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