

**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 Define workload, use factor and occupancy factor in shielding calculation for a radiation installation. Draw a model layout of a Linear accelerator room and discuss the method of thickness calculation for primary and secondary barriers.
- 2 Explain the three basic principles of radiological protection? What is the annual dose limits prescribed by ICRP for occupational and public exposure?

**SHORT ESSAY (Answer any Ten)**

**10 X 5 = 50 Marks**

- 3 What is electromagnetic radiation and its properties.
- 4 X-ray spectrum with graph.
- 5 Explain about radiation sickness and Central nervous syndrome.
- 6 Linear and Mass attenuation coefficient.
- 7 Natural background radiation.
- 8 MU cal-co60 for SAD at 10cm,FS-8x8cm<sup>2</sup> : Dose per fraction 300cGy ,O/P factor – 132.2107 cGy/min ,PDD54.8 -%
- 9 Write in detail about free radicals.
- 10 What are the parameters applied for shielding calculation and define it.
- 11 Define acute, sub-acute, chronic, hereditary, early and late effect.
- 12 What is film badge and write its advantage and disadvantage.
- 13 Thermoluminescence dosimeter.
- 14 Write in detail about ionization type based survey meter.

**SHORT ANSWERS (Answer any Ten)**

**10 X 3 = 30 Marks**

- 15 GM counter.
- 16 Properties of X-rays.
- 17 Fluorescence and phosphorescence.
- 18 Proportional counter.
- 19 Equivalent dose and its weighting factor.
- 20 Effective dose and its weighting factor.
- 21 Dose limits to radiation worker and public.
- 22 HVT and TVT.
- 23 Capacitor and insulator.
- 24 Half-life and tenth-life.
- 25 Interaction of neutron with matter.
- 26 Velocity, frequency and wavelength.

**SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH**

**(A DEEMED TO BE UNIVERSITY)**

**B.Sc. Allied Health Sciences Third Year (Semester-V)**

**February 2019 Examination**

**B.Sc. Radiotherapy Technology**

**Time : 3 Hrs.**

**[ Max. Marks : 100]**

**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 Skin cancers and their management
- 2 Explain the principle and functioning HDR remote after-loading machine. Mention the radioactive isotopes it can achieve & 3 applications

**SHORT ESSAY (Answer any Ten)**

**10 X 5 = 50 Marks**

- 3 Work up and staging of Ca Breast
- 4 Steps of Simulation CT scan
- 5 RT portals and dose for treatment of Ca Tongue
- 6 Advantages of Linear accelerator over Telecobalt machine
- 7 Intra oral prosthesis(Mouth bite) - Where is it used and its advantages
- 8 What is ALARA & Explain the role of Time distance & shielding in radiation safety
- 9 Radiotherapy in Ca Rectum
- 10 SBRT
- 11 Radiotherapy portals and doses in Ca Larynx
- 12 Management of Skeletal metastasis
- 13 Grading of Radiation induced enteritis and its management
- 14 Explain the Indications, procedure, planning and dose of ISBT in Ca Cervix

**SHORT ANSWERS (Answer any Ten)**

**10 X 3 = 30 Marks**

- 15 Define Half life & what is the half life of Co-60, Ir-192
- 16 Prophylactic dental check up
- 17 Name 3 radio isotopes used in Radiotherapy
- 18 Define Isocenter
- 19 Name 3 routes of drug administration
- 20 Disadvantages of Linac over Telecobalt machine
- 21 Mention 4 Rs of radiobiology
- 22 Shoulder retractor and its uses
- 23 What is Haemostatic RT - mention its Dose
- 24 Mention 4 types of commonly used IV fluids
- 25 What is Organ at risk..?
- 26 Define Point A & Point B

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