CANDIDATE NUMBER----------

"Investing in Africa's future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

NSLS106 : ANATOMY AND PHYSIOLOGY

END OF FIRST SEMESTER FINAL EXAMINATIONS

November 2019

LECTURER: MRS CHITUKU S

DURATION: 3 HRS

INSTRUCTIONS

Answer **ALL** questions in Section A on this paper (20)

Answer all questions in Section B on this paper (20)

Answer three questions from section C All questions carry equal marks (20) each.

Section A (20 marks)

Question 1-27 Circle the right answer

1. The basic structural and functional unit of living organisms is the ----------
   A. Cell
   B. Nucleus
   C. Organelle
   D. Plasma membrane

2. The outer boundary of a human cell is the ----------
   A. plasma membrane
   B. nuclear membrane
   C. cytoskeleton
   D. cell wall

3. Which of the following would not be found in the plasma membrane of the human cell?
   A. Cholesterol
   B. RNA
   C. Gycolipids
   D. Proteins
   E. phospholipids

4. Water can readily diffuse from the cell membrane.
   A. True
   B. False

5. Osmosis is ----------
A. Diffusion of solute across the membrane
B. a form of facilitated diffusion across a membrane
C. a form of active transport across a membrane
D. diffusion of water across the membrane

6. Which of the following pairs is a correct match?
A. Endocytosis: passive membrane transport process
B. osmosis: active membrane transport process
C. facilitated diffusion: active membrane transport process
D. exocytosis: active membrane transport process

7. A cell will swell, and likely burst, if it is placed in a(n) _____ solution.
A. Hypotonic
B. Isotonic
C. Hypo-osmotic
D. Hypertonic

8. Primary active transport is driven by secondary active transport.
A. True
B. False

9. Pinocytosis is a type of_____.
A. Receptor-mediated exocytosis
B. facilitated diffusion
C. endocytosis
D. exocytosis

10. Cells of the body mainly use _____ for the selective endocytosis of most macromolecules.
A. Diffusion
B. Pinocytosis
C. Fluid-phase endocytosis
D. Receptor-mediated endocytosis

11. At rest, most body cells are not polarized.
A. True
B. False

12. The primary site of cellular ATP production in most cells is the _____
A. Lysosomes
B. Ribosomes
C. Mitochondrion
D. Nucleus

13. Human blood ----------
A. Is mostly composed of white blood cell
B. Is primarily composed of both formed elements and plasma
C. Has nucleated erythrocytes within it.
D. All of the above
E. None of the above

14. The structural characteristic(s) of an erythrocyte that contribute to its function include:
A. Its biconcave shape
B. Its hemoglobin composition
C. Its primary metabolic process for producing ATP
D. None of the above
E. All of the above

15. Starting from the inner-Starting at the inner most layer of the heart outwards, the names of the layers in order are:

A. Pericardium, Epicardium, Myocardium and Endocardium
B. Endocardium, Myocardium, Epicardium and Pericardium
C. Pericardium, Epicardium, Endocardium and Myocardium
D. Epicardium, Endocardium, Myocardium and Pericardium
E. Myocardium, Endocardium, Pericardium and Epicardium

16. Hypernatremia

A. Depresses the heart rate
B. Dramatically increases heart irritability
C. Leads to heart block and cardiac arrest
D. Blocks heart contraction by inhibiting ionic calcium transport

17. During exercise, the greatest increase in blood flow occurs in:

A. Skeletal muscle
B. Cardiac muscle
C. Kidneys
D. Liver
E. None of the above

18. T-cells

A. Produce antibodies that immobilize antigens
B. Attack and destroy foreign cells
C. Produce plasma cells
D. All of the above
E. None of the above

19. The spleen

A. Is a site of lymphocyte proliferation
B. Is involved with immune system surveillance and response

C. Cleanses the blood

D. All of the above

E. None of the above

20. Which of the answers below puts the three divisions of the pharynx in order? (Start with the most cranial section and end with the most caudal section.)

A. Nasopharynx, Oropharynx and Laryngopharynx

B. Oropharynx, Nasopharynx and Laryngopharynx

C. Laryngopharynx, Oropharynx and Nasopharynx

D. Oropharynx , Laryngopharynx and Nasopharynx

E. None of the answers above are in the correct order

21. During a myogenic response in the kidneys

A. An increase in systemic pressure causes the afferent arterioles to dilate

B. An increase in systemic pressure causes the afferent arterioles to constrict

C. The response prevents glomerular blood pressure from rising to damaging
levels

D. A & C

E. B & C

22. Vasodilation of the efferent arteriole from the glomerulus.

A. Increases the hydrostatic pressure in the glomerulus

B. Decreases GFR

C. Decreases the hydrostatic pressure in the glomerulus

D. Increases GFR

E. A & D

F. B & C

G. A & B

H. C & D

23. Angiotensin II

A. Is a potent vasoconstrictor

B. Increases MAP

C. Stimulates the release of aldosterone

D. Stimulates the release of ADH

E. All of the above

24. Severe sweating will

A. Cause a decrease in plasma volume

B. Cause an increase in plasma osmolarity

C. Increase the production of ANP

D. Increase the production of ADH

E. A, B, and D

F. All of the above

25. The detrusor muscles in the bladder are regulated by:

A) The sympathetic nervous system

B) The parasympathetic nervous system

C) The somatic nervous system

D) None of the above

26. Large Intestine

A) Salt and water, mucus, amylase

B) Mucus

C) HCl, pepsin, mucus

D) Digestive enzymes, bicarbonate

27. Which of the following best describes the location where the carotid pulse can be found?

(A) In front of the ears and just above eye level

(B) In the antecubital space

(C) In the middle of the groin
(D) On the anterior side of the neck
(E) On the medial aspect of the wrist

Match the following terms with their definitions	
28. Neutrophil 29. IgA 30. IgG 31. IgM 32. Eosinophil 33. Mast Cell 34. Macrophage	A) An antibody dimer that helps prevent the attachment of pathogens to epithelial cell surfaces B) A white blood cell that releases histamine during inflammation C) A white blood cell that is partial to parasitic worms D) An antibody monomer that is the most abundant and diverse antibody during the primary and secondary immune response E) A white blood cell that is partial to bacteria and fungi F) A antibody pentamer released by plasma cells

	during the primary immune response G) The primary phagocyte of the immune system
Match the digestive organ with its exocrine secretion(s) below. The same answer may be used more than once.	
35. Stomach 36. Small Intestine 37. Esophagus 38. Mouth 39. Pancreas 40. Liver	A. Salt and water, mucus, amylase B. Mucus C. HCl, pepsin, mucus D. Digestive enzymes, bicarbonate E. Bile salts, bicarbonate and organic waste products F. Enzymes, salt and water, mucus

Section B (20 marks) Fill in missing information

1. – toward the head end or upper part of a structure or body; above
2. – away from the head end or toward the lower part of a structure or body; below
3. – toward or at the front of the body; in front of

4. – toward or at the backside of the body; behind

5. – toward or at the midline of the body; on the inner side of

6. – away from the midline of the body; on the outer side of

7. – close to the origin of the body part or the point of attachment of a limb to the body trunk

8. – farther from the origin of a body or the point of attachment of a limb to the body trunk.

9. – toward or at the body surface

10. – away from the body surface; more internal.

11. The heart is ---------- to the breastbone

12. The elbow is ---------- to the wrist

13. The skin is ---------- to the skeleton

14. The breastbone is---------- to the spine

15. The heart is ---------- to the arm

The table below shows neurotransmitters and their major function. Complete the table.(6)

Neurotransmitter	Location	Major action
16.	CNS	Involved in control of skeletal muscle contractions
Dopamine	CNS PNS	17.
18.	CNS	Leads to sleepiness and moods regulation

Histamine	CNS	19.
20.	CNS	Creates sense of good feelings

Section C (60 marks) Answer three from this section.

Question 1.

Outline the key structures and functions of blood. (20)

Question 2.

Describe two of the following:

a. Functions of the pituitary gland (10)
b. Thymus gland (10)
c. Pineal gland (10)

Question 3.

a. With an aid of a diagram describe the structure of the heart (10)

b. Describe the cardiac cycle (10)

Question 4

a) Describe the menstrual cycle (10)
b) Outline the mechanism of respiration/breathing (10)

END