**Lecture 1:**

1. What is ionizing radiation?

2. Types of of ionizing radiation?

3. Give an example of a ionizing radiation source?

4. Explain what is atomic number, mass number?

5. Explain what are isotopes (stable and radioactive)?

6. Explain what are isomers, isobars?

7. What determines whether a nucleus will be radioactive or stable?

9. Explain what half-life is of radioactive decay?

10. International units for radioactivity (old and new according to the SI system)?

11. How do alpha particles, beta particles, and gamma rays differ in terms of ionization and penetrating power?

12. Explain the process of ionization of atoms?

13. Explain the process of excitation?

14. Explain alpha decay (in which nuclei does it occur, how does the atomic number change, and how does the mass number change)?

15. Explain beta minus decay (in which nuclei does it occur, how does it change atomic number, and how does mass number change)?

16. Explain beta plus decay (in which nuclei does it occur, how does it change atomically, and how does mass number change)?

17. Explain gamma decay?

18. By what processes does corpuscular ionizing radiation transfer energy on its way through matter?

19. What types of interaction of gamma radiation with matter do you know?

20. Explain the photoelectric effect?

21. What is the Compton effect?

22. What is the pairing effect?

23. Explain the concept of half-thickness by the interaction of radiation with matter?

24. What is nuclear medicine?