

**TECHNICAL UNIVERSITY OF MOMBASA  
FACULTY OF APPLIED AND HEALTH SCIENCES**

**DEPARTMENT OF MEDICAL SCIENCES**

UNIVERSITY EXAMINATION OF DEGREE

BACHELOR OF MEDICAL LABORATORY SCIENCE (BMLS )

**AML 4141: MEDICAL PHYSIOLOGY I**

END OF SEMESTER EXAMINATION **SERIES** MAY 2016 PAPER ONE

**TIME** 2 HOURS

**SECTION A; Attempt all questions in this section**

1. Muscle contraction or movement occurs when the chemicals cross bridges are formed and broken between.
  - a. Microfilaments and microtubuls
  - b. Myofibrils and myofilaments
  - c. Endomyosin and epimysium.
  - d. Actin and myosin
  - e. Endomysium and permysium
2. Which of the following is not membranous organelle
  - a. lysosome
  - b. perixosomes
  - c. golgi apparatus
  - d. centrosomes
  - e. nucleus
3. Which of the following is the principle enzyme in the inner mitochondrial membrane
  - a. NADH dehydrogenase;
  - b. SDH, succinic dehydrogenase;
  - c. c, cytochrome c;
  - d. COX, cytochrome oxidase
  - e. All the above

4. Which of the following is true about primary lysosomes
  - a. Contain only digestive enzymes.
  - b. Contain digestive enzymes with food vacuoles
  - c. Contain partially digested remnants of other organelles and organic material
  - d. Contain remnants of other organelles and organic material
  - e. All the above
5. Which of the following is true about total body water
  - a. About two third of total body water is interstitial fluid
  - b. About one third of total body water is intracellular fluid
  - c. About one third of total body water is extracellular fluid
  - d. About two third of total body water is extracellular fluid
  - e. About one third of total body water is the interstitial space
6. The cytoskeleton of the cell consists of the following except
  - a. Actin and Myosin
  - b. Spindle apparatus
  - c. Microfilaments
  - d. Intermediate filaments
  - e. polysomes
7. Which of the following is false about the cell membrane
  - a. Is a phospholipid bilayer.
  - b. Is permeable to water and other polar substances
  - c. Contains protein which can aid in membrane transport.
  - d. Contains cholesterol which plays a role in membrane flexibility.
  - e. Contains glycoproteins.
8. The exchange of molecules or ions across cell membrane is referred to as
  - a. Antiport
  - b. Symport
  - c. Uniport
  - d. d.transport
  - e. co-transport
9. The following are characteristics of a muscle cell except.
  - a. Excitability

- b. Conductivity
  - c. Mobility
  - d. Contractility
  - e. Elasticity
10. Which of the following is not true about neuroglia.
- a. They are supporting cells of the nervous system
  - b. Promote health and growth
  - c. Produce and conduct impulses
  - d. Release chemical regulators.
  - e. Do not promote health and growth
11. The process by which depolarization of a muscle fiber initiates contraction is called.
- a. Action potential
  - b. Threshold potential
  - c. Membrane potential.
  - d. Depolarization repolarization
  - e. Excitation –contraction coupling
12. Which of the following happen during the depolarization phase of action potential.
- a. Voltage gated(VG)sodium channels close
  - b. Voltage gated(VG) potassium channels open and sodium channels close
  - c. Voltage gated(VG) potassium channels open
  - d. Voltage gated(VG)sodium channels open and potassium channels close
  - e. None of the above
13. Which of the following statements is true
- a. Sodium is more concentrated inside the cell
  - b. Chloride is more concentrated inside the cell
  - c. Glucose is more concentrated inside the cell
  - d. Potassium is more concentrated inside the cell
  - e. Potassium is more concentrated outside the cell
14. A reflex arch consists of which of the following
- a. Sensory neurone, afferent neurone, receptor, synapse, motor neurone effector organ
  - b. Receptor, afferent neurone, synapse, sensory neurone, effector organ
  - c. Receptor, motor neurone, synapse, sensory neurone effector organ.
  - d. Receptor sensory neurone synapse afferent neurone effector organ

- e. Receptor afferent neurone, synapse motor neurone effector organ
15. Which of the following is not true about monosynaptic reflex
- a. Consists of only one synapse within the CNS
  - b. Sensory neuron synapses directly with the motor neuron
  - c. The response is flexor muscle contraction and inhibition of extensor muscles
  - d. The Stretch Reflex is an example of monosynaptic reflex
  - e. The withdrawal reflex is not an example of monosynaptic reflex
16. Which of the following is the site of energy production in a cell
- a. Endoplasmic reticulum
  - b. mitochondria
  - c. plasma membrane
  - d. ribosomes
  - e. nucleus
17. Which of the following is permanent cells of the CNS
- a. neurone
  - b. osteoblast
  - c. fibroblast
  - d. neuroblast
  - e. purkinjer cells
18. Which of the following statements about neurones is not true
- a. Is the basic functional unit of the nervous system
  - b. Respond to physical and chemical stimuli
  - c. Produce and conduct electrochemical impulses
  - d. Release chemical regulators
  - e. Can divide by mitosis
19. Which of the following is a function of the centrosomes
- a. Formation of the network of microtubules that participate in making the cytoskeleton Spindle apparatus
  - b. Signaling that it is o.k. to proceed to cytokinesis
  - c. Signaling that it is o.k. for the daughter cells to begin another round of the cell cycle
  - d. the position of the centrosome establishes the point at which the axon will grow out.
  - e. All the above

20. Which of the following is false about the cardiac muscle
- Cells connect to each other at *intercalated discs*.
  - Makes up myocardium of heart
  - Contains multiple nucleus and many mitochondria.
  - Cells are short, branching & have a single nucleus
  - Unconsciously (*involuntarily*) controlled
21. Which of the following is not true about prokaryotic cells.
- Smaller than eukaryotic cells
  - larger than eukaryotic cells
  - DNA is in direct contact with rest of cells contents
  - lacks a nucleus but has a nucleoid
  - Some have a sticky outer coat called a capsule
22. Which of the following is not the properties of the supporting cells of the nervous system.
- Provide a supportive scaffolding for neurons
  - Segregate and insulate neurons
  - Promote health and growth
  - Guide young neurons to the proper connections
  - Do not segregate or insulate neurons
23. Which of the following statements below is not true
- Lysosomes produces lytic enzymes
  - Mitochondria is the site of energy production
  - Nucleus contain the genetic information
  - Golgi apparatus is the site of protein synthesis
  - All the above
24. In Isometric muscle contraction .
- Muscle shorten during contraction
  - Occurs in smooth muscle only
  - Used for body movements
  - Muscle is prevented from shortening in contraction
  - None of the above
25. Which of the following is cells secretes myelin

- a. Epidymanal cells
  - b. Satelites cells
  - c. Osteocytes
  - d. fibrocytes.
  - e. oligodendrocytes
26. Which of the following organelle is responsible for separation of chromosomes at chiasma during mitosis
- a. mitochondria
  - b. liposomes
  - c. centrioles
  - d. golgi apparatus
27. Which of the following is true about interstitial fluid
- a. Its the amout of fluid found in the intravascular space
  - b. Its the amout of fluid found outside the cells
  - c. Its the amout of fluid that forms part of the extracellular fluid and plasma
  - d. Its part of the extracellular fluid found outside the vascular system
  - e. About two third of total body water is interstitial fluid
28. Which of the following is not a central nervous system neuroglia.
- a. Astrocytes
  - b. shwann cells
  - c. oligodendrocytes
  - d. Microglia.
  - e. Epidymal cells
29. Bulk transport across the cell membrane includes the following except.
- a. phagocytosis
  - b. endocytosis
  - c. Cytitis
  - d. pinocytosis
  - e. Exocytosis
30. Typical osmolarity of human interstitial fluid or blood plasma ranges between.
- a. 200—275mosmol/l
  - b. 175—275mosmol/l
  - c. 300-400mosmol/l
  - d. 285-310mosmol/l
  - e. 275-385mosmol/l

## Section B

Answer all the questions

31. Describe the sequence of events in muscle contraction. (20 marks)

32a. Describe the cell cycle. (10 marks)

32b. What are centrosomes describe their role in the cell cycle (10 marks)