AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF NURSING & MIDWIFERY SCIENCES
END OF MAY-AUGUST 2023 SEMESTER EXAMINATIONS

COURSE CODE AND TITLE: BSN 113 MEDICAL PHYSIOLOGY

DATE: 2ND AUGUST 2023

Duration: 2 HOURS Start: 9:00 AM Finish: 11:00 AM

INSTRUCTIONS

1. This exam is out of 70 marks
2. This Examination comprises THREE Sections. Section I: Multiple Choice Questions (20 marks) Section II: Short Answer Questions (30 marks) and Section III: Long Answer Questions (20 marks)
3. Answer ALL Questions.
4. Do Not write anything on the question paper -use the back of your booklet for rough work if need be.

SECTION I: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. One of the following statements about negative feedback is incorrect: -
   A. Output is one of the inputs in the system
   B. It is based on a setpoint for controlled variable
   C. The system correct errors
   D. The set point of the system cannot be changed by input other than the controlled variable
2. The following is an example of primary active transport: -
   A. Calcium extrusion from cell by Na-Ca++ exchanger
   B. Glucose entry into cell through glucose transporter 2 (GLUT-2)
   C. Water flux into cell membrane trough aquaporin
   D. Calcium sequestration in sarcoplasmic reticulum by calcium-ATPase
3. One of the following ligands has the cell surface receptor: -
   A. Tubulin.
   B. Cytoskeleton
   C. Growth hormone
   D. Aldosterone
4. The following cannot be obtained by direct spirometry: -
   A. Tidal volume
   B. Vital capacity
   C. Inspiratory reserve volume
   D. Residual volume
5. Hyperventilation results in the following change in blood plasma: -
   A. Rise in oxygen carriage capacity
   B. Fall in p.H.
   C. Rise in p.H.
   D. Rise in carbon dioxide level
6. The baroreceptor reflex acts primarily in the following fashion: -
   A. Negative feedback
   B. Positive feedback
   C. Feedforward
   D. Adaptive control
7. The fourth heart sound: -
   A. Closure of the aortic and pulmonary valves
   B. Vibration of the ventricular walls during systole
   C. Ventricular filling in late diastole
   D. Closure of the mitral and tricuspid valve
8. One gram of hemoglobin can transport: -
   A. 134 mls of oxygen
   B. 13.4 mls of oxygen
   C. 1.34 mls of oxygen
   D. 0.134 mls of oxygen

9. The normal plasma osmolarity in osmol/kg of water amounts to: -
    A. 10
    B. 100
    C. 290
    D. 450
10. One of the following is a potent vasoconstrictor: -
    A. Ang II
    B. Vasopressin
    C. Endothelin-1
    D.

11. Place the following structures of respiratory tree in the order in which air passes through them: -
        1. Secondary bronchi
        2. Bronchioles
        3. Primary bronchi
        4. Alveoli
        5. Terminal bronchioles
    A. 4,1,2,3,5
    B. 1,3,5,2,4
    C. 3,1,5,2,4
    D. 3,1,2,5,4
    E. 1,3,2,5,4

12. Typical value of intrapleural pressure is _____cmH2O
    A. +6
    B. +3
    C. -3
    D. -6
13. The following G protein inactivates adenylyl cyclase: -
    A. Gαs
    B. Gαi
    C. Gq
    D. cAMP
14. The Hering-Breuer reflex
    A. Function to increase ventilation with changes in blood pressure
    B. Alter pulmonary ventilation when PO2 changes
    C. Alter pulmonary ventilation when PCO2 changes
    D. Prevent excessive tidal volume
15. The following are antigen presenting cells: -
    A. Regulatory T-Cells
    B. Neutrophils
    C. Natural killer cells
    D. B lymphocytes

16. Rods and cones are sensory cells that respond to light are functionally known as: -
    A. Mechanoreceptors
    B. Thermoreceptors
    C. Nociceptors
    D. Photoreceptors
17. The following are contact group of clotting factors except: -
    A. XI
    B. Prekallikrein
    C. HMWK
    D. V
18. One of the following is true about cardiac muscles: -
    A. The have automaticity and innervated by alpha motor neuron.
    B. They are easily fatigued
    C. They are controlled by autonomic nervous system.
    D. They do not get tetany
19. Excitation in skeletal muscle: -
    A. Is CNS in origin
    B. Stored memory is important
    C. Is a learned function
    D. Involves most part of brain
20. A subject with Snellen chart test result of 6/60 implies: -
    A. Can read at 6 feet where normal subject can read at 60 feets.
    B. Can read at 60 feets where normal subject can read at 6 feets.
    C. Is described as emmetropia
    D. Does not have perception of light stimulus on the left eye

SECTION II: SHORT ANSWER QUESTIONS (30 MARKS)

1. Explain the sequential steps of cell cycle (5 Marks)
2. Outline five (5) physiological role of calcium in human body (5 Marks)
3. Define positive feedback system and give an example (5 Marks)
4. Explain using illustration the cardiac action potential (5 Marks)
5. Explain any five (5) antithrombogenic factors (5 Marks)
6. Outline the steps of the excitation-contraction coupling in skeletal muscles (5 Marks)

SECTION III: LONG ANSWER QUESTION – (20 MARKS)

1. Describe oxygen, carbon dioxide transport and erythropoiesis process (20 Marks)