Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Aug 2013

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 telecobalt and explain the various types of radioactive source used in radiotherapy
2. Describe in detail the Electromagnetic waves and their properties, inverse square law and its application in Radiotherapy
3. Describe in detail the principles of a production of X –ray and the structure and various components of a diagnostic X – ray machine

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

4. Structure of atom
5. Cobalt 60
6. Ohms law & heating effect of a current
7. Explain the methods of cooling x – ray tubes
8. Basic interactions between X – ray in matter
9. Thermionic emission
10. Radiation protection measures in a diagnostic X – ray machine

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

11. Bequerel
12. Curie
13. Gray
14. SI unit of exposure in air
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 – Aug 2013

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. Describe applied anatomy and the pathology of Head and Neck cancers.
2. Explain in detail cell cycle and effects of radiation on normal and tumor cells.

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

3. Explain LET, RBE and OER.
4. Explain radiation carcinogenesis.
5. Describe the applied anatomy of Cervix.

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

6. Chromosomal aberrations
7. Radiation effects on Embryo and foetus.
8. Radiation protection
9. Applied anatomy of Breast
10. Proton beam
11. TNM stage

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Aug 2013

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 cervical cancer for telecobalt
2. Describe in detail the process in planning a patient for radiotherapy of oral 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 LDR brachytherapy
4. Virtual CT simulation
5. Particle beam therapy in radiotherapy

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

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

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Mar 2013

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. Explain the properties of alpha, beta and gamma radiation.
2. Explain the principles of semiconductor. Draw circuit diagram of full-wave rectifier and explain.
3. Construction and working of fixed and rotating anode X-ray tube

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

4. Radioactive decay constant
5. What are the radioactive nuclides used in medicine?
6. Electromagnetic induction & mutual induction
7. Ohm's law and Kirchoff's law
8. Liner energy transfer - Explain about low and high LET radiation.
9. Explain the relation between kerma and absorbed dose.
10. Production of artificial radioactive isotopes

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

11. Inverse square law
12. Isotope
13. Half-life & Mean-life
14. Curie
15 Half value layer
16. Exposure
17. Rem.

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Mar 2013

Time: 3 Hours Max. Marks: 30 Marks

Radiation Biology, Applied Anatomy and Pathology

Q.P. Code : 1357

our 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 in detail radio sensitivity of normal and tumour tissue. What are the 4 Rs of radiobiology and explain them
2. Describe in detail the anatomy & lymphaties of head and Neck region. Explain in detail the pathology and spread of cancer in a patient with cancer of the oral cavity

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

3. Describe in detail the difference between malignant and Benign tumours
4. Describe the effect of Ionizing Radiation on DNA
5. Explain the types of Biopsy of Cancer and the importance of pathology repot

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

6. Cell survival curve
7. Hyperthermia
8. LET
9. RBE
10. Hypofractionation
11. Protons

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Mar 2013

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. Write a note on Basic concept in the rational for combining Radiation and Chemotherapy.
2. Discuss the treatment set up of Patient with Breast tumours.

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

3. Discuss Radiation safety in Brachytherapy.
4. Radiotherapy Simulation
5. Enumerate practical beams in Radiotherapy and discuss its uses.

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

6. Intraluminal Brachytherapy in Ca Oesophagus
7. Neoadjuvant Chemotherapy
8. Hypoxic Sensitizers
9. Radiation Mucositis
10. PAP smear
11. Acute and late complication in Lung Carcinoma after Radiotherapy

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