UNIVERSITY OF ESWATINI

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES

FINAL EXAMINATION

MAY 2019

COURSE CODE: **EHS 108**

TITLE OF PAPER: **PRINCIPLES OF ANATOMY AND PHYSIOLOGY**

DURATION: **2 HOURS**

MARKS: **100**

INSTRUCTIONS

1. **THIS PAPER CONSISTS OF TWO (2) SECTIONS: SECTION 1 – MULTIPLE CHOICE AND SECTION 2 – SHORT ESSAY QUESTIONS.**
2. **ANSWER ALL QUESTIONS IN SECTION ONE AND TWO QUESTIONS IN SECTION TWO.**
3. **READ QUESTIONS AND INSTRUCTIONS CAREFULLY.**
4. **EACH QUESTION IS TO BE ANSWERED ON A SEPARATE SHEET OF PAPER.**

THIS PAPER IS NOT TO BE OPENED UNTIL THE INVIGILATOR HAS GRANTED PERMISSION.

SECTION 1

Instructions: For each question/statement, choose the most appropriate response and write the question number and the corresponding letter in your answer sheet, in capital letters, e.g. 20. D. Each correct response carries 1 mark.

1. The elbow is ----------to the wrist
   A. Distal
   B. Proximal
   C. Lateral
   D Medial
2. The study of the structure of tissues is an example of ----------
   A. Cell anatomy
   B. Cytology
   C. Embryology
   D. Histology
3. Which of the following types of epithelial cells are examined during a Pap smear test?
   A. Stratified cuboidal epithelium
   B. Stratified columnar epithelium
   C. Stratified squamous epithelium
   D. Transitional epithelium
4. Systematic anatomy considers the structure of major----------, whereas surface anatomy refers to the study of ----------?
   A. Superficial markings; macroscopic anatomy
   B. Anatomical landmarks: organ systems
   C. Superficial external features; anatomical landmarks
   D. Organ system; superficial markings

5. Moving along the surface of the skin from the wrist towards the elbow is an example of moving in a ----------direction

A. Medial

B. Lateral

C. Proximal

D. Distal

6. A plane that is cut parallel to the midsagittal plane is a ----------

A. Transverse section

B. Parasagittal section

C. Frontal section

D. Sectional plane

7. Beginning with chemicals and proceeding through increasing levels of complexity, the correct sequence is ----------

A. Chemicals, tissues, cells, organs, organ system, organism

B. Chemicals, organ system, organs, tissues, cells, organism

C. Chemicals, cells, organ systems, tissues, organs, organism

D. Chemicals, cells, tissues, organs, organ systems, organism

8. Damaged at the cellular, tissue, or organ level often affects the entire system. This supports the view that ----------

A. Each level is dependent on the others

B. Each level is totally independent of the others

C. Each level has its own specific function

D. The lower levels depend on the higher levels

9. A person in anatomical position is standing erect, feet facing forward and ----------

A. Arms in a raised position, with palms of hands facing forward and with the thumbs to the outside

B. Arms hanging to sides, with palms of hands facing forward and with the thumbs to the outside

C. Arms hanging to sides, with palms of hands facing anteriorly and the thumbs located medially

D. Arms in a raised position, with palms of hands facing dorsally and the thumbs to the inside

10. Which of the choices contains the sequence of anatomical directions equivalent to ventral, posterior, superior, inferior?

A. Dorsal, anterior, caudal, cephalic

B. Cephalic, caudal, posterior, anterior

C. Anterior, dorsal, cephalic, caudal

D. Caudal, cephalic, anterior, posterior

11. Which of the following types of loose connective tissue are responsible for overweight or obesity?

A. Reticular

B. Bone

C. Adipose

D. Areolar

12. Which of the following types of epithelial cells has surfaces with cilia or microvilli?

A. Transitional cells

B. Columnar cells

C. Cuboidal cells

D. Squamous cells

13. The ----------cartilage looks like frosted glass when freshly exposed

A. Elastic

B. Skeletal

C. Hyaline

D. Fibrocartilage

14. Which of the following is **NOT** a function of epithelial tissues?

A. Provide physical protection

B. Produce specialized secretions

C. Store energy reserves for use when nutrient supplies are low

D. Receive stimuli and provide nervous system with information about the sensation

15. What does it mean for a gland to be classified as "simple"?

A. It has a duct that divides one or more times on its way to the gland cells

B. It has several secretory areas that share a duct

C. The secretory portion of the gland is shaped like a tube

D. It has a single duct that does not divide on its way to the gland cells

16. Which of the following epithelial tissues is mostly involved in secretion and absorption only?

A. Transitional epithelial

B. Simple columnar

C. Stratified columnar

D. Simple cuboidal

17. Which of the following is a fluid connective tissue?

A. Cartilage

B. Blood

C. Adipose tissue

D. Saliva

18. The main function of the astrocytes include----------

A. Phagocytize microorganism

B. Control chemical environment around neurons

C. Line central cavities of the brain

D. Produce an insulating covering sheath

19. Ventricles of the brain and the central canal of the spinal cord are filled with ----------

A. Normal saline

B. Water

C. Cerebrospinal fluid

D. Intracellular fluid

20. The central nervous system consist of which of the following?

A. Brain and spinal cord

B. Somatic and autonomic divisions

C. Cranial and spinal nerves

D. Sympathetic and autonomous division

21. Which sequence best describes the flow of lymph through the lymphatic system?

A. Capillaries, vessels, trunks, ducts

B. Ducts, vessels, trunks, capillaries

C. Ducts, trunks, capillaries, vessels

D. Capillaries, trunks, vessels, ducts

22. The lymphoid tissue's structural framework is composed of ----------

A. Adipose tissue

B. Dense, irregular connective tissue

C. Dense, regular connective tissue

D. Reticular connective tissue

23. Collection of lymphoid tissue that guard mucosal surfaces (MALT) include all of the following **EXCEPT**----------

A. Appendix follicles

B. Tonsils

C. Peyer's patches

D. Thymus

24. The function of the spleen include all of the following **EXCEPT**----------

A. Removal of old blood cells from the blood

B. Storage of blood platelets

C. Storage of iron

D. Forming crypts that trap bacteria

25. Which of the following is located in the spleen's white pulp?

A. Blood vessels

B. Capsules

C. Lymphocytes

D. Macrophages

26. The lymphoid organ that functions during youth and then begins to atrophy/shrink is the -
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A. Spleen

B. Palatine

C. Bone marrow

D. Thymus

27. Entry of lymph into the lymphatic capillaries is promoted by which of the following?

A. Greater fluid in the blood vessels

B. The skeletal muscle pump

C. One-way mini valves formed by overlapping endothelial cells

D. The respiratory pump

28. Arrange the tunics/layers of the walls of the eyeball in their correct sequence from inside out.

A. Choroid, sclera, retina

B. Retina, choroid, sclera

C. Sclera, choroid, retina

D. Retina, sclera, choroid

29. Which sequence follows the correct passage of light entering the cornea?
    A. Cornea, lens, posterior segment, anterior segment, pupil
    B. Cornea, anterior segment, posterior segment, lens
    C. Cornea, anterior segment, pupil, lens, posterior segment
    D. Cornea, pupil, posterior segment lens, anterior segment

30. When focusing on a distant object, the lens ----------
    A. Flattens
    B. Bulges
    C. Becomes more convex
    D. Becomes more concave

31. When viewing a close object, the lens ----------
    A. Flattens
    B. Bulges
    C. Becomes more convex
    D. Becomes more concave

32. The structure in the cochlea of the inner ear that provides information to the central nervous system is the ----------
    A. Tectorial membrane
    B. Organ of Corti
    C. Scala tympani
    D. Basilar membrane

33. What is the dividing line between the external ear and the middle ear?
    A. Pharyngotympanic tube
    B. Sacculus
    C. Utriculus
    D. Tympanic membrane

34. What are the "patrol agents" in the blood that defend the body against toxins and pathogens?

    A. Red blood cells and platelets

    B. White blood cells and antibodies

    C. Albumins and globulins

    D. Hormones and enzymes

35. Which of the following is **NOT** a component of plasma?

    A. Proteins

    B. Electrolytes

    C. Red blood cells

    D. Water

36. What are the major components of the cardiovascular system?

    A. Red blood cells, white blood cells, and platelets

    B. Blood vessels, heart, and blood

    C. Lymph, plasma, and hematocrit

    D. Veins, arteries and capillaries

37. Vessels that carry blood away from the heart are called----------

    A. Capillaries

    B. Arteries

    C. Veins

    D. Sinusoids

38. When the heart beats, the ---------- contracts

    A. Atria

    B. Mitral valve

    C. Ventricles

    D. Auricles

39. The left atrium collects blood from the ---------- and empties into the ----------

A. Systemic circuit to right ventricle

B. Pulmonary circuit to right ventricle

C. Pulmonary arteries to left ventricle

D. Systemic circuit to left ventricle

40. What are the two major factors affecting blood flow rates?

A. Diameter and length of blood vessels

B. Pressure and resistance

C. Turbulence and viscosity

D. Neural and hormonal control mechanism

Total: 40 Marks

SECTION 2

Instructions: In this section, answer only two (2) questions. Question 1 is compulsory.

Question 1

A. With aid of examples, differentiate between cilia and microvilli (4)

B. Define apoptosis and state its importance in the body (3)

C. Distinguish between osmosis and facilitated diffusion (4)

D. Define a hypotonic solution and state what would happen to a cell placed in this type of solution (3)

E. With aid of examples, distinguish between endocytosis and exocytosis (4)

F. List the three (3) major parts of a nucleus (3)

G. List any seven (7) cell organelles and state their functions (14)

Total: 35 Marks

Question 2

A. Define a synapse (1)

B. Describe the three (3) basic functions of the nervous system (6)

C. Describe how cocaine produces its effects in the neurons (6)

D. State any five (5) long term effects of using the drug, cocaine (5)

E. Draw a structure of a motor neuron and label the following: (7)

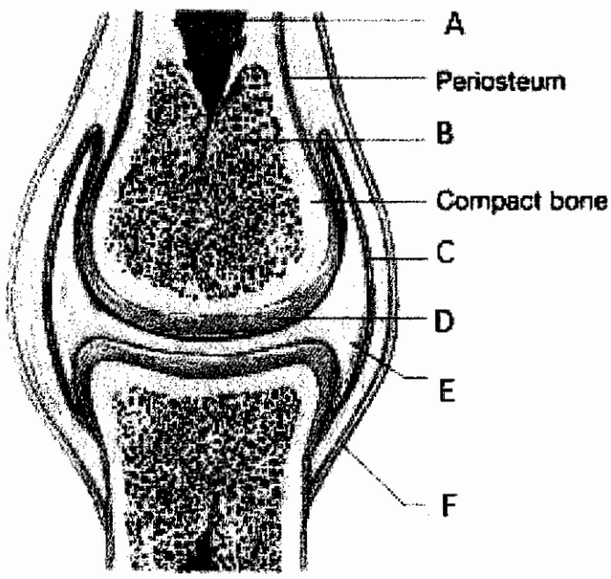
i. Dendrites
ii. Axon
iii. Nucleus
iv. Myelin sheath
v. Terminal branches
vi. Node of Ranvier
vii. Axon terminal

Total: 25 Marks

Question 3

A. Define abduction (1)

B. Label the following joint structures (A-F): (6)



C. Describe the function of each of the above joint structures in B. (A-F) (6)

D. Describe any six (6) functions of a bone and give an example in each. (12)

Total: 25 marks