Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – APRIL-2019

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

RADIOTHERAPY (Part– I – A)
FUNDAMENTAL OF PHYSICS
(Revised Scheme-3)
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 construction and working of a rotating anode x-rays tube.
2. Explain AC transformer construction and its working principle.
3. Explain the principles of Semiconductor. Draw circuit diagram of bridge rectifier and explain.

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

4. Properties of Alpha, Beta and Gamma X-rays.
5. Radiation Exposure and Absorbed Dose.
6. Mutual induction and self induction.
7. Radioactive Disintegration.
8. Factors affecting quality of X-rays.
9. Artificial Radioactivity.
10. Auto transformer.

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

11. Coulomb's law and Ohm's law.
12. Nuclear fission.
13. Thermionic emission.
14. Fluorescence and Phosphorescence.
15. Isotopes.
16. Ionization and Excitation.
17. Inverse Square Law.

Rajiv Gandhi University of Health Sciences, Karnataka

****

II Year B.Sc. Radiotherapy Technology Degree Examination – April-2019

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. The cell cycle and the effect of radiation in different phases of cell cycle
2. Pediatric tumors and its care

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

3. Oxygen and Re-oxygenation effect
4. Linear energy transfer and relative biologic effectiveness
5. Chromosomal aberrations

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

6. Benign and malignant
7. Head and Neck tumours
8. Effect of Embryo and Fetus
9. Skin cancers
10. Effective and equivalent dose
11. Staging and grading systems

*****

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – April-2019

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. Preparation of patient prior to Radiotherapy for carcinoma cervix. What are acute and late effects associated with radiotherapy for carcinoma cervix?
2. Simulation planning and technique for tongue cancer Radiotherapy

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

3. Acute and Late effects of Mediastinal Radiotherapy
4. Briefly describe simulation for rectal cancer.
5. Care during brachytherapy for tongue cancer

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

6. Physical effects of radiation
7. Hypofractionation
8. Chemoirradiation
9. Care during head and neck radiotherapy
10. Mould Brachytherapy
11. Explain multidisciplinary approach

*****

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – SEP-2019

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. Photon interaction with matter
2. Explain about modern X ray tube and factors effecting the quality of X rays.
3. What is a capacitor? Factors effecting capacitance. Explain parallel and series capacitors.

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

4. Explain adsorbed dose, KERMA with graph.
5. Explain equivalent dose and effective dose, units.
6. Self induction and mutual induction
7. What is rectification? Explain full wave and half wave rectification.
8. Ohm's law and Kirchhoff's law
9. Properties of alpha, beta and gamma radiation
10. Explain fluorescence and phosphorescence.

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

11. LET and unit
12. Radioactivity and unit
13. Half life
14. Atomic number and Mass number
15. Coulomb law
16. Anode heal effect
17. Explain characteristics of Bremstralung X ray.

*****

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – OCT-2019

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 and lymphatics of uterine cervix. Write about epidemiology, etiology and natural history of carcinoma cervix.
2. Write about effects of Radiation on a cell.

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

3. Causes of neoplasm
4. Radiation Carcinogenesis
5. Lymphatic supply of breast

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

6. LET
7. RBE
8. Draw a cell cycle. In which phase of the cell cycle radiation is most effective?
9. Hyperfractionation
10. Use of grading system in histology
11. TLD

*****

Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – OCT-2019

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. Explain the complications expected during radiotherapy of cervix, head and neck, and breast.
2. External beam radiotherapy: rationale, procedure and techniques

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

3. Acute and late effects of radiotherapy
4. Altered fractionation schedules
5. Clinical signs and symptoms of neoplasia

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

6. Brachytherapy
7. Alopecia
8. Blood count during radiotherapy
9. Radiation pneumonitis
10. Conventional fractionation
11. Effect of radiation on parotid glands

*****