

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

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

September 2022 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 Describe the structure of atom : nucleus, atomic number, mass number, ionization, excitation and types of isotopes
- 2 Describe the construction and working of an X-ray tube with neat diagram

SHORT ESSAY (Answer any Ten)

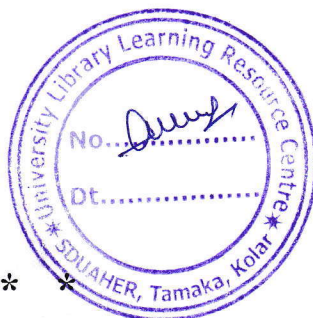
10 X 5 = 50 Marks

- 3 Radioactive equilibrium and its types.
- 4 What is Electromagnetic radiation. and its Properties.
- 5 Production of artificial radioisotopes in nuclear reactor.
- 6 Explain about Kirchhoff's law with proper circuit diagram.
- 7 Principles of nuclear reactor.
- 8 Name different types of interaction of radiation with matter and explain briefly about Compton effect.
- 9 Properties of alpha, beta and gamma radiation.
- 10 Transformer and its types.
- 11 What is rectifier and its types and explain about Half-wave rectifier with neat diagram.
- 12 Factors influencing the quality and quantity of x-rays.
- 13 Conductivity of electricity through gases at low pressure.
- 14 Capacitance and Capacitors.

SHORT ANSWERS (Answer any Ten)

10 X 3 = 30 Marks

- 15 Properties of radium
- 16 Define activity and Half-life.
- 17 p-n junction diode.
- 18 Electric charges and units of electric charge.
- 19 Mutual induction and self-induction circuits
- 20 Inverse square law.
- 21 Characteristic X-rays.
- 22 Properties of X-rays.
- 23 Filament design
- 24 Write about the filters and its types.
- 25 Conductors and insulators.
- 26 Bremsstrahlung x-rays.



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Time : 3 Hrs.

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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.

SHORT ESSAY (Answer any Ten)

10 X 5 = 50 Marks

- 3 What are the uses of electrical energy with proper example?
- 4 What is Self rectifier, Half wave rectifier and Full wave rectifier?
- 5 Beam centering devices
- 6 What are the causes of failure of x-ray tube and HT cables.
- 7 Tomography
- 8 What is subtraction radiography? Also mention its uses
- 9 Define tube voltage? How does it influence the heat generation? Explain the mechanism of controlling tube voltage?
- 10 Method of viewing the intensified image
- 11 Explain about generation of electricity?
- 12 What type of target is used in Mobile x-ray unit. Mention its uses.
- 13 What is inherent filtration and Additional filtration? What is their importance
- 14 Dental x-ray equipment

SHORT ANSWERS (Answer any Ten)

10 X 3 = 30 Marks

- 15 Wisconsin test cassette.
- 16 Focal spot test tool.
- 17 Conductors and semiconductors
- 18 Multi section cassette.
- 19 Beam centering device.
- 20 Step wedge.
- 21 Earthing and fuses
- 22 Cones and grid ratio.
- 23 Tube current and Tube voltage.
- 24 Capacitor and insulator
- 25 Properties of x-ray
- 26 Test of kilo voltage and timer.

