[LF 0212] **AUGUST 2014** **Sub.Code: 1922**

B.Sc. RADIOTHERAPY TECHNOLOGY
THIRD YEAR
PAPER II – RECENT ADVANCES IN RADIOTHERAPY TECHNIQUES

Q.P. Code : 801922

Time: Three hours **Maximum: 100 Marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain the oblique field technique and Arc field technique.
2. Explain the quality Assurance test in Radiotherapy.
3. Explain the Intensity modulated Radiotherapy.

II. Write Notes on: **(8 x 5 = 40)**

1. Simulation process in 3Dimentional conformal therapy.
2. Dynamic wedge in Linear Accelerator.
3. Arc field Radiation technique.
4. Type of Patient positions in whole Body irradiation.
5. Principles of Anteriovenous Malfunctions (AVM) treatment technique.
6. Explain multileaf collimator principle.
7. Electron treatment technique.
8. Gated treatment technique.

III. Write Notes on: **(10 x 3 = 30)**

1. Coplanar treatment technique.
2. Arc and skip technique.
3. BRW frame.
4. Target tracking treatment.
5. SRS and SRT.
6. Isocentric treatment.
7. What is Cyber knife?
8. Different positions in whole body treatment.
9. IGRT.
10. Hyper fractionated treatment.

*****

[LH 0815] **AUGUST 2015** **Sub.Code: 1922**

B.Sc. RADIOTHERAPY TECHNOLOGY
THIRD YEAR
PAPER II – RECENT ADVANCES IN RADIOTHERAPY TECHNIQUES

Q.P. Code : 801922

Time: Three Hours **Maximum: 100 Marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Role of radiotherapy technician in the planning process of Total Body Irradiation.
2. Describe the steps of 3D Conformal Radiotherapy for a 20 year old lady with Carcinoma Parotid.
3. Image Guided Brachytherapy.

II. Write Notes on: **(8 x 5 = 40)**

1. Respiratory motion control strategies.
2. Multi Leaf Collimator.
3. Verification methods used for 3 Dimensional Conformal Radiotherapy.
4. Customised block making.
5. Role of PET CT in Radiotherapy planning.
6. Intensity Modulated Radiotherapy treatment delivery.
7. Helical Tomotherapy.
8. Uses of Wedges in Radiotherapy.

III. Short Answers on: **(10 x 3 = 30)**

1. Immobilistaion used for Stereotactic Radiosurgery.
2. Indications for Stereotactic Radiotherapy.
3. Name two conditions where Intensity Modulated Radiation Therapy is beneficial.
4. List 2 differences between Image Guided Radiotherapy and Stereotactic Body Radiotherapy.
5. Mention 2 OAR and its dose constraint of Intensity Modulated Radiation Therapy for Carcinoma Prostate.
6. Hemibody Irradiation.
7. In vivo measurement techniques.
8. Mention the areas needed to be boosted during Total skin electron therapy.
9. Define Planning Target Volume.
10. Machines used for delivering Stereotactic Radiation.

****

[LJ 0816] AUGUST 2016 **Sub.Code: 1922**

B.Sc. RADIOTHERAPY TECHNOLOGY
THIRD YEAR
PAPER II – RECENT ADVANCES IN RADIOTHERAPY TECHNIQUES

Q.P. Code : 801922

Time: Three Hours **Maximum: 100 Marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Enlist different types of beam modifiers used in external beam radiotherapy. Describe in detail the types of wedges and its uses.
2. Describe about oblique field Arc field, rotational and moving field.
3. Explain stereotactic radio surgery and stereotactic radiation therapy. List the malignant and non malignant conditions that are amenable to SRS. Describe the type of anaesthesia, equipments used and positioning of a patient for SRS.

II. Write Notes on: **(8 x 5 = 40)**

1. Define universal wedge and enumerate the sizes and angle of wedges used in your department.
2. Define wedge angle, hinge angle and wedge factor with diagrams.
3. Physical properties for a ideal shielding material.
4. Steps in setting up a manual wedge.
5. Explain the effect of wedges on a isodose curve with diagram.
6. Bolus and its uses.
7. Cerrobend material composition, melting point and its density.
8. Define half value layer, give HVL values of two materials for Cobalt-60 photons.

III. Short Answers on: **(10 x 3 = 30)**

1. SSD Technique and its advantages.
2. What does BRW and CRW frames stand for? Mention its uses.
3. Indications for Stereotactic-Radiosurgery.
4. Angiographic localizer box.
5. What does IORT stand for mention two solid malignancies where IORT is found useful? Some commonly used dose for IORT.
6. Hemi-body irradiation.
7. Explain Mantle Field Irradiation with Diagram.
8. Principle of 3-Dimensional treatment.
9. Write about stryofoam cutter and custom block. Explain with suitable diagram.
10. Daily QA check list in EBRT.

****

[LK 0217] FEBRUARY 2017 **Sub.Code: 1922**

B.Sc. RADIOTHERAPY TECHNOLOGY
THIRD YEAR
PAPER II – RECENT ADVANCES IN RADIOTHERAPY TECHNIQUES

Q.P. Code : 801922

Time: Three Hours **Maximum: 100 Marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. What is total body skin irradiation? Describe the work flow in planning and execution of total-body skin irradiation.
2. Mention various frames that are used for immobilisation in SRS. Describe Treatment planning, patient - set up and QA in CYBERKNIFE.
3. Describe the dosages and field set up for a patient with stage 2B seminoma with diagram. Mention the relevant OARs and its dose constraints.

II. Write Notes on: **(8 x 5 = 40)**

1. What is mantle field irradiation where it is used? Explain mantle field with diagram.
2. Types of multileaf Collimators and tabulate the merits and demerits of each of them.
3. Verification methods used for 3 Dimensional Conformal Radiotherapy.
4. Immobilisation devices.
5. Advantages of CT-MR registration and fusion in Radiotherapy planning.
6. Describe various methods used to deliver tumoricidal dose to a moving tumour.
7. Patient setup verification strategies in conformal radiotherapy.
8. Uses of wedges in Radiotherapy modification of isodose chart by a 30 degree wedge with diagram.

III. Short Answers on: **(10 x 3 = 30)**

1. Cone-beam CT and its role in RT.
2. Inverse planning and its dis-advantages.
3. Name three indications for stereotactic body radiotherapy.
4. Advantages of Gamma knife over Cyberknife.
5. Mention 2 OARs and its dose constraint of Intensity Modulated Radiation Therapy for parotid cancer.
6. What is angiographic localizer box, where is it used?
7. Types of dose volume histograms and its significance.
8. Mention three indications for proton beam therapy.
9. Mention three benign conditions treated using radiotherapy.
10. Three differences between Stereotactic Radiosurgery and stereotactic body radiotherapy.

****

[LL 0817] AUGUST 2017 **Sub.Code: 1922**

B.Sc. RADIOTHERAPY TECHNOLOGY
THIRD YEAR
PAPER II – RECENT ADVANCES IN RADIOTHERAPY TECHNIQUES

Q.P. Code : 801922

Time: Three Hours **Maximum: 100 Marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. What is hemi body irradiation? Describe the work flow in planning and execution of hemi-body irradiation.
2. Describe the steps of IMRT for a 30 year old female with Carcinoma Parotid.
3. Describe the planning an execution of image guided radiotherapy for a lung cancer patient.

II. Write Notes on: **(8 x 5 = 40)**

1. Steps in patient set up and immobilisation in IMRT.
2. Types of Collimator and tabulate the merits and demerits of each of them.
3. Verification methods used for 3 Dimensional Conformal Radiotherapy.
4. Styrofoam cutter.
5. Role of CT-MR registration and fusion in Radiotherapy planning.
6. Half value layer how is HVL calculated give the HVL of two materials for cobalt 60 photons?
7. Dose verification tools in conformal radiotherapy.
8. Uses of beam modifying devices in Radiotherapy.

III. Short Answers on: **(10 x 3 = 30)**

1. Port film and its role in RT.
2. Inverse planning and its advantages.
3. Name two conditions where stereotactic radiosurgery is beneficial.
4. List 2 differences between Gamma knife and Cyberknife.
5. Mention 2 OAR and its dose constraint of Intensity Modulated Radiation Therapy for head and neck cancer.
6. Total-body Irradiation.
7. Dose volume histograms.
8. Mention the uses of proton beam therapy.
9. Define clinical Target Volume.
10. Two difference between Stereotactic Radiosurgery and stereotactic body radiotherapy.

****

[LM 0218] FEBRUARY 2018 **Sub. Code: 1922**

B.Sc. RADIOTHERAPY TECHNOLOGY

THIRD YEAR

PAPER II – RECENT ADVANCES IN RADIOTHERAPY TECHNIQUES

Q.P. Code : 801922

Time: Three Hours **Maximum: 100 Marks**

Answer ALL questions

I. Elaborate on: **(3 x 10 = 30)**

1. Compare the advantage of 3D CT based planning over 2D planning.
2. Explain the mechanism of production of high energy X rays in a linear accelerator.
3. What is Image guided Radiotherapy? – Explain.

II. Write Notes on: **(8 x 5 = 40)**

1. Photo electric effect.
2. Treatment verification – explain.
3. PET scan and its uses.
4. How will you minimize setup errors?
5. Describe the Bragg Peak and explain the use.
6. Carbon ion therapy.
7. Techniques for tumor bed boost.
8. Explain the Last Man Out switch.

III. Short Answers on: **(10 x 3 = 30)**

1. Radioactive isotopes used as permanent implants.
2. Electronic Portal Imaging Device (EPID).
3. Explain Image transfer to planning system.
4. Inter fractional tumor motion.
5. Head Rest.
6. Water phantom.
7. On Board Imaging.
8. What is Half Beam Block?
9. Explain Wedge angle.
10. Lead Apron.

****