Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

M.Sc (Physics) (Sem.-3)

RADIATION PHYSICS

Subject Code : MSPH-535-21

M.Code : 92539

Date of Examination : 21-12-22

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. a. What is Compton Scattering?

   b. Define attenuation coefficient.

   c. Write a note on multiple scattering.

   d. What do you understand by Straggling?

   e. What are elastic collisions?

   f. Write two advantages of room temperature detectors.

   g. Briefly explain the working of gas filled detectors.

   h. How nuclear medicine is beneficial?

   i. What is Photoelectric effect?

   j. Write applications of Rutherford scattering.

SECTION B

2. Explain in detail the phenomenon of pair production.

3. Describe the radiative collisions of electrons with nucleus.

4. Explain the working of NaI(Tl) scintillation detector.

5. Detail out the spectrum analysis of PIXE technique.

6. What are the applications of elemental analysis?

SECTION-C

7. a. Write a detailed note on broad and narrow beam geometries.

   b. Differentiate between organic and inorganic scintillation detectors.

8. Explain in detail the principle, construction, instrumentation and spectra analysis of XRF.

9. a. Explain the working of electron spin spectroscopy.

   b. Describe how the energy is lost by heavy charged particles.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.