Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
(Autonomous)
End Semester Examination: MAR / APR 2025
Faculty: Science and Technology

Program: B.Sc.(Gen 03) **Semester: VI** **SET: A**
Program (Specific): General B.Sc. **Course Type: DSC**
Class: T.Y.B.Sc. **Max.Marks: 35**
Name of the Course: Radiation Physics
Course Code: 24-PHY-3611 **Time: 2Hr**
Paper: XI

Instructions to the candidate:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Draw a well labelled diagram wherever necessary.*
4) *Use of scientific calculator and log table is allowed.*

Q1) Define or state the following. **5**

a) Which radioactive nuclei are used in medical diagnosis?

b) In ionization chamber which type of gases are filled?

c) Define one Sievert dose.

d) What is mean by stopping power?

e) Define the radiation unit 1 Becquerel.

Q2) Answer the following. (Attempt any 4) **4**

a) **W**hat do you mean by excitation of atom?

b) State one curie activity of radioactive substance.

c) What is full form of 'KERMA'?

d) State any two names of dosimeter.

e) State different types of radiation detectors.

f) What the relation between RAD and Gray?

Q3) Answer the following (Attempt any 4) **8**

a) Write a short note on ionizing radiation.

b) State the advantages of semiconductor detector.

c) What is radiation shielding and why it is necessary?

d) What is absorbed and equivalent dose?

e) State important safety rule for handling of radioactive sources.

f) A self-quenched G.M counter operates at 1000 v and has anode diameter 0.02 cm. The radius of cathode is 2 cm. what is maximum radial field?

Q4) Answer the following. (Attempt any 2) 8

a) Draw a schematic diagram of scintillation counter and explain it's working.

. b) Explain the term Effective dose.

c) With neat diagram explain thermoluminescent dosimeter.

d) Write a note on straggling of range.

Q5) Answer the following. (Attempt any 2) 10

a) Obtain the relation between range and energy.

b) Explain construction and working of proportional counter.

c) Explain the applications of gamma rays in preservation of food.

d) Explain hard, soft and radiation collision with neat diagram.
