[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 4737 **H**

Unique Paper Code : 222600001

Name of the Paper : SEC – Radiation Safety

Name of the Course : **B.Sc. (H) / B.Sc. (Prog.) – UGCF-NEP (SEC)**

Semester : II

Duration : 1 Hour Maximum Marks : 30

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **FIVE** questions in all.
3. Question **1** is compulsory.
4. Each question carries **SIX** marks.
5. Use of scientific calculator is allowed.

P.T.O.

1. Attempt all parts of the following question : (6×1=6)

(a) _____ radiation consists of high-energy electrons or positrons.

(b) Which type of radiation meter is sensitive to low levels of radiation?

(c) Electromagnetic waves with high frequency are characteristic of _____ radiation.

(d) 1 Roentgen = _____ C/kg.

(e) Name the particle that results from the electron-positron annihilation process?

(f) True/False: Semiconductor detectors have greater energy resolution than gas-filled detectors.

2. (a) Name the various types of radiation sources. (2)

(b) What are the parameters which govern the interaction of heavy charged particle with matter? (4)

3. (a) Calculate the maximum energy of a photoelectron ejected from AI by UV light with a wavelength of 1500 Å? (2)

(b) How do linear and mass attenuation coefficients play a role in photon interaction with matter. (4)

4. (a) Give one reason why semiconductors are preferred over metals and insulators for these devices? (2)

(b) Explain the principle and working of scintillation detectors? (4)

5. (a) How does annual limit of intake (ALI) limit radiation exposure dose? (2)

(b) How is Derived air concentration (DAC) used to ensure the safety of workers under radiation environment? (4)

6. (a) List the basics of radiation hazards evaluation and control. (2)