Final Exam for IS302
- Modular Emergency Radiological Response Transportation Training

1. Ionizing radiation is defined as:
a. Any type of energy.
b. Radiation that has enough energy to remove electrons from atoms.
c. Unstable atoms in an unwanted place.
d. Energy that will destroy atoms.

2. Radioactive **material** is defined as:
a. Any material that spontaneously emits ionizing radiation.
b. Material found readily in nature.
c. Energy in the form of particles or waves given off by unstable atoms.
d. Any material that has been exposed to gamma radiation.

3. What is radioactive contamination?
a. Radioactive material in an unwanted or uncontrolled location.
b. Any material that contains radioactive (unstable) atoms.
c. Radiation in an unwanted location.
d. Any material that gives off radiation.

4. Radiation is _____; contamination is _____.
a. medicine; material.
b. material; energy.
c. atom; energy.
d. energy; material.

5. A person who is exposed to radiation will become contaminated.
a. True.
b. False.

6. Some commonly transported sources of radioactive material are:
a. Radio waves and medical procedures.
b. X-rays and visible light.
c. Asbestos and chlorine.
d. Radiopharmaceuticals and smoke detectors.

7. An acute dose of radiation refers to:
a. A small amount of radiation dose received in a short period of time.
b. A large amount of radiation dose received in a short period of time.
c. A small amount of radiation dose over a long period of time.
d. A large amount of radiation dose over a long period of time.

8. A small dose of radiation received over a long period of time is called:

a. A chronic radiation dose.
b. A prompt radiation dose.
c. An acute radiation dose.
d. A somatic radiation dose.

9. Federal packaging and labeling regulations regarding radioactive material are such that the probability of an emergency responder receiving an ACUTE dose of radiation during response to a transportation incident is extremely:
a. Probable.
b. Low.
c. High.
d. Likely.

10. The doses we receive every day from natural background radiation and the doses received by people who work in nuclear and medical facilities are examples of:
a. A large radiation dose.
b. Heritable radiation doses.
c. Stochastic radiation doses.
d. Chronic radiation doses.

11. Inhalation, ingestion, injection, and absorption are all methods by which:
a. The body removes poisons.
b. Radioactive material enters the body.
c. Somatic effects are identified.
d. Radiation enters the body.

12. The potential health effects from exposure to radiation depend on how much radiation you receive and how fast you receive the dose.
a. True.
b. False.

13. Not all radioactive material packages require package markings.
a. True.
b. False.

14. Which of the following would NOT be found, as a package marking, on a radioactive material package?
a. UN identification number.
b. “Type A” or “Type B.”
c. Contamination levels.
d. Orientation arrows.

15. Which of the package labels below would indicate the lowest external radiation hazard?
a. Radioactive White-I.
b. Radioactive Yellow-II.

c. Radioactive Yellow-III.

16. The standard placard for radioactive material is yellow on top and white on bottom with black lettering and a black radiation symbol in the yellow portion.
a. True.
b. False.

17. The Number "7" on the standard placard for radioactive material denotes:
a. 7 times normal background radiation.
b. The DOT hazard classification for radioactive material.
c. The pH of the enclosed material.
d. The number for hazard severity.

18. When dealing with radioactive material, the correct response guide in the Emergency Response Guidebook can be identified by using which of the following:
a. UN Identification number.
b. Proper shipping name.
c. Shipment placards.
d. All of the above.

19. The Emergency Response Guidebook (ERG) states that "medical problems take priority over radiological concerns."
a. True.
b. False.

20. Which of the package types below is designed to transport material with the lowest levels of radioactivity?
a. Type A packaging.
b. Type B packaging.
c. Intense packaging.
d. Excepted packaging.

21. Type A packages contain potentially life-endangering amounts or radioactive material.
a. True.
b. False.

22. Type B packages must withstand a series of tests which simulate severe or "worst case" accident conditions.
a. True.
b. False.

23. Most radioactive material shipments involve small quantities of radioactive material that have been packaged in Industrial or Type A packages. These containers pose minimal risk to the First Responder.
a. True.

b. False.

24. A patient who has only been exposed to radiation from an external source should be handled as follows:
a. Made comfortable and provided with last rites while next of kin is notified.
b. Thoroughly decontaminated and wrapped in sterile blankets prior to transport.
c. No differently than a person who may have received radiation therapy or a person who has received a diagnostic X-ray.
d. Left at the scene until qualified persons arrive to decontaminate.

25. When handling a potentially contaminated patient, which method below should be used to limit the spread of contamination?
a. Patient should be wrapped in plastic, label as radioactive material, and left at the scene.
b. Decontaminate patient by removing all of their outer clothing (gross decon).
c. Induce vomiting just in case the patient got contamination in their mouth.
d. Held inside the hot zone until the radiation authority can arrive.

26. The four basic types of ionizing radiation are:
a. Alpha particles, gamma rays, microwaves, and X-rays.
b. Alpha particles, beta particles, gamma rays, and neutron particles.
c. Neutron particles, gamma rays, radar waves, alpha particles.
d. Microwaves, gamma rays, radar waves, and X-rays.

27. Fissile Material is a material whose atoms are capable of nuclear fission (capable of being split).
a. True.
b. False.

28. What is the Transport Index (TI)?
a. An index that can be used to identify hazardous materials.
b. An index that can be used to identify transport companies.
c. The maximum radiation level in mrem per hour 1 meter away from the package.
d. The hazard class for the type of material being transported inside the package.

29. A sealed radioactive source used in radiography operations would be an example of a special form radioactive material.
a. True.
b. False.

30. The “rem” is a unit used to measure:
a. Radioactive contamination.
b. The number of nuclear decays that occur during a specific time.
c. Rapid energy movement.
d. Radiation exposure.

31. The curie (Ci), and becquerel (Bq), are units used to measure:
a. Activity level.
b. Radiation dose rate.
c. Nuclear fission probability.
d. A package's Transport Index.

32. Contamination survey instruments are very sensitive and typically report results in counts per minute (CPM).
a. True.
b. False.

33. Contamination survey instruments commonly read out in mrem/hour or rem/hour.
a. True.
b. False.

34. Exposure rate survey instruments typically measure in mrem/hour or rem/hour.
a. True.
b. False.

35. Which instrument type would be most beneficial to the responder when entering a field of radiation?
a. A contamination survey instrument.
b. A Thermo detector.
c. An oxygen concentration meter.
d. An exposure rate survey instrument.

36. The object behind a radiation exposure rate survey is to identify sources of radiation and determine general radiation fields. This will be useful for establishing hot zone boundaries.
a. True.
b. False.

37. When approaching the incident scene, the survey instrument should be set on the _____ scale.
a. Highest.
b. Lowest.
c. x 10.
d. x 100.

38. While surveying with a contamination monitor, if you hear an increase in count rate. What should you do?
a. Stop surveying, cover the area, leave, and wait for State Radiological Control Personnel to advise.
b. Pause for 5-10 seconds over the area to provide adequate time for instrument response.
c. Turn the contamination monitor up to the next scale and continue the survey.
d. Finish the survey with audible turned off to avoid distraction.

39. Dosimetry devices such as the Self-Reading Dosimeter (SRD) or Electronic Dosimeters can provide Responders with information concerning their total accumulated dose.
a. True.
b. False.

40. While working in the Hot Zone area you are using an SRD to track your dose. When you read your SRD, a higher than expected reading is indicated. What should you do?
a. Notify the Incident Commander of the situation and continue working.
b. Warn everyone to leave the area and decontaminate immediately.
c. Perform a thorough radiation survey while your co-workers continue their tasks.
d. Notify co-workers, have every-one in the area check their dosimeters, and exit the area immediately.

41. A Radioactive White-I label indicates that extremely _____ levels of external radiation can
be expected.
a. High.
b. Low.
c. Damaging.
d. Risky.

42. For a Radioactive Yellow-II label, what is the maximum radiation level (in mrem/hour) on contact with the package?
a. 0.5
b. 50
c. 200
d. 10

43. If a radiation survey instrument is available, the transport index is a good initial indicator for determining whether or not damage has occurred to the package.
a. True.
b. False.

44. Under normal transport conditions, the maximum radiation level at any point on the outer surfaces or outer plane of a transport vehicle should not exceed 200 mrem/hour.
a. True.
b. False.

45. A good way to assess whether or not a package is externally contaminated is to:
a. Perform a detailed radiation survey on the exterior of the package.
b. Take a wipe or smear sample on the exterior of the package.
c. Take a direct reading on the exterior of the package with a contamination survey instrument.
d. Touch the package and see if it is warm.

46. Response personnel could potentially become contaminated with radioactive material by:
a. Changing gloves after handling contaminated equipment or victims.
b. Sleeving or wrapping equipment prior to entry into the hot zone.
c. Eating, drinking or smoking in the hot zone.
d. Not touching unprotected skin areas.

47. To avoid the need for decontamination of critical hand-held equipment, a common practice is to place equipment in clear poly bags then remove and dispose of the bag on exit from the contaminated area.
a. True.
b. False.

48. Many commonly shipped radioactive materials have very short half-lives. Rather than decontaminating items that may become contaminated with these materials, the items can be sealed in a bag and allowed to decay to a stable or non-radioactive state.
a. True.
b. False.

49. The preferred method for personnel decontamination (skin and/or other body surfaces) involves the use of:
a. Mild soap and hot water.
b. A soft brush and hot water.
c. Abrasive cleaners and lukewarm water.
d. Mild soap and lukewarm water.

50. It is not necessary to use the wet decon method to decontaminate everyone exiting the hot zone at a radioactive material transportation incident. Removing the outer layer of PPE or clothing will often eliminate the contamination. A contamination survey will determine if further decontamination is necessary.
a. True.
b. False.