Radiation on normal Cells.
9. Characteristic of Malignant Cells.
10. Pathology of Skin Cancer.
11. Wilms Tumour.

Q.P. Code: 1358 – Section B – Principles of Radiotherapy (30 Marks)

Use separate answer book

LONG ESSAYS (Answer any One) **1 x 10 = 10 Marks**

1. Define brachytherapy and types of Brachytherapy and write in details about Intracavitory Brachytherapy (ICBT).
2. Describe in details Acute side effects Radiation in Head and Neck Cancer patients and its prevention.

SHORT ESSAYS (Answer any Two) **2 x 5 = 10 Marks**

3. Concomitant Boost Radiotherapy.
4. Staging of Cancer Cervix.
5. Clinical signs and symptoms of Cancer of Head and Neck.

SHORT ANSWERS (Answer any Five) **5 x 2 = 10 Marks**

6. Target volumes.
7. Post operative Radiotherapy.
8. Palliative Radiotherapy.
9. Causes of death in Cancer.
10. Simulation.
11. TDF.

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12

1356_2012_1_S102

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Feb / Mar 2012

Time: Three Hours **Max. Marks: 60 Marks**

RADIOTHERAPY (Part– I – A)

FUNDAMENTAL OF PHYSICS (RS - 2)

Q.P. CODE: 1356

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) **2 x 10 = 20 Marks**

1. Discuss in detail about the construction of the Fixed and Rotating anode x-ray tubes with neat diagrams
2. What is the meaning of Rectification? Explain in detail about Full wave rectification and half wave rectification
3. What are the different types of interaction of photons with matter and explain each types with necessary diagrams

SHORT ESSAYS (Answer any FIVE) **5 x 5 = 25 Marks**

4. Explain the different modes of Radioactive decay
5. Discuss in brief about Florescence and Phosphorescence
6. Describe the Principles of Semiconductors
7. Explain the working principle of the autotransformer with neat diagram
8. Discuss about the continuous spectrum and line spectrum of X rays
9. Describe the following: a) Heal effect b) Line focus principle c) Thermionic emission d) space charge effect
10. Define the following: a) Absorbed dose b) Exposure c) Kerma e) Effective dose

SHORT ANSWERS (Answer any FIVE) **5 x 3 = 15 Marks**

11. Radium
12. Ionization and excitation
13. Eddy current
14. Extrinsic Semiconductor
15. ALARA Principle
16. Tungsten target
17. TLD badge

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Sep 2012

Time: Three Hours Max. Marks: 60 Marks

RADIOTHERAPY (Part– I – A)

FUNDAMENTAL OF PHYSICS (RS - 2)

Q.P. CODE: 1356

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS (Answer any Two) 2 x 10 = 20 Marks

1. Describe in detail production of X –ray in a X – ray tube and explain the various types of target systems used
2. Describe in detail the Radioactivity and the various types of radioactive substances used in Radiotherapy
3. Describe in detail the principles of a Nuclear Reactor and the production of artificial radioactive isotopes

SHORT ESSAYS (Answer any FIVE) 5 x 5 = 25 Marks

4. Structure of atom
5. Radium
6. Ohms law & heating effect of a current
7. Explain the methods of cooling X – ray tubes
8. Basic interactions between X – ray and matter
9. Bremstralung
10. Linear energy transfer

SHORT ANSWERS (Answer any FIVE) 5 x 3 = 15 Marks

11. Roentgen
12. Curie
13. Gray
14. KERMA
15. Compton effect
16. Inverse square law
17. Half value layer

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Sep 2012

Time: 3 Hours Max. Marks: 30 Marks

Radiation Biology, Applied Anatomy and Pathology

Q.P. Code : 1357

Your answers should be specific to the questions asked. Draw neat labeled diagrams wherever necessary
(Note : Both QP Codes 1357 and 1358 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any One) 1 x 10 = 10 Marks

1. Explain the types of radiation and its biological effects
2. Define malignant neoplasms and its typical pathological characteristics

SHORT ESSAYS (Answer any Two) 2 x 5 = 10 Marks

3. Explain the etiology of gastrointestinal tumors
4. Describe the pathology of lymphomas
5. Describe briefly linear energy transfer and relative biological effectiveness

SHORT ANSWERS (Answer any Five) 5 x 2 = 10 Marks

6. Chromosomal aberrations
7. Reoxygenation
8. Cell survival curve
9. Histologic classification of Neoplasia
10. Stochastic effects
11. Radio protectors

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Sep 2012

Time: 3 Hours | Max. Marks: 30 Marks

Principles of Radiotherapy

Q.P. Code : 1358

Your answers should be specific to the questions asked. Draw neat labeled diagrams wherever necessary
(Note : Both QP Codes 1357 and 1358 are to be answered within total duration of 3 hours)

LONG ESSAYS (Answer any One) 1 x 10 = 10 Marks

1. Describe in detail the process in planning a patient for radiotherapy of Lung cancer for Linear accelerator
2. Describe in detail the process in planning a patient for radiotherapy of oesophageal cancer for 3D conformal radiotherapy

SHORT ESSAYS (Answer any Two) 2 x 5 = 10 Marks

3. Explain the radiation safety procedure to be observed when treating a patient with HDR brachytherapy
4. Virtual simulation
5. Altered fractionation schedules in radiotherapy

SHORT ANSWERS (Answer any Five) 5 x 2 = 10 Marks

6. Late effects of radiotherapy
7. Pre operative radiotherapy
8. Post operative radiotherapy
9. Proton beam
10. Acute radiation reactions
11. Normal tissues to be spared during brachytherapy of cervical cancer

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