

**B.Sc. Radiotherapy Technology Third Year Semester-V
February 2020 Examination**

Time: 3 Hrs.

[Max. Marks: 100]

**Paper-I
Radiation Physics
Q.P Code: J5610**

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

LONG ESSAY

2 X 10 = 20 Marks

- 1 Explain the principle, working advantages and types of scintillation detector.
- 2 Define workload, use factor and occupancy factor in shielding calculation for a radiation installation. Draw a model layout of a brachytherapy room and discuss the method of thickness calculation for barriers.

SHORT ESSAY (Answer any Ten)

10 X 5 = 50 Marks

- 3 Write about uses of compensating filters.
- 4 Define PDD. What are the factors dependent on PDD?
- 5 Write a short note on surface dose in megavoltage beam.
- 6 What are the safety procedures for keep sealed radioactive sources(Iridium-192 , caesium-137 , Iodine – 131)
- 7 Explain about four field technique.
- 8 Define penumbra? and what are the types of penumbra?
- 9 Mention about the characteristics of ionization chamber.
- 10 What is stochastic effect and non-stochastic effect? Give some examples.
- 11 Discuss about the parts of telecobalt machine.
- 12 What is electromagnetic radiation? Write its properties.
- 13 Draw neat circuit for full-wave rectifier and explain it.
- 14 What is the permissible dose for radiation worker and public?

SHORT ANSWERS (Answer any Ten)

10 X 3 = 30 Marks

- 15 Define TPR and TMR
- 16 HVT and TVT.
- 17 What are the protective materials used for shielding?
- 18 Basic principles of radiation protection.
- 19 What is tube voltage and tube current?
- 20 Define SSD, SAD and Dmax?
- 21 Write about control panel.
- 22 Properties of X-rays.
- 23 Write properties of tungsten and molybdenum.
- 24 What is scattering foil and what type of material is made?
- 25 Define early effects and late effects with proper examples.
- 26 Types of brachytherapy.

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Paper-II

Principle and Practice of Radiotherapy

Q.P Code : J5620

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

LONG ESSAY

2 X 10 = 20 Marks

- 1 Planning and procedure of Radiotherapy in Ca breast
- 2 Planning of 4 field technique for Ca cervix and mention 3 acute and late complications

SHORT ESSAY (Answer any Ten)

10 X 5 = 50 Marks

- 3 Techniques for delivering whole brain Radiotherapy
- 4 Radiotherapy in Soft tissue sarcomas
- 5 Radiotherapy in Ca Bladder
- 6 Lung cancer and role of Radiotherapy
- 7 Define Penumbra.? Difference in penumbra of cobalt vs Linac beams and its clinical implications.
- 8 Anterolateral wedge pair technique - write the steps of planning and execution of treatment
- 9 Work up and staging of Ca Breast
- 10 What is ALARA & Explain the role of Time distance & shielding in radiation safety
- 11 Management of Skeletal metastasis
- 12 Complications of Pelvic RT and their management
- 13 RT portals and dose for treatment of Ca Tongue
- 14 Parts of Linear accelerator and their function in brief

SHORT ANSWERS (Answer any Ten)

10 X 3 = 30 Marks

- 15 Electron gun
- 16 Explain skin sparing effect
- 17 Symptoms of Anal cell ca
- 18 Hormone therapy
- 19 What is Breast board and its use..?
- 20 Skin care advise during Radiotherapy
- 21 Name 3 techniques to reduce bowel dose during pelvic RT
- 22 Expand TDF
- 23 Mention 3 uses of Room lasers in Radiotherapy
- 24 Intercostal drainage tube
- 25 What is Claustrophobia?
- 26 What is Retinoblastoma.