

[LA0512]

Sub. Code: 4031

**M.Sc (MEDICAL PHYSICS) DEGREE EXAMINATION-MAY 2012
SECOND YEAR**

Paper I – ADVANCED TECHNIQUES OF RADIOTHERAPY

Q.P. Code: 284031

**Time: Three hours
180 (Min)**

Answer All questions.

Maximum: 100marks

I. Elaborate on:

**Pages Time Marks
(Max) (Max) (Max)**

- | | | | |
|--|----|----|----|
| 1. Discuss about the HDR brachytherapy unit, applicator, facility design with model layout and significance of daily and periodic quality assurance program. | 17 | 40 | 20 |
| 2. Describe in detail about the treatment planning processes of three- dimensional conformal radiation therapy. | 17 | 40 | 20 |

II. Write notes on:

- | | | | |
|--|---|----|---|
| 1. Types and procedures of prostate implants. | 4 | 10 | 6 |
| 2. Inverse treatment planning processes. | 4 | 10 | 6 |
| 3. Total skin electron therapy. | 4 | 10 | 6 |
| 4. MLC based IMRT treatment techniques. | 4 | 10 | 6 |
| 5. X-knife and gamma knife. | 4 | 10 | 6 |
| 6. Tomotherapy. | 4 | 10 | 6 |
| 7. Plan optimization and evaluation. | 4 | 10 | 6 |
| 8. Ocular brachytherapy. | 4 | 10 | 6 |
| 9. Different imaging modalities for treatment planning. | 4 | 10 | 6 |
| 10. Intravascular brachytherapy and its radioactive sources. | 4 | 10 | 6 |

[LC 0413]

APRIL 2013

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M.Sc (MEDICAL PHYSICS) - DEGREE EXAMINATION

SECOND YEAR

ADVANCED TECHNIQUES OF RADIOTHERAPY

Q.P. Code: 284031

Time: 3 hours

maximum: 100 marks

I. Elaborate on:

(2X20=40)

1. Describe in detail about different techniques of IMRT dose delivery system and commissioning procedures of IMRT for clinical use.
2. Describe in detail about the stereotactic radiosurgery and stereotactic radiotherapy techniques, immobilization, dosimetry and quality assurance protocol.

II. Write notes on:

(10X6=60)

1. HDR pre and post treatment safety checks and emergency procedures.
2. Electron arc therapy and dosimetry
3. Treatment planning of prostate radioactive seeds implantation
4. Arterial anatomy, angioplasty and restenosis treatment techniques
5. Treatment planning of 3DCRT
6. Image guided radiotherapy
7. Electronic brachytherapy
8. Dose volume histogram
9. Dose verification phantoms, dosimeters and protocol
10. kV cone beam CT and MU cone beam CT

[LD 1013]

OCTOBER 2013

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M.Sc (MEDICAL PHYSICS) - DEGREE EXAMINATION

SECOND YEAR

PAPER I - ADVANCED TECHNIQUES OF RADIOTHERAPY

Q.P. Code: 284031

Time: 3 hours

Maximum: 100 marks

I. Elaborate on:

(2X20=40)

1. Discuss the various modalities of imaging in intensity modulated radiation therapy, MLC based treatment delivery, planning and verification processes and quality assurance protocols.
2. Describe HDR brachytherapy source calibration, treatment simulation, planning processes, dosimetry and quality assurance program

II. Write notes on:

(10X6=60)

1. Radioactive sources of prostate implants and compare merits and demerits
2. Types of immobilization and its significance in radiotherapy
3. Cyber knife therapy
4. TBI treatment techniques
5. Image segmentation and registration
6. Treatment plan verification and delivery
7. Intra operative radiotherapy
8. Catheter based intra vascular brachytherapy
9. Beta source ocular therapy
10. Stereotactic body radiotherapy
