

1. Which of the following is NOT a use for radioisotopes in medicine?
 - a. sterilization
 - b. bone repair
 - c. therapy
 - d. new drug testing

2. Radiation, when applied to medical equipment, _____ the DNA of living organisms.
 - a. kills
 - b. disrupts
 - c. severely damages
 - d. burns

3. To maintain cleanliness of sterilized equipment, it is kept in _____.
 - a. an incubator
 - b. a sterile saline solution
 - c. a sealed container
 - d. an air-tight bag

4. Radioisotopes are used during research of new drugs to _____.
 - a. trace the drug
 - b. kill bacteria
 - c. verify side-effects
 - d. ensure stability

5. Data from radioisotopes in new drug testing is used for _____.
 - a. scientific studies
 - b. approval
 - c. future technology
 - d. test control

6. Medical imaging allows physician to rapidly _____ injuries.
 - a. complete
 - b. repair
 - c. assess
 - d. decrease

7. X-rays are created by _____.
 - a. high energy gamma sources
 - b. large magnets
 - c. radioactive particles
 - d. electrical current

8. Bones and empty spaces are easily identifiable using X-rays because of their _____.
 - a. large differences in density
 - b. absorption capabilities
 - c. location in the body
 - d. air spaces

9. X-ray machines produce _____ amounts of radiation.
 - a. large
 - b. small
 - c. background
 - d. no

10. Computed tomography (CT scan) uses what type of technology?
 - a. X-ray
 - b. gamma ray
 - c. radioisotope decay
 - d. fission

11. Computed tomography (CT scan) is especially good for diagnosis of _____?
- a. Heart attack
 - b. torn ligaments
 - c. bone breaks
 - d. cancer
12. Magnetic resonance imaging (MRI) machines produce _____ amounts of radiation.
- a. average
 - b. large
 - c. no
 - d. small
13. Magnetic resonance imaging (MRI) is especially good for detailed images of _____.
- a. bone structure
 - b. tendons and ligaments
 - c. blood vessels and blood flow
 - d. tumors

Answer: B

14. Positive Emission Tomography (PET) is based on what principle?
- a. Radioisotope is absorbed in the targeted area.
 - b. Radioactivity emits from only the targeted area.
 - c. PET radiation is measured directly from source.
 - d. High energy gamma sources work best.
15. Positive emission tomography scans are commonly used for _____.
- a. cancer detection
 - b. blood flow in heart muscle
 - c. brain abnormalities
 - d. all the above

16. What type of scan can a positive emission tomography scan be combined with to provide detailed images of cancer spread?
- a. Single Photon Emission Tomography (SPECT)
 - b. X-ray
 - c. Computed Tomography (CT)
 - d. Magnetic Resonance Imaging (MRI)
17. Radiation is used in therapy because _____.
- a. it can be targeted in specific areas
 - b. it is less expensive than other treatments
 - c. in some cases, there are no other options
 - d. none of the above
18. _____ has a physician direct radiation beams.
- a. Co-60 saturation
 - b. External radiation therapy
 - c. Internal radiation therapy
 - d. Radiation scanning
19. During internal radiation therapy, _____ is (are) used to target specific areas.
- a. stable isotopes
 - b. gamma rays
 - c. beta radiation
 - d. radionuclides
20. The most commonly used medical isotope is _____.
- a. Co-60
 - b. Mo-99
 - c. Ir-192
 - d. Tc-99m

21. Advantages of using Tc-99m include which of the following:
- a. Low production costs
 - b. Low effective dose
 - c. Short half-life
 - d. Abundant supply
22. Mo-99 is created from _____.
- a. nuclear fission of U-235
 - b. chemical reaction of Mo-100
 - c. decay of nuclear reactor fuel
 - d. separation from Tc-99m
23. Mo-99 is separated from contaminants during production using _____.
- a. its decay properties
 - b. physical force
 - c. gamma capture
 - d. chemical separation
24. The half-life of Tc-99m is approximately _____.
- a. 6 hours
 - b. 66 hours
 - c. 6 days
 - d. 6 minutes
25. Tc-99m is typically separated from Mo-99 using?
- a. An acid solution
 - b. A caustic solution
 - c. a saline solution
 - d. an organic solution

26. The half-life of Mo-99 is approximately _____.
- a. 6 hours
 - b. 66 minutes
 - c. 6 days
 - d. 66 hours
27. The solution obtained from a Tc-99m generator is tested for _____ before use.
- a. U-235 activity
 - b. pH
 - c. Bacteria
 - d. Mo-99 activity
28. Gamma knife therapy typically uses _____ as a radioactive source.
- a. Co-60
 - b. Tc-99m
 - c. Cs-137
 - d. none of the above
29. Gamma knife therapy is used for cancer treatments because _____.
- a. it is the most precise treatment available
 - b. gamma radiation can penetrate the tumor
 - c. dose to surrounding tissue is not important
 - d. the length of time for treatment is quick
30. What is brachytherapy?
- a. Small dose of radiation over a short time
 - b. Small dose of radiation over a long time
 - c. Large dose of radiation over a short time
 - d. Large dose of radiation over a long time

31. Brachytherapy commonly uses which radioisotope?
- a. Co-60
 - b. Ir-192
 - c. Tc-99m
 - d. Cs-137
32. Brachytherapy is a form of _____.
- a. external radiation therapy
 - b. gamma knife therapy
 - c. intravenous blood therapy
 - d. internal radiation therapy
33. One of the primary regulators for medical isotope shipments is:
- a. Nuclear Regulatory Commission (NRC)
 - b. United States Postal Service (USPS)
 - c. Federal Aviation Administration (FAA)
 - d. Department of Energy (DOE)
34. Training requirements for medical isotope shipments is defined by the _____
- a. Nuclear Regulatory Commission (NRC)
 - b. Department of Energy (DOE)
 - c. United States Postal Service (USPS)
 - d. Department of Transportation (DOT)
35. Training for radioactive material shipping must cover which topic?
- a. Security Awareness
 - b. Packaging Materials
 - c. Shielding Requirements
 - d. Dose Calculations

36. Task specific training should be provided to _____.
- a. source custodians
 - b. the radiological control officer
 - c. mailroom attendants
 - d. laboratory technicians
37. Which of the following is the source custodian responsible for with regard to radioactive materials?
- a. Spill control
 - b. Tracking
 - c. Dose Assessments
 - d. Safe handling practices
38. A lost source should be reported to the _____.
- a. Radiological Control Officer
 - b. Radiological Technician
 - c. Laboratory Manager
 - d. Security Chief
39. Disposal of radioactive medical waste can include _____.
- a. dilution
 - b. return to manufacturer
 - c. destruction
 - d. All the above
40. I-131 is used to treat _____.
- a. lung cancer
 - b. brain cancer
 - c. breast cancer
 - d. thyroid cancer

41. Ir-192 is typically used to treat _____.
- a. lung cancer
 - b. brain cancer
 - c. breast cancer
 - d. thyroid cancer
42. Co-60 is most commonly used to treat _____.
- a. lung cancer
 - b. brain cancer
 - c. breast cancer
 - d. thyroid cancer