



UNIVERSITY OF EMBU

2017/2018 ACADEMIC YEAR

TRIMESTER EXAMINATION

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
(NURSING)

HNS 122: MEDICAL PHYSIOLOGY II

DATE: APRIL 6, 2018

TIME: 2:00 – 5:00 PM

INSTRUCTIONS:

Answer:

All MCQs in Section A;

All Short-answer Questions in Section B

All Long-answer Questions in Section C

Cancelled work should be done neatly by crossing with a single line in the essay and by use of X in the MCQs

SECTION A: MULTIPLE CHOICE QUESTIONS (TOTAL: 20 MARKS)

Choose (CIRCLE/TICK) only one correct answer from the following questions

1. The basic unit of contraction is
 - A) Myosin
 - B) Actin
 - C) Z-Lines
 - D) sarcomeres
2. A cord or strap of dense tissue that connects a muscle to bone is called
 - A) Tendon
 - B) Ligament
 - C) Bursa
 - D) Arthritis

3. This is the explanation of how muscles contract.
 - A) Lock and Key Hypothesis
 - B) Cell Theory
 - C) Mendels laws
 - D) Sliding filament model
4. An increase in whole body oxygen demand is met chiefly by:
 - A) Increasing cardiac output
 - B) Increasing oxygen content of arterial blood
 - C) Increasing oxygen extraction from arterial blood
 - D) Increasing blood pressure
4. In order to warm the body up when cold:
 - A) sudoriferous glands release sweat
 - B) melanin is produced
 - C) vitamin D is synthesized
 - D) the arrector pili muscles contract to stand hairs upright
5. The vital function of the skin is:
 - A) the cells of the epidermis store glucose as glycogen for energy
 - B) it converts modified epidermal cholesterol to vitamin D
 - C) it aids in the transport of materials throughout the body
 - D) it absorbs vitamin C so that the skin will not be subject to diseases
6. The primary ionic basis of the prepotential in the sinoarteriole node is:
 - A) Calcium influx through transient T Calcium channels
 - B) Inwardly directed long-lasting Calcium current
 - C) Outward Sodium current
 - D) Potassium efflux through leak channels
7. Normally, the impulse that excites the left ventricular myocardium originates in the:
 - A) SA node
 - B) Purkinje system
 - C) Left bundle branch
 - D) Ventricle
8. The propagation of repolarization from ventricular epicardium to endocardium is represented by the:
 - A) QRS complex
 - B) QT interval
 - C) T wave
 - D) TP period

9. In a healthy normotensive individual at rest, heart rate is typically increased by:
- A) Deep expiration
 - B) Fear
 - C) Anger
 - D) Intravenous infusion of phenylephrine
10. _____ has a direct vasodilator effect on smooth muscle in arterioles in the presence of endothelial dysfunction.
- A) Acetylcholine
 - B) Angiotensin II
 - C) Nitric oxide
 - D) Norepinephrine
11. Thin walled capillaries do not burst when intracapillary pressure is increased within physiologic limits because:
- A) They lack smooth muscle cells
 - B) The blood flow rate is less
 - C) They have small radius
 - D) Capillary hematocrit is less than whole-body hematocrit
12. The most abundant protein in the blood is:
- A) Albumin
 - B) Hemoglobin
 - C) Fibrinogen
 - D) Beta-1 globulin
13. Primary hemostasis refers to cessation of bleeding due to
- A) Formation of a definitive clot
 - B) Clot retraction
 - C) Formation of a temporary platelet plug
 - D) All of the above
14. The adhesion of platelets to subendothelial collagen is impaired in the absence of:
- A) von Willebrand factor
 - B) Plasmin
 - C) Heparin
 - D) Antithrombin

15. The leukocyte that contains heparin is:
- A) neutrophil
 - B) eosinophil
 - C) basophil
 - D) monocyte
-
16. A substance that stimulates the immune system to release antibodies:
- A) fibrinogen
 - B) antibody
 - C) interleukin
 - D) antigen
17. In an Rh-negative mother not previously sensitized by the Rh antigen, RH incompatibility does not usually have a serious consequence during the first pregnancy because:
- A) Antibodies are not able to cross placenta
 - B) The titer of IgG is low during the primary immune response
 - C) IgG is ineffective against fetal red cells
 - D) Massive hemolysis in the fetus is compensated by increased erythropoiesis
18. Lymph flows:
- A) toward the heart only
 - B) in a circular pattern within the tissues
 - C) both toward and away from the heart
 - D) into the capillaries
19. The mechanism that aids lymph return include:
- A) smooth muscle contractions within the blood vessels
 - B) milking action of smooth muscles
 - C) pressure changes within the thorax
 - D) the pumping action of the heart
20. During the cardiac cycle, aortic valve closes at the end of:
- A) Isovolumetric systole
 - B) Rapid ejection
 - C) Diastasis
 - D) Protodiastole

SECTION B: Answer ALL the questions in this section (40 marks; Use the answer booklet provided)

1. State functions of bones (5 marks)
2. Explain the mechanism of muscle stimulation and relaxation by motor neuron (5 marks)
3. State the functions of Epidermal Growth Factor (EGF) (4 marks)
4. State 6 factors affecting mean arterial pressure (6 marks)
5. Describe antibody mediated immune response (5 marks)
6. State the physiological functions of lymph (4 marks)
7. Briefly describe the mechanism of lymph flow in the body: (6 marks)
8. State 5 factors affecting heart rate (5 marks)

SECTION C: Answer ALL the questions in this section (40 marks; Use the answer booklet provided)

QUESTION ONE

1. The human body motion depends on contraction of the muscles and the functional unit of the muscle is sarcomere.
 - a) State the 4 components of sarcomere (6 marks)
 - b) Describe how muscle cells provide ATP to derive the cross-bridge cycle (7 marks)
 - c) Explain the sliding-filament model in muscle contraction (7 marks)
2. The respiratory system is made up of a gas-exchanging organ and a “pump” that ventilates the lungs
 - a) State the 4 organs of respiratory system (4 marks)
 - b) Describe the respiratory function of the nose (7 marks)
 - c) Discuss the transport of blood oxygen and carbon dioxide which is essential for internal respiration (9 marks)

--END--

