Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Aug / Sep 2011

Time: Three Hours Max. Marks: 60 Marks

RADIOTHERAPY (Part– I – A)

FUNDAMENTAL OF PHYSICS (RS - 2)

Q.P. CODE: 1256

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 the construction and working of a modern rotating anode x-ray tube and explain the cause for heel effect.
2. Explain the conductivity of electricity through gases at low pressure.
3. Describe the bridge rectification circuit with a neat diagram. What ripple factor do you expect with this type of rectification?

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

4. Working of a Coolidge tube.
5. Advantages of semiconductor devices over thermionic devices.
6. Describe copper losses and hysterisis losses.
7. What would be the effect on a x-ray sepctrum when mA and KV is increased.
8. Define the ionization and excitation processes.
9. Explain the radioactive disintegration law.
10. Describe the various components of the electromagnetic spectrum and mention its uses.

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

11. Rem and Sievert.
12. Electron volt and ohm's law.
13. Heating effect of a current.
14. Auger electron and free electron.
15 Inverse square law.
16. Isotopes and isotones with example.
17. Various protection level instruments used in a therapy department.

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Rajiv Gandhi University of Health Sciences, Karnataka

II Year B.Sc. Radiotherapy Technology Degree Examination – Aug / Sep 2011

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: 1257 & 1258

our 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: 1257– Section A – Radiation Biology, Applied Anatomy and Pathology (30 Marks)

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

1. Describe in detail the effect of ionizing radiation on cancer cells. Explain in detail radio sensitivity of normal and tumour cells
2. Describe in detail the anatomy of breast. Explain in detail the pathology and spread of cancer in a patient with breast cancer

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

3. Oxygen effect and the 4 Rs. Of radiology
4. Describe the effect of ionizing radiation on DNA
5. Explain the staging methodology of cancer

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

6. Cell survival curve
7. Cancer
8. LET
9. RBE
10. Fractionation
11. ALARA

Q.P. Code: 1258 – Section B – Principles of Radiotherapy (30 Marks)
Use separate answer book

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

1. Describe in detail the process in planning a patient for radiotherapy of Head and Neck cancer for telecobalt
2. Describe in detail the process in planning a patient for radiotherapy of cancer of the cervix 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 brachytherpy
4. Virtual simulation
5. Altered fractionation schedules in radiotherapy

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

6. Late effects
7. Pre operative radiotherapy
8. Post operative radiotherapy
9. Amifostine
10. Acuter radiation reactions
11. Normal tissues to be spared during radiotherapy of head and neck cancer

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Rajiv Gandhi University of Health Sciences, Karnataka

Second year B.Sc. Radiotherapy Technology Degree Examination –Feb/March 201

Time: Three Hours Max. Marks: 60 Marks

RADIOTHERAPY (Part– I – A)

FUNDAMENTAL OF PHYSICS (RS - 2)

Q.P. CODE: 1256

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 the structure of a x – ray unit / equipment with its electrical circuit diagram
2. Describe in detail the production of x – ray in a Linear accelerator with a neat digram
3. Describe in detail the principles of x – ray absorption and transmission in body tissue

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

4. Types of transformers used in x – ray equipment
5. Production and properties of X – rays
6. Draw a neat diagram of space charge effect
7. Explain the principles of radiation protection in
8. Explain the principles of thermionic emission
9. Soft and Hard X – rays
10. Importance of focal spot

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

11. Gray
12. Roentgen
13. Bequerel
14. Curie
15. Radioactivity
16. HVL
17. Filters

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Rajiv Gandhi University of Health Sciences, Karnataka

Second year B.Sc. Radiotherapy Technology Degree Examination – Feb/March 2011

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: 1257 & 1258

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: 1257– Section A – Radiation Biology, Applied Anatomy and Pathology (30 Marks)

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

1. Describe in details Linear Energy transfer and Relative Biological effectiveness.
2. Describe in details in Aetiology, Epidemiology, Anatomy and Pathology of Cancer Cervix.

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

3. Cell Survival Curves.
4. New Radiation Modalities.
5. Staging and grading systems.

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

6. Acute effects of total body irradiation.
7. Radiation Protection.
8. Histological classification of neoplasia.
9. Lymphomas.
10. Carcinogenesis.
11. Seminoma.

Q.P. Code: 1258 – Section B – Principles of Radiotherapy (30 Marks)

Use separate answer book

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

1. Describe in details Altered Fractionation schedules.
2. Describe in details Multidisciplinary approach to the management of Cancer patient.

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

3. Timing Dose Fractionation in Radiotherapy.
4. Clinical Signs and symptoms of neoplasia.
5. Complications associated with cancer and its treatment, Causes of death.

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

6. Acute and Late Effects of Radiation Therapy.
7. Prevention and treatment of the acute side effects of Radiotherapy.
8. Care and assistance during Sedation/Anesthesia.
9. Physical effects of neoplasia on the body.
10. Physical effects of Radiotherapy and Chemotherapy in Combination and alone on the body.
11. Development of neoplasia within the patient.

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Rajiv Gandhi University of Health Sciences, Karnataka

Second year B.Sc. Radiotherapy Technology Degree Examination –Feb/March 201

Time: Three Hours Max. Marks: 60 Marks

RADIOTHERAPY (Part– I – A)

FUNDAMENTAL OF PHYSICS (RS - 2)

Q.P. CODE: 1256

Your answers should be specific to the questions asked
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