

[LS 140]

NOVEMBER 2020
(OCTOBER 2020 SESSION)

Sub. Code: 2035

M.D. DEGREE EXAMINATION
BRANCH IX – RADIO THERAPY

**PAPER I – MEDICAL RADIATION PHYSICS AS APPLIED TO
RADIOTHERAPY AND RADIATION BIOLOGY**

Q.P. Code: 202035

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Explain the various principles of radiation protection and give a note on personnel monitoring devices. Discuss factors that are to be taken into consideration for designing a treatment room for teletherapy machine.
2. What are Beam modifying devices? Explain in detail about any two of them. What is FFF and what are its benefits.

II. Write notes on:

(10 x 7 = 70)

1. What are unsealed radioisotopes? Write short notes on pure Beta Emitters.
2. Define Brachytherapy. Describe the radiobiological rationale for brachytherapy.
3. Fraction Size and Overall Treatment Time: its influence on early and late responding tissues
4. Discuss the benefit of concomitant boost therapy with respect to Radiobiology.
5. Hypoxic cell sensitizers
6. Explain the relationship between LET, OER and RBE.
7. Therapeutic Ratio
8. Discuss the rationale, patient selection criteria and technique and doses of Intra Operative Radiation Therapy (IORT) along with 2 examples.
9. What is thermotolerance? Discuss role of hyperthermia in cancer management.
10. Radioimmunotherapy
