

TECHNICAL UNIVERSITY OF MOMBASA
FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE IN MEDICAL LABORATORY**

BMLS 14S &15M/YEAR4/ SEMESTER1

AML 4406: MEDICAL IMAGING

SEMESTER EXAMINATION

SERIES: NOV/DEC. 2016

TIME: 2 HOURS

1.a One of the following is a long term effect of radiation

Answer

- a. Loss of hair
 - b. Headache
 - c. toothache
 - d. Flue
 - e. Cataract genesis
2. which one among the following is precaution to be observed when using radioactive sources
- a. Hold with forceps
 - b. Never hold near eyes
 - c. Kept in boxes when not in use.
 - d. Stay away from radiation field
 - e. All of the above
3. Decay of atoms into different elements is the consequence of
- a. radioactive atoms emitting alpha and beta particles
 - b. same elements breaking into its proton electron forms
 - c. Disappearance of atoms altogether
 - d. formation of isotopes
 - e. ionization

4 . Emission of radioactive elements can be termed as

- a. radiation
- b. Radioactivity
- c. Radio isotopy
- d. Acquiring neutrons
- e. acquiring electrons

5. Elements bonded chemically to form compound

- a. Are molecules
- b. Unstable elements
- c. A radioactive materials
- d. Stable elements
- e. None of the above

6. Explain production of X-Rays

- a. Produced when fast moving electrons are stopped by a matter
- b. naturally occurring radiation
- c. Used as treatment
- d. are not radioactive
- e. Are potentially dangerous

7. An Element is described as unstable when

- a. It has equal number of protons and neutrons
- b. It causes electromagnetic waves
- c. It become negatively charged on gaining electron
- d. loosing electrons
- e. Decays into daughter atom

8..A radioisotope is created when.

- a. Adding a neutron to an atom
- b. A particle becomes heavier version
- c. The number of protons determines isotope.
- d. Atom becomes radioactive
- e. Electromagnetic field is created

9. Isotopes of carbon 18 has.

- a. 10 neutrons

- b. 12 neutrons
- c. None neutrons
- d. 6 neutrons
- e. 12 Protons

10. Reflected sound waves in the tissues when sound waves are introduced to the body

- a. Form stable isotopes
- b. undergoes radioactive decays to
- c. form parent and daughter isotope
- d. Are picked by transducer and processed
- e. Cannot be accounted for

11. Genetic effect of radiation is due to

- a. The way heat travels.
- b. The flow of heat from one place to another
- c. Electro-magnetic waves travelling at the speed of radio waves.
- d. Ionization
- e. Damaged cells in the reproductive system

12. when high frequency sound waves are produced in the tissues, reflected particles

- a. Are wasted
- b. Are translated to hydrogen
- c. Are picked by the tissues
- d. Destroy tissues
- e. Are picked by processor

13. The origin of beta particles released during disintegration by some isotopes

- a. Is breakdown of a nucleus into its proton-electron form
- b. Are a consequence of radioactivity reaction
- c. Are forcefully ejected electrons .
- d. Are gamma rays and energy are released
- e. None of the above

14. Tritium

- a. is a naturally occurring isotopes of Hydrogen
- b. Has no neutrons
- c. Has more number of protons than neutrons
- d. Has 2 protons
- e. Resembles Helium

15. The atomic number of carbon is

- a. 1
- b. 23
- c. 6
- d. 12
- e. 14

16. Radiopharmaceuticals are used majorly for

- a. Colouring organs
- b. Diagnosis
- c. Induction
- d. Identifying
- e. Separation

17. The substance introduced into the body to enhance differences in the neighbouring body structure is

- a. Radiation
- b. radio pharmaceuticals
- c. Contrast agent
- d. Gamma rays
- e. Alpha rays

18. Identify the properties of Deuterium below.

- a. 1 proton and 0 neutron
- b. 1 proton and 1 neutron
- c. 1 proton and 2 neutrons occurring naturally.
- d. 1 Proton and an electron
- e. 1 proton and 2 electron

19. The number of protons determine the number of electrons;

- a. In electrically neutral atom.
- b. In electrically positive atom
- c. In electrically negative atom
- d. In radioactive atoms
- e. In isotopes

20. The atomic number of an element is also known as

- a. The number of its proton
- b. The mass The number of protons and neutrons
- c. electrons
- d. All of the above

21. The parent isotope refers to

- a. The isotope which undergoes radioactive decay in a nuclear reaction
- b. Molecules
- c. positively charged particles
- d. Negatively charged particle
- e. Radioactive elements

22. Release of energy and particles

- a. Is a process of Radioactivity
- b. Is radiation
- c. Is spontaneous disintegration of atomic nucleus
- d. Is consequence of nucleus reaction
- e. Can be artificial

23. Stochastic effect of radiation;

- a. Are long term
- b. Has threshold below which no effect is seen
- c. Shortens life span
- d. Random and unpredictable
- e. Are predictable and inevitable

24. Electromagnetic force in atom cause

- a. Repulsion between electrons and neutrons
- b. Attraction between electrons and protons
- c. Repulsion between electrons and protons
- d. Attraction between protons and neutrons
- e. Attraction between neutrons and electrons

25. when an element gains neutrons--

- a. Electron is released
- b. Protons are released
- c. Tritium is added
- d. Isotope is formed
- e. decaying occurs

26 The instrument used to introduce sound waves into the body is

- a. Metal
- b. Gama camera
- c. Monitor
- d. Transducer
- e. Radiopharmaceuticals

27. Magnetic properties of an atom is influenced by the amount of

- a. isotopes
- b. Neutron
- c. Electrons
- d. Protons
- e. Radioisotopes

28. The ALARA Principle states that radiation absorbed by the body;

- a. should be kept as possible within normal range
- b. should be as low as reasonably achievable.
- c. Should be the smallest possible
- d. should be monitored
- e. Should be periodically checked

29. An element's half life is;

- a. The time taken to absorb radiation
- b. The time taken for an element to decay
- c. The time taken for parent atom to form daughter atoms
- d. The time taken for a half of an element to decay
- e. The time taken for nuclear to disintegrate

30. One of the following reactions form chain decay

- a. Nuclear reaction of stable elements
- b. Unstable parent which produce unstable daughters
- c. stable parents which form stable daughters\
- d. Unstable parents which form stable daughters
- e. Stable parents which form Unstable daughters

PART B

2. Give a detailed account of types of effect of radiation which can occur on exposed individuals
20 mks

3. 3. Describe principles of Ultrasound as radiation source, giving examples of each source of ionizing radiation (20mks)