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2207_2011_1_S48

Rajiv Gandhi University of Health Sciences, Karnataka

Third year B.Sc. Radiography Degree Examination – Feb/March 2011

Time: Three Hours **Max. Marks: 80 Marks**

PHYSICS OF RADIOTHERAPY AND EQUIPMENT

Q.P. CODE: 2207

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 physical properties of alpha, beta, gamma rays and their absorption in matter and the methods of detection
2. Write an essay about production of artificial radioactive sources
3. Draw a block diagram of linear accelerator and describe in detail about functions of the various parts

SHORT ESSAYS **8 x 5 = 40 Marks**

4. Radioactive decay
5. Surface moulds
6. Personal monitoring devices
7. Survey meter
8. Radiotherapy simulator
9. Exposure and absorbed dose
10. Intracavitary brachytherapy
11. Photoelectric absorption

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SHORT ANSWERS **10 x 2 = 20 Marks**

12. Scattered radiation
13. Pimesons
14. Beam homogenicity
15. Protons
16. Remote after loading systems in brachytherapy
17. Total body irradidation
18. Craniospinal irradiation
19. Film badge
20. Cerrobend
21. Clinical target volume

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16

2208_2001_1_S45

Rajiv Gandhi University of Health Sciences, Karnataka

Third year B.Sc. Radiography Degree Examination – Feb/March 2011

Time: Three Hours **Max. Marks: 80 Marks**

RADIOTHERAPY, ONCOLOGY & TECHNIQUES
(Revised Scheme)

Q.P. CODE: 2208

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 radiotherapy and different radiation effects on human body
2. Describe brachytherapy and its use in ca cervix
3. Describe patient immobilization devices

SHORT ESSAYS (Answer any Eight) **8 x 5 = 40 Marks**

4. Tumour grading
5. Immunotherapy in malignant disease
6. Soft tissue tumours
7. Early radiation effects
8. GI prase of cell cycle
9. Lethal dose
10. Breast cone
11. Standard fractionation
12. LET
13. Phot rays

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SHORT ANSWERS **10 x 2 = 20 Marks**

14. Scrotal shield
15. Vaginal tandem
16. Central shield
17. Low dose radiation
18. Splenic irradiation
19. SSD
20. RAD
21. Film badge
22. Depth dose
23. Mucositis

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17

2209_2011_1_S155

Rajiv Gandhi University of Health Sciences, Karnataka

Third year B.Sc. Radiography Degree Examination – Feb/March 2011

Time: Three Hours **Max. Marks: 80 Marks**

IMAGING TECHNIQUE INCLUDING US / CT/ MRI / NUCLEAR

Q.P. CODE: 2209

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 the principles of CT number. Discuss the factors affecting patient dose in CT scanning.
2. Describe principles and types of Doppler ultrasound.
3. Discuss in detail the types of magnets used in MR imaging.

SHORT ESSAYS (Answer any Eight) **8 x 5 = 40 Marks**

4. Chemical shift artifact.
5. Photomultiplier tube.
6. Radioactivity.
7. SPECT.
8. Paramagnetic contrast agent.
9. Magnetic Resonance Angiography.
10. Acoustic coupling media.
11. Isotopes and Radionuclides.
12. Superconducting magnet.

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SHORT ANSWERS **10 x 2 = 20 Marks**

13. Acoustic impedance.
14. Pixel and voxel.
15. Cyclotron.
16. M mode.
17. Intensity of beam.
18. Phased array transducers.
19. Doppler shift.
20. Linear attenuation coefficient.
21. Acoustic shadowing.
22. Beam hardening.

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2210_2011_1_S104

Rajiv Gandhi University of Health Sciences, Karnataka

Third year B.Sc. Radiography Degree Examination – Feb/March 2011

Time: Three Hours **Max. Marks: 80 Marks**

RADIOGRAPHIC TECHNIQUES – II

Q.P. CODE: 2210

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 various myelographic technique employed for the evaluation of spinal disorder in Neuro-Radiological department
2. What is Percutaneous Transhepatic choledochography and discuss the procedure and technique?
3. Define the following Roentgenological procedures with respect to indication / technique / instrumentation / projections / views / sequential radiograms / complications and management
   a) Air encephalography b) Ventriculography c) Bronchography

SHORT ESSAYS (Answer any Eight) **8 x 5 = 40 Marks**

4. Multiple radiography
5. Sialography
6. Barium meal fallow through study
7. Ten day rule in radiation protection
8. Transfemoral arteriography
9. Positive contrast media
10. Larynogography
11. Foreign body localization
12. Hypotomic dvodemography
13. Brief outline of ERCP

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SHORT ANSWERS **10 x 2 = 20 Marks**

14. Arthography
15. Fistulography
16. Pressure injector
17. Positive contrast media
18. Barium sulphate
19. PTC
20. Minute pyelography
21. Vesiculography
22. Renal arteriography
23. Sonogram

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19

2207_2011_1_S49

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Radiography Degree Examination – Aug / Sep 2011

Time: Three Hours **Max. Marks: 80 Marks**

PHYSICS OF RADIOTHERAPY AND EQUIPMENT

Q.P. CODE: 2207

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. Write an essay about electron beam therapy
2. Write an essay on radiotherapy protective materials and personal monitoring
3. Write an essay on beam modifying devices

SHORT ESSAYS **8 x 5 = 40 Marks**

4. Radioactive equilibrium
5. Pair production
6. Tissue equivalent phantom materials
7. Annual dose equivalent levels
8. Radium substitutes
9. Immobilization devices
10. Templates in brachytherapy
11. Gamma Camera

SHORT ANSWERS **10 x 2 = 20 Marks**

12. Isotope
13. Inverse square law
14. Tissue air ratio (TAR)
15. Cesium – 137
16. Secondary standard dosimeter
17. Thermionic emission
18. Point A and B
19. 3d conformal radiotherapy
20. Remote after loading systems in brachytherapy
21. Half life

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2208_2011_1_S221

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Radiography Degree Examination – Aug / Sep 2011

Time: Three Hours **Max. Marks: 80 Marks**

RADIOTHERAPY, ONCOLOGY & TECHNIQUES
(Revised Scheme)

Q.P. CODE: 2208

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 diagnostic work – up and radiotherapy technique in management of GI Tumors – Oesopagus, Rectum, and Anal cancer
2. Discuss staging and radiotherapy management of cervical cancer
3. Write in detail management of ostomy, Gastric tube, tracheotomy

SHORT ESSAYS (Answer any Eight) **8 x 5 = 40 Marks**

4. Radiosensitizer & radio – protectors
5. Patient positioning and immobilization
6. Daily reproducibility and quality assurance
7. Seminoma
8. Hemi – body radiation
9. Cardiopulmonary resuscitation
10. IGRT
11. Cyberknife
12. SSD and SAD
13. Conventional and CT simulation

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SHORT ANSWERS **10 x 2 = 20 Marks**

14. Bolus
15. Electron applicator
16. Sterotactic radiotherapy
17. Name of two radiosensitive and two radioresistant tumors
18. Tolerance dose of spinal cord, kidnsy, liver and lung
19. Proton therapy
20. National and international legislation related to cancer
21. Intra – operative radiotherapy
22. Name two acute and two chronic toxicities of head & neck radiotherapy
23. Patient consent for radiotherapy

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21

2209_2011_1_S152

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Radiography Degree Examination – Aug / Sep 2011

Time: Three Hours **Max. Marks: 80 Marks**

IMAGING TECHNIQUE INCLUDING US / CT/ MRI / NUCLEAR

Q.P. CODE: 2209

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. Write in detail about image production Magnetic resonance and about 2D and 3D pictures?
2. Describe the principles of Gama Camera.
3. What is contrast media? How do you Classify and mention the adverse reactions of contrast media?

SHORT ESSAYS (Answer any Eight) **8 x 5 = 40 Marks**

4. SPECT.
5. HRCT Scan Lungs.
6. Colour Doppler basic Principles.
7. Inverse square Law.
8. Venography.
9. Field Of View.
10. Image Artefacts.
11. Radio frequency Transmitter.
12. Procedure for CT guided Lung biopsy.

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SHORT ANSWERS **10 x 2 = 20 Marks**

13. Diffusion.
14. Beam hardening artifacts.
15. M-Mode.
16. Mobile Radiography.
17. Mammography.
18. Renal Isotope scanning.
19. MRCP.
20. Infusion Pyelography.
21. Tesla.
22. Soft tissue radiography.

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22

2210_2011_1_S262

Rajiv Gandhi University of Health Sciences, Karnataka

III Year B.Sc. Radiography Degree Examination – Aug / Sep 2011

Time: Three Hours **Max. Marks: 80 Marks**

RADIOGRAPHIC TECHNIQUES – II

Q.P. CODE: 2210

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. Write in detail about contrast media use in radiology with a note on adverse effects
2. Write in detail about excretion urography
3. Write in detail about DSA

SHORT ESSAYS (Answer any Eight) **8 x 5 = 40 Marks**

4. Barium swallow
5. Mammography
6. PTC
7. Fistulography
8. Forensic radiography
9. Foregn body localization
10. Lymphography
11. Renal arteriography
12. Barium enema
13. Peripheral venography

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SHORT ANSWERS **10 x 2 = 20 Marks**

14. Ten day rule
15. Oral cholecystography
16. ERCP
17. Lumbar discography
18. Percutaneous lung biopsy
19. Xero radiography
20. Thermography
21. Seldinger technique
22. MCU
23. HSG

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23

2915_2011_1__S263

Rajiv Gandhi University of Health Sciences, Karnataka

III year B.Sc. Radiotherapy Technology Examination – Aug / Sep 2011

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

RADIOTHERAPY PART –II – A

RADIATION PHYSICS

(RS -2)

Q.P. CODE: 2915

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. Define percentage depth dose and tissue maximum ratio and explain about the different parameters which influence them
2. explain the different principles by which radiation can be measured
3. Describe the various steps involved in treatment planning of intensity modulated

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

4. What is a wedge and explain different types of wedge used for radiotherapy
5. Explain the skin sparing effect in megavoltage therapy
6. Define the different ICRU target volumes and their significance in planning
7. What is an isodose chart and what are the different factors which influence them
8. What is a simulator and explain the simulation procedures for tumor localization and verification
9. What is high dose rate Brachytherapy and state how it differs from LDR treatments
10. How can you minimize radiation exposure to public and radiation workers in a radiotherapy department

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

11. Multi leaf collimators
12. Tissue phantom ratio
13. Breast cone
14. Electron cone
15. Sliding window IMRT
16. ALARA
17. TLD badge

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10

2916_2011_1_S261

Rajiv Gandhi University of Health Sciences, Karnataka

III year B.Sc. Radiotherapy Technology Examination – Aug / Sep 2011

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

PRINICPLES & PRACTICE OF RDIOTHERAPY

(RS -2)

Q.P. CODE: 2916

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

Section – A

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

1. Describe the management of Medulloblastoma and techniques of cranio spinal irradiation
2. Discuss the management of carcinoma cervix stage – III

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

3. Techniques of TBI
4. Quality assurance procedures before IMRT
5. Proton beam radiotherapy in head & neck cancers

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

6. Cerro bend blocks
7. C T – simulator in RT planning
8. Mantle field
9. Chemotherapy in Gliomas
10. Gating techniques in radiotherapy of lung cancer
11. Cetuximab in solid tumors

Section – B

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

1. Explain palliative care of a adult cancer patient and importance of cancer planning & follow-up
2. Describe psychosocial problems of cancer patients and how do you support in managing their illness

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

3. Cyberknife
4. Hospice
5. Steps involved in formulation of a research study

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

6. Radioactive waste material disposal
7. Keeping patients diagnosis in confidentiality
8. Self – help groups
9. Complemenatary therapies
10. End of life issues
11. Differentiate between verbal and non verbal communication

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Rajiv Gandhi University of Health Sciences, Karnataka

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

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

PRINICPLES & PRACTICE OF RDIOTHERAPY

(RS -2)

Q.P. CODE: 2916

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

Section – A

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

1. Describe in detail the process involved in Radiotherapy planning of a patient with oral cancer. Elaborate on the Mould room techniques used and simulation techniques used and simulator techniques used
2. Describe in detail the process involved in Radiotherapy planning of a patient with caner Cervix. Elaborate on the Mould room technique used and simulator techniques used

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

3. Describe in brief an Intracavitory brachytherapy procedure its simulation procedure
4. Describe in brief the technique used for simulation of Hodgkin's disease with Mantel RT planning techniques
5. Describe in brief the patient positioning and precautions to be taken for Craniospinal irradiation

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

6. Mould
7. ILBT
8. Target volume
9. Normal tissue shielding methods
10. Use of Breast cone
11. SRS

Section – B

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

1. Describe the Radiotherapy Fractionation schedules and rationale. What are the schedules used in Teletherapy and Brachytherapy of Oesophagus
2. Describe the emergency procedure to be followed by the Technologist in a Telecobalt Machine when the source get stuck during treatment of a patient

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

3. Describe the normal tissues to be shielded and methods used in shielding in Head and Neck cancer in patient treated on Telecobalt machine
4. What are the advantages & disadvantages of conformal RT in comparison to Telecobalt
5. Describe in detail the process of CT simulation for 3 Dconformal radiotherapy. What are the mould room techniques used for patient positioning for 3DCRT of Bone tumour

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

6. Informed cosnsent
7. ALARA
8. IGRT
9. Amifostine
10. Cyberknife
11. Cisplatin

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