X-Ray Safety Quiz

Circle the most appropriate answer (1 mark each)

1. The current thinking is that the risk of developing a fatal cancer as a result of exposure to radiation is 4% per 1000 mSv, this is based on:
   a. Mice studies
   b. All of these
   c. Nuclear bomb studies
   d. Erring on the side of caution

2. X-rays are a form of ________ radiation?
   a. Cosmetic
   b. Particulate
   c. Visible
   d. Electromagnetic

3. Increasing distance from an x-ray device will ______ radiation exposure:
   a. Decrease
   b. Increase
   c. Have no effect on
   d. Stop

4. All UVIC personnel are considered members of the general public and are subject to the whole body exposure limit of ______ per year.
   a. 1 mSv
   b. 5 mSv
   c. 50 mSv
   d. 0.2 mSv

5. Thirty centimeters of concrete will reduce gamma radiation intensity to one tenth (1/10). What thickness of concrete will reduce the intensity to one hundredth (1/100)?
   a. 120 centimeters
   b. 45 centimeters
   c. 90 centimeters
   d. 60 centimeters
6. Preceding its use how recently must a survey meter have been calibrated?
   a. 18 months
   b. 24 months
   c. 12 months
   d. 6 months

7. Responsibilities of the X-Ray Equipment User include:
   a. Wear dosimeters as required
   b. Ensure permissible dose limits are not exceeded
   c. Stop operation of the equipment if any unsafe operational conditions arise and notify the Principal Investigator
   d. Successfully complete the x-ray safety exam
   e. All of these

8. All locations where x-ray equipment is used will have ready access to a survey meter to ensure compliance with the regulatory limit of ____ μGy/hr at ____ cm from any external surface of the equipment, to ensure permissible dose limits would not be exceeded under routine operation conditions of the equipment.
   a. 5 μGy/hr at 5 cm
   b. 1 μGy/hr at 10 cm
   c. 5 μGy/hr at 100 cm
   d. 10 μGy/hr at 5 cm

9. External radiation exposure can be decreased by:
   a. Reducing the time spent near a source
   b. All of these
   c. Using appropriate shielding placed between oneself and the source
   d. Increasing the distance between oneself and the source

10. Responsibilities of the Principal Investigator include:
    a. Ensure personnel are properly instructed in both general x-ray safety training and training specific to the equipment to be operated.
    b. Post safety rules, and safe operating and emergency procedures.
    c. Provide a readily accessible survey meter
    e. All of these
11. Dosimeters:
   a. Must be worn any time radiation is used
   b. Only effective method for detecting low energy beta particles
   c. Measure accumulated dose over a long period of time
   d. Highly sensitive detection technology
   e. All of these

12. Administrative body on campus that is responsible for approving the X-Ray Safety Policies and Procedures manual, investigating any policy violation, and recommending disciplinary action to the VP Finance and Operations:
   a. Canadian Nuclear Safety Commission
   b. UVic Radiation Safety Committee
   c. Radiation Safety Officer
   d. Principal Investigator

13. Effects that will occur with certainty when a threshold is met:
   a. Somatic
   b. Hereditary
   c. Stochastic
   d. Deterministic

14. Any suspected over-exposure to radiation requires a timely investigation. If you suspect you have been overexposed, you should:
   a. Report incident immediately to the Radiation Safety Officer
   b. Report incident tomorrow to the Principal Investigator
   c. Keep calm and carry on with your assignment
   d. Panic

15. If you plan on purchasing or inheriting an x-ray device you must notify:
   a. Next of kin
   b. Radiation Safety Officer
   c. Centre for Disease Control
   d. Twitterverse

16. If you plan on disposing or transferring ownership of an x-ray device, you must notify:
   a. Campus Security
   b. Research Services
   c. Facilities Management
   d. Occupational Health, Safety & Environment
17. Geiger counters can be used to:
   a. Indicate only that x-rays are present
   b. Accurately quantify x-ray dose

18. All deficiencies found during a laboratory inspection are reported to the Principal Investigator and to the Radiation Safety Committee for corrective action(s).
   c. True
   d. False

19. X-rays are highly penetrating and are considered an external hazard:
   a. True
   b. False

20. Ionizing radiation has sufficient energy to remove electrons from atoms in materials through which it passes.
   a. True
   b. False

21. X-rays are unable to travel long distances and to penetrate most materials:
   a. True
   b. False

22. It is safe to quickly change the sample while the primary beam is on with the shutter open:
   a. True
   b. False

23. When working with x-ray equipment, the level of radiation exposure must be kept to zero:
   a. True
   b. False

24. All x-ray equipment must be registered with OHSE:
   a. True
   b. False
25. All x-ray equipment users are to be specifically trained in the correct operation of the equipment by the Principal Investigator or delegate:
   a. True
   b. False

26. All x-ray labs must be posted with an appropriate warning sign:
   a. True
   b. False

27. The dose of radiation received is proportional to the amount of time spent in the radiation field:
   a. True
   b. False

28. General x-ray safety refresher training is required every three years:
   a. True
   b. False

29. Standard Operating Procedures must be developed for equipment operation and emergency procedures:
   a. True
   b. False

30. If you modify or repair an x-ray device, you do not need to notify anyone:
   a. True
   b. False