MAULANA AZAD NATIONAL URDU UNIVERSITY
Faculty of Science, Department of Physics

Semester: V

Radiation and Safety: Sample Questions

Unit 1:

Q1. Write a note on Bohr's Theory of an atom
Q2. State the Plank Hypothesis
Define NMR and 3 precautions to be taken
Q3. What is the de Broglie hypothesis
What is the Rydberg constant? Derive an expression for it?
Q4. Describe the Nuclear Structure and Binding Energy
Q5. Write a note on Radioactive decay and half-life

Unit2:

Q1. Write a note on Photoelectric Effect (5)
Q2. What is the range (2)
Describe the Bragg Curve (3)
Q3. What is the Cerenkov Effect(2)
What is the mass attenuation coefficient? (4)
Q4. Discuss Pair Production and Pair Annhilation(5)
Q5. Write a note on Radioactive decay and half-life (5)

Unit3:

Q1. Discuss Radiation Quantities and Units.
Q2. Define exposure, absorbed dose, equivalent dose, effective dose,
collective equivalent dose, Annual Limit of Intake (ALI, derived Air Concentration (DAC).
Q3: Write short notes on:
Radiation detection: Basic concept and working principle of gas detectors (Ionization Chambers, Proportional Counter, Multi-Wire Proportional Counters (MWPC) and Gieger Muller Counter), Scintillation Detectors (Inorganic and Organic Scintillators), Solid States Detectors and Neutron Detectors, Thermo luminescent Dosimetry.

Unit4:

Q1. What is Radiation safety management?
Q2. What are the Biological effects of ionizing radiation?
Q3. What is the International Commission on Radiological Protection (ICRP)?
Q4. How do we do Nuclear waste and disposal management.?

Unit5:

Q1. Discuss the Application of nuclear techniques?
Q2. Write short notes on: Application in medical science (e.g., MRI, PET, Projection Imaging Gamma Camera, radiation therapy), Archaeology, Art, Crime detection, Mining and oil. Industrial Uses: Tracing, Gauging, Material Modification, Sterization, Food preservation