1. Alpha rays and beta rays are NOT harmful to living tissues.   True   False

2. The metal that radiation cannot penetrate is _____.

3. Describe the two theories of radiation injury:

    a. Direct theory: _____

    b. Indirect theory: _____

4. Which theory of radiation is more common?   _____

5. When radiation hits the outer area of a cell it forms _____ _____ (free ions floating around). Free radicals form _____ and the toxins cause damage to the cells.

6. _____ help to heal the harmful effects of the free radicals.

7. When we receive radiation and subsequently experience injury, the sequence is:

    a. Radiation _____

    b. _____ period (waiting period)

    c. Period of _____

    d. Period of _____

8. Experiencing injury from radiation is dependent on many things. These include:

    a. Total _____ - total amount of radiation received

    b. _____ rate - the speed at which we receive the radiation

    c. The amount of _____ that received the radiation

    d. Cell _____

    e. _____

9. The _____ radiation received and the _____ the dose rate, the _____ the symptoms will be visible.

10. Cells most sensitive to radiation are:

    a. _____ cells

    b. Rapidly _____ cells

    c. _____ cells (which are cells of the _____)

11. **Somatic effects of radiation** is the effects that the _____ experiences. These include:

    a. _____

    b. _____

    c. _____

12. **Genetic effects of radiation** is the effects experienced by _____ _____.

    These include:

    a. _____ _____

    b. _____

    c. _____

13. Cells that are particularly sensitive to radiation include:

    a. _____ system

    b. _____ (which is the _____ system)

    c. _____

    d. Bone _____

14. Blood forming cells have the greatest _____ hazard from x-rays. _____ is a type of cancer that occurs from radiation to the bone marrow.

15. Cells of the body that are specifically sensitive to dental x-rays include the:

    a. _____

    b. _____ of the eye

    c. _____

    d. Bone _____

16. Small doses of radiation over a long period of time could cause damage to the immune system (though highly unlikely).   True   False

17. It would take _____ dental x-rays in a short period of time to induce thyroid cancer.

18. It would take _____ - _____ dental x-rays to induce leukemia.

19. It would take over _____ x-rays in a _____ day period to induce skin cancer.

20. The traditional unit of measurement of radiation is called a _____.

21. RAD stands for _____ absorbed dose and represents the _____ of energy absorbed by the tissue. (It is the _____ of absorbed dose.)

22. REM stands for _____ _____ in _____ and is a measurement of radiation taking into account not only the dose, but the specific _____ of radiation exposure.

23. MAD stands for _____ _____ _____ is the amount of radiation that is safe for dental x-ray technicians to have in a _____ . The formula to determine YOUR MAD is: _____ in which n = your _____

24. The first step to ensuring patient safety from radiation exposure is to review their _____ _____ and take into consider radiation from _____ _____ and whether or not they are pregnant or could be pregnant.

25. We should also take into consideration the date of their last dental _____ and perform a - _____ exam and then determine the necessary x-rays for that particular patient.

26. Taking bitewing x-rays during every recall appointment for every patient is proper protocol.   True   False

27. The **least** effective PID to use in order to reduce unnecessary exposure to radiation is a _____ PID.

28. A _____ PID is more effective at reducing exposure to radiation than a _____ PID.

29. Review: A _____ is the lead washer that restricts the _____ beam to _____" at the end of the PID.

30. Though a rectangular collimator initially reduces exposure to excess radiation, in the long run, the patient may end up being exposed to more radiation because you will have more _____.

31. State and federal laws require the aluminum filter to be _____ thick for _____ kVps and below, and _____ thick for over _____ kVps.

32. The size of the portal of the collimator is determined by the _____ of the PID.

33. Using _____ speed film is recommended. The _____ the film the _____ exposure time required.

34. Additional protocols to protect patients from excess radiation exposure include:

    a. Use of a lead _____ with a _____ collar

    b. Using _____ speed film, or better yet, use digital imaging which requires _____ less radiation

    c. Using beam alignment devices

    d. Set the exposure factors correctly

    e. And most importantly, learn _____ _____ so that you _____ _____.

35. As long as an operator stands more than _____ feet from the source of radiation, they will not come in contact with the radiation.   True   False

36. The types of radiation beams that could be harmful to an operator include _____ and _____.

37. A _____ is a monitoring device that captures radiation in order to determine if operators are getting exposed to radiation in the office.

38. The MPD for occupational exposure is _____ _____ in a year.

39. The MAD for occupational exposure is the maximum allowable in a _____ and is determined by the following formula: _____

40. Always employ the _____ principle!

NEXT UP: Unit 3 Topic A: Bitewing Technique