Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – April 2014

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. Draw circuit diagram of three phase X-ray circuit and explain.
2. Explain the basic interaction of X and gamma radiation with matter.
3. Radioactive equilibrium

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

4. Ohm's law and Kirchoff's law
5. Production of artificial radioisotopes
6. Specific gamma ray emission
7. Auto transformer
8. Mutual induction and self-induction
9. Full-wave rectifier
10. Define exposure, absorbed dose.

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

11. LET
12. Effective dose
13. Kerma
14. HVT
15. Atomic number, mass number
16. Units of radioactivity
17. Bremstralung radiation

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – September 2014

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 the structure of Atom. Explain with examples, the classification of Atoms.
2. Discuss the Electromagnetic Radiation with various models.
3. Explain with neat block diagram the basic components of a Clinical Linear Accelerator and its functions.

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

4. Radioactive disintegration process
5. Quantum theory of Radiation
6. Capacitance and Capacitors
7. Alternating Current and AC Transformer theory
8. Soft and hard X-rays
9. Linear Energy Transfer (LET)
10. Radiation protection measures in a diagnostic X-ray machine

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

11. Graphical representation of Data
12. Discovery of X-rays
13. Nuclear Fusion
14. Auger Electron
15. Cyclotron
16. Ohm's and Kirchoff's law
17. Thermo-luminescent Dosimeters

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – September 2014

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 in details linear energy transfer, oxygen enhancement ratio and relative biological effectiveness.
2. Write a note on the radiation tolerance of the following organs.
   a) Spinal cord b) Rectum c) Liver d) Eye e) Kidney
   How do you protect these organs while treating malignancy in the vicinity of these organs?

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

3. Discuss the epidemiology, Natural history and patterns of spread in Ca Hypopharynx.
4. What is Acute radiation syndrome? Discuss about the haemopoetic syndrome in detail.
5. Role of diet in Cancer

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

6. TNM Staging
7. Palliative Radiotherapy
8. Indication of CSI
9. Radio sensitivity
10. Radioprotectors
11. Therapeutic ratio

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – April 2014

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 in detail the anatomy of Tongue, and epidemiology, etiology and natural history of Head and Neck cancers.
2. Describe radiation absorption.

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

3. What are newer radiation modalities?
4. Explain altered fractionation schedules.
5. Describe the anatomy of Rectum and the pathology of Rectal cancer.

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

6. TNM staging
7. OER
8. Cell survival curves.
9. Conventional fractionation
10. ALARA
11. Radiation sensitizers

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – April 2014

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 the complications of Radiotherapy in paediatric tumors and measures taken to prevent them
2. Write an essay on the rationale, planning and techniques of external beam therapy

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

3. Define altered fractionation and various schedules
4. Briefly describe simulation in carcinoma Esophagus
5. Write an essay on brachytherapy in Gynecological Cancer

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

6. Post Operative radiation
7. Radiation effects on Haemopoetic tissue
8. Rotation Techniques in teletherapy
9. Radio Dermatitis
10. Assistance during Brachytherapy
11. Mucosal reactions in Head & Neck

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – September 2014

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 of preparation and planning of cancer Breast patients for telecobalt therapy.
2. Explain in detail about the complications associated with cancer and its treatment.

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

3. Clinical signs and symptoms of neoplasia
4. Mould room preparation for Head and Neck cancer patient.
5. Acute effects of radiation and its treatment

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

6. Care and assistance during sedation/anesthesia for pediatric patients
7. ALARA
8. Brain tumors
9. Simulation of cancer Cervix patient
10. Conventional fractionation
11. Teams in Multidisciplinary approach in cancer patient

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