SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

B.Sc. Allied Health Sciences Second Year (Semester-III)

March 2024 Examination

B.Sc. Radiotherapy Technology

Time : 2.30 Hrs. **[Max. Marks : 80]**

Subject: Fundamentals of Physics

Q.P Code : K3520

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

LONG ESSAY **2 X 10 = 20 Marks**

1. Explain about Nuclear reactor in detail with neat diagram.
2. Write in detail about theory and construction of Transformer and its types with neat diagram.

SHORT ESSAY **6 X 5 = 30 Marks**

3. What is rectifier and its types and explain about Half-wave rectifier with neat diagram.
4. Write in detail about Bremsstrahlung X-rays.
5. Explain about Kirchhoff's law with proper circuit diagram.
6. Explain in detail about X-ray spectrum.
7. What are the Properties of alpha, beta and gamma radiation?
8. What is the principle of Semiconductor?

SHORT ANSWERS **10 X 3 = 30 Marks**

9. What is meant Step-down transformer?
10. Mention Electromagnetic radiation properties.
11. Write the Properties of x-rays?
12. Define Mutual induction and self-induction?
13. Write the Properties of Tungsten?
14. Write a short note of Conductors and insulators?
15. Mention the Properties of Radium?
16. Define Radioactive disintegration law and ohm's law?
17. Define Inverse square law?
18. Define Half-life and activity?

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B.Sc. Allied Health Sciences Second Year Semester-III

March 2024 Examination

B.Sc. Radiotherapy Technology

Time: 2.30 Hrs. **[Max. Marks: 80]**

Subject: Radiation safety

Q.P Code: K3530

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

LONG ESSAY **2 X 10 = 20 Marks**

1. Write in detail about the ionization chamber and pocket dosimeter
2. Write in detail about X-ray tube with a neat diagram.

SHORT ESSAY **6 X 5 = 30 Marks**

3. Write a short note on the x-ray spectrum
4. What is radioactivity explain natural and artificial radioactivity with examples.
5. Write a short note on atomic structure with a neat diagram
6. Write in detail about the Thermoluminescence dosimeter with a neat diagram
7. What is the stochastic and deterministic effect?
8. Explain about equivalent dose and effective dose with weighting factors.

SHORT ANSWERS **10 X 3 = 30 Marks**

9. What is ionization and excitation?
10. Define keV, kVp and mA of an x-ray tube.
11. What is isomeric transition? Give example.
12. Define coherent scattering in photon interaction
13. Define Kerma. What is the unit of Kerma?
14. What is the importance of shielding in radiation protection?
15. What are the annual dose limits for radiation workers and the public?
16. Define isobar, isomer with an example
17. Write the working principle of TLD.
18. How does the atomic number of the distance affect the intensity and quality of x-rays?

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B.Sc. Allied Health Sciences Second Year Semester-III

March 2024 Examination

B.Sc. Radiotherapy Technology

Time : 2.30 Hrs. **[Max. Marks : 80]**

Subject: Medical Physics

Q.P Code : K3540

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

LONG ESSAY **2 X 10 = 20 Marks**

1. Write about C-arm and dental x-ray units.
2. Write in detail about maintenance's of diagnostic X-ray machine with the causes of failure of X-ray tubes?

SHORT ESSAY **6 X 5 = 30 Marks**

3. Explain about High Tension (HT) cable.
4. Write in detail about the Factors affecting quality and quantity of x-ray.
5. Enumerate the details of Image intensifier.
6. Explain the various Quality assurance tests of x-ray equipment.
7. Cones, Diaphragm tube and Grids
8. Define rectifier and explain the full wave rectifier.

SHORT ANSWERS **10 X 3 = 30 Marks**

9. Velocity , frequency and wavelength
10. Tube voltage. And Tube current
11. Write a short note of Mammography.
12. Write about properties of x-rays
13. What are the of uses electrical energy?
14. Write a short note of Self-rectifier.
15. Define Ammeter and voltmeter.
16. Grid and its types.
17. What is Heel effect?
18. Filters and its types.

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