SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

B.Sc. Allied Health Sciences Second Year (Semester-III)
March 2021 Examination

B.Sc. Imaging Technology

Time : 3 Hrs. **[Max. Marks : 100]**

Paper-I

Fundamentals of Physics

Q.P Code : J3350

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

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

1 What is rectifier and its types. Explain about it with neat circuit.

2 Explain about production of artificial radioactive isotopes and write some radionuclides used in medicine.

SHORT ESSAY (Answer any Ten) **10 X 5 = 50 Marks**

3 What is a Transformer? Mention the types of transformers?

4 Construction and working of x-rays.

5 Structure of atom and Define Electromagnetic force and Nuclear force.

6 Define Radioactive equilibrium and its types. What type of radioactive equilibrium exists between radium and radon?

7 What are alpha, beta and gamma rays. Enumerate their properties?

8 Principles of Semiconductors

9 Principle of nuclear reactor.Mention the types of nuclear reactors?

10 X-ray spectrum

11 Enumerate the properties of Electromagnetic radiation. and its types

12 Factors influencing the quality of x-rays produced.

13 Conductivity of electricity through gases at low pressure.

14 Name the two Kirchhoff's laws and explain them with the help of circuit diagram.

SHORT ANSWERS (Answer any Ten) **10 X 3 = 30 Marks**

15 Radionuclides used in medicine

16 Ohm's law and Coulomb's law

17 Disintegration law and activity.

18 Radium properties

19 Properties of X-rays.

20 Conductor and insulator

21 Mutual induction and self-induction

22 Electron volt

23 Specific gamma ray emission

24 Florescence and Phosphorescence.

25 Ionization and excitation

26 Energy, power and velocity

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Paper-II

Radiation safety

Q.P Code : J3360

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

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

1 Chromosomal aberration and its types with neat diagram. Explain about mutation.

2 Write about structure of atom in detail.

SHORT ESSAY (Answer any Ten) **10 X 5 = 50 Marks**

3 Photoelectric effect and Compton effects - write their clinical applications

4 Define Workload ,use factor, occupancy factor with relation to radiotherapy bunker construction

5 Different types of shielding materials and their uses.

6 Enumerate the differences between stochastic and deterministic effect.

7 What is filters and explain about its types.

8 What is Ionization chamber, explain with neat diagram.

9 Electromagnetic radiation

10 Explain the philosophy of Radiation protection. Describe the role of Time, distance and shielding

11 Bremsstrahlung x-rays.

12 Scintillation detectors principle, advantage and types.

13 What is TLD and what is used for.? Enumerate the guidelines for use of TLD by Radiation workers

14 X-ray spectrum with graph.

SHORT ANSWERS (Answer any Ten) **10 X 3 = 30 Marks**

15 Dose limits to radiation worker and public

16 Mutation and its types..

17 Natural background radiation

18 Ionization and excitation

19 Equivalent dose.

20 Effective dose.

21 Time, Distance and Shielding..

22 Kerma and Absorbed dose.

23 LD 50/60

24 Acute , sub-acute and chronic effect

25 Deterministic and stochastic effect.

26 Properties of X-rays

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B.Sc. Allied Health Sciences Second Year (Semester-III)
March 2021 Examination

B.Sc. Imaging Technology (IMT)

Time : 3 Hrs. **[Max. Marks : 100]**

Paper-III

Medical Physics

Q.P Code : J3370

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

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

1 Describe various quality assurance gadgets used with x-ray equipment's.

2 Principle and construction of Image intensifiers. Mention the function of each layer. Write about the advantages of using intensifiers?

SHORT ESSAY (Answer any Ten) **10 X 5 = 50 Marks**

3 What are the uses of electrical energy with few example?

4 Write a neat labeled diagram of X-ray tube and write about the function of each of part?

5 Capacitor discharge mobile equipment

6 Name the factors influencing quality of X-rays and explain them in brief.

7 Explain the parts of X-ray tube and function of each of them?

8 Rectifiers and their role in X-ray production

9 Transformer and its uses

10 Method of viewing the intensified image

11 How is electricity generated? Mention 4 main sources of electricity?

12 What is the disadvantage of using stationary anode in Mobile x-ray unit.How does it influence the heat production, longevity of target and X-ray quality?

13 Properties of X-ray. How is Photoelectric effect important for generating good quality X-ray images

14 What is Mammogram? Procedure and Uses of Mammography

SHORT ANSWERS (Answer any Ten) **10 X 3 = 30 Marks**

15 Wisconsin test cassette.

16 Beam centering device.

17 Conductors and semiconductors

18 Focal spot test tool.

19 Multi section cassette.

20 Cones and grid ratio.

21 Tube current and Tube voltage.

22 Test of kilo voltage and timer.

23 Properties of x-ray

24 Capacitor and insulator

25 Earthling and fuses

26 Step wedge.

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