1. Does the half life of a radioactive element affected by conditions or the initial amount of that isotope?

No

2. Does atom consist of a positively charged nucleus surrounded by a cloud of negatively charge electron?

Yes

3. Does the maximum possible number of electrons in any orbit independent on the orbit number?

Yes

4. Does the binding energy of electrons in various orbits depend on the magnitude of the Coulomb force of attraction between the positively charged nucleus and the negatively charged electrons?

Yes

5. Does the X-ray spectrum emitted by an X-ray tube only depend on the accelerating voltage?

No

6. In X-ray production, the higher the energy of electrons bombarding the target, the more forward the direction of x-ray emission.

Yes

7. In X-ray production, does the efficiency of x-ray production depend on the size of target?

No

8. Geometric penumbra is caused by variable transmission of beam through nondivergent collimator edge.

No

9. Transmission penumbra is due to the finite dimensions of the focal spot.

No

10. The width of geometric penumbra increases with increase in source-to-surface distance and depth.

Yes

11. Physical penumbra is influenced by geometric penumbra, beam energy, and the lateral transport of electrons in the tissues.

Yes

12. Protons, photons, and heavier charged particles exhibit Bragg peak.

No

13. Charged particles are indirectly ionizing. They liberate directly ionizing particles that are responsible for producing ionization and excitation of atoms.

No

14. Photon beams interact with matter through five major processes: coherent scattering, photoelectric effect, Compton effect, pair production and nuclear disintegrations.

No

15. Compton interaction probability in water decreases with photon energy from 10 to 150keV.

No

16. Compton interaction probability is almost independent of Z. It depends on electron density.

Yes

17. Pair production probability decreases slowly with energy beyond 1.02MeV.

No

18. The Bragg peak is not observed in electron beams because it does not exist.

No

19. Lead is an efficient absorber of neutrons, but not of x-rays. The most efficient absorber of x-rays is a hydrogenous material such as water, paraffin wax, and polyethylene.

No

20. For diagnostic, superficial, and orthovoltage x-ray beams, the quality of x-ray beams is specified by megavoltage and percent depth dose in water.

No

21. For Megavoltage x-ray beams, the quality of beams is specified by kVp, filtration, and half value layer.

No

22. In clinical practice, the most commonly used methods to measure the peak energy of a megavoltage x-ray beam are scintillation spectrometry or photoactivation of appropriate foils.

No

23. For low-energy x-ray beams such as orthovoltage and superficial, the absorbed dose in bone is two to four times the absorbed dose in soft tissues for the same exposure because of the significant probability of the Compton effect.

No

1. For megavoltage photon beams, the absorbed dose in bone is slightly higher than that in soft tissue because of the predominance of the Compton effect.

No

25. All recent calibration protocols (TG-21, TG-51, and IAEA TRS-398) use Bragg-Gray cavity theory.

Yes

26. In TG-51, beam quality for photon beam is specified by the depth of 50% dose in water (R50).

No

37. In TG-51, beam quality for electron beam is specified by percent depth dose for the electron component of the beam at 10cm depth in water.

No

38. TLD response is almost independent of energy in the megavoltage range of photon and electron beams used clinically.

Yes

39. The TLD dosimeter form and size are independent of dosimetry for certain beams and irradiation conditions.

No

40. The sensitivity of radiographic film depends on the size of emulsion grains and the quality and the type pf radiation.

Yes

41. The major advantage of radiochromic film include almost tissue equivalence, high spatial resolution, sensitivity to visible light, and no need for processing.

No

42. Percent depth dose for photon beams in water decrease almost exponentially.

No

43. Parallel opposed beams give rise to greater dose at midpoint than at superficial depths.

No

44. CT numbers bear a linear relationship with attenuation coefficients.

Yes

45. Imaging modalities such as ultrasound, MRI are useful in mapping out structural and functional anatomy, and their signal values can be correlated with electron density by scanning phantom.

No

46. Accelerator-amounted accessories such as EPID and CBCT systems allow treatment verification before and during treatments. It is not necessary when using conformal radiation therapy techniques such as 3-D CRT.

No

47. As the MRI simulator develops, radiographic and/or CT simulators are not an essential part of the treatment planning process.

No

48. In photon treatment plan, surface dose usually increases with increasing angle of obliquity.

Yes

49. Electron beams have a modest skin-sparing effect, which gradually disappears with decreasing energies.

No

50. Beam obliquity changes the percentage depth dose, giving rise to increase in dose at dmax, and decrease in depth dose beyond.

Yes

51. Total skin electron irradiation is a useful technique for the treatment of mycosis fungoides. If the linac machine is commissioned for clinical electron beam, considerable dosimetry is not required before commissioning the procedure for actual treatments.

No

52. Large volume ion chambers are suitable for measure neutrons.

No

53. If a complicated treatment plan using intensity-modulated radiotherapy was approved by a senior physician, a QA program (patient-specific quality assurance) is not essential.

No

54. Dosimetry of small fields as used in SRS or SRT is complex because of a possible lack of charged particle equilibrium.

Yes

55.