

**UNIVERSITY OF SWAZILAND  
FACULTY OF HEALTH SCIENCES  
DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE**

**FINAL EXAMINATION, MAY 2012**

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

**COURSE CODE: EHM 108**

**TIME ALLOCATED: TWO (2) HOURS**

**MARKS ALLOCATED: 75**

**INSTRUCTION:**

- **THERE ARE SEVEN (7) PRINTED PAGES EXCLUDING COVER PAGE**
- **THERE ARE THREE (3) QUESTIONS, DIVIDED INTO 2 SETIONS:**
  - **SECTION A WITH QUESTION 1A AND 1B: OBJECTIVE**
  - **SECTION B WITH QUESTIONS 2 AND 3: SHORT ESSAYS**
- **DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO BY THE INVIGILATOR**

## SECTION A: OBJECTIVE QUESTIONS (35 MARKS)

### QUESTION 1 A: MULTIPLE CHOICE

For each question, choose the most appropriate response and write in your answer sheet the corresponding letter only, in **capital letters**, e.g. 26 B. Each correct response carries 1 mark.

1. Which of the following is correct about Anatomy and Physiology?
  - a) Anatomy deals with the visible aspects of the body only while Physiology deals with the invisible aspects.
  - b) The basic unit of both Anatomy and Physiology is the cell.
  - c) Anatomy involves the study of the function of the body while Physiology is the study of the structural aspects of the body
  - d) a and b
  
2. A vertical line that divides the body into anterior and posterior parts is known as a \_\_\_\_\_ plane.
  - a) sagittal
  - b) coronal
  - c) frontal
  - d) b & c
  
3. The smallest finger is located \_\_\_\_\_ to the thumb.
  - a) laterally
  - b) superiorly
  - c) medially
  - d) posteriorly
  
4. Which of the following bones is part of the axial skeleton?
  - a) Rib
  - b) Vertebra
  - c) Humerous
  - d) a and b

5. Which of the following ions participates in neuromuscular transmission
- a)  $\text{Na}^+$
  - b)  $\text{Mg}^+$
  - c)  $\text{Fe}^+$
  - d)  $\text{Zn}^+$
6. Which of the following serves as the control centre in a homeostatic mechanism?
- a) Skin
  - b) Spinal Cord
  - c) Glands
  - d) None of the above
7. Stimulation of baroreceptors by an increase in blood pressure triggered a series of events that led to the reduction of the BP to normal levels. This is an example of \_\_\_\_\_.
- a) negative feedback
  - b) positive feedback
  - c) negative feedback followed by Positive feedback
  - d) positive feedback followed by negative feedback
8. Which of the following structures is surrounded by a double membrane?
- a) The cell
  - b) The nucleus
  - c) Ribosomes
  - d) a and b
9. Which of the following is correct about endocrine glands?
- a) They secrete mucus
  - b) They have long ducts
  - c) They can be unicellular or multicellular
  - d) All of the above

10. Skeletal muscles are \_\_\_\_\_.
- a) striated
  - b) involuntary
  - c) single-unit
  - d) all of the above
11. Which of the following muscles will be in use when one picks food from a plate into his mouth?
- a) Bicep
  - b) Gluteal
  - c) Gastrocnemius
  - d) Deltoid
12. A hungry man started salivating after seeing some delicious food. This response was mediated by the \_\_\_\_\_.
- a) parasympathetic system
  - b) sympathetic system
  - c) somatic nervous system
  - d) a and b
13. Which of the following chambers of the heart receives blood from systemic circulation
- a) Right atrium
  - b) Right ventricle
  - c) Left atrium
  - d) Left ventricle
14. Deficiency of calcium ( $\text{Ca}^{2+}$ ) in the body is likely to cause \_\_\_\_\_.
- a) heart problems
  - b) weakness of bones
  - c) hearing problems
  - d) a and b

15. Transmission of impulses across a synaptic gap is mediated by \_\_\_\_\_.
- a) neurotransmitters
  - b) hormones
  - c)  $\text{Ca}^+$
  - d)  $\text{Na}^+$  and  $\text{K}^+$
16. Which of the following parts of the brain autonomically controls the heart rate and breathing?
- a) Cerebellum
  - b) Brain stem
  - c) Cerebral cortex
  - d) All of the above
17. The fluid that protects and nourishes the central nervous system is known as \_\_\_\_\_.
- a) synovial fluid
  - b) plasma
  - c) tissue fluid
  - d) cerebrospinal fluid
18. Which of the following organs contains sensory receptors?
- a) Skin
  - b) Eye
  - c) Skeletal muscle
  - d) All of the above
19. Sensation of balance and position of the whole body is performed by \_\_\_\_\_.
- a) the legs
  - b) the ear
  - c) cerebral cortex
  - d) all of the above
20. Which of the following is part of the specific immunity?
- a) Skin
  - b) Antibodies
  - c) Phagocytes
  - d) Red blood cells

21. Which of the following organs is part of the lymphatic system?
- a) Tonsils
  - b) Liver
  - c) Brain
  - d) Bones
22. In the body oxygen is transported by \_\_\_\_\_.
- a) red blood cells
  - b) white blood cells
  - c) plasma proteins
  - d) all of the above
23. Mechanical digestion is done by \_\_\_\_\_.
- a) enzymes
  - b) teeth
  - c) tongue
  - d) intestines
24. Excretion of wastes from the blood to form urine is done by the \_\_\_\_\_.
- a) kidney
  - b) Liver
  - c) lungs
  - d) heart
25. Which of the following cells has got half the number chromosomes?
- a) Ovum
  - b) Epithelial cell
  - c) Red blood cell
  - d) Somatic cell

[25]

QUESTION 1B: MATCHING AND TRUE OR FALSE

Choose a word or phrase in column B that best fits the descriptions in each statement given in column A, and write the corresponding letter only in your answer sheet, in **capital letters**, e.g. 11K B. Each correct response carries 1 mark.

Column A	Column B
1. A neurotransmitter that mediates parasympathetic response	(a) Cell
2. A fluid that lubricates joints	(b) Pleural fluid
3. A fluid that surrounds the lungs	(c) Action potential
4. A wave of depolarization that can be transmitted along a neuron	(d) Acetylcholine
5. The basic unit for skeletal muscle contraction	(e) Sarcomere
	(f) Synovial fluid
	(g) Noradrenaline
	(h) Tissue fluid
	(i) Resting membrane potential

State whether each of the following statements is true (T) or false (F), and write the corresponding letter only, in **capital letters**, e.g. 12 B. Each correct response carries 1 mark.

6. Mitochondria contains DNA
7. Muscle relaxation consumes energy
8. A resting membrane potential of +20 mV is normal
9. Sensation from the right leg is registered on the left side of the brain.
10. Nerves with myelin sheath transmit impulses faster than those without.

[10]

[Total 35 Marks]

**SECTION B: SHORT ESSAY QUESTIONS (40 MARKS)**

**QUESTION 2**

(a) State one main function of each of the following cell organelles:

(i) Mitochondria

(ii) Ribosomes

(iii) Cytoskeleton

(iv) Golgi apparatus

(v) Smooth endoplasmic reticulum

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(b) State the three (3) main types of intercellular junctions found in the body. For each of them outline its indication/unique role in the body and give an example of a specific body tissue where it is usually found.

[9]

(c) Compare and contrast anatomically and physiologically between the nervous system and the endocrine system.

[6]

**[Total 20 Marks]**

**QUESTION 3**

(a) Describe and explain with the aid of examples how the skin protects the body from environmental threats.

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(b) Mr X has been employed as a grinding mill operator where he is exposed to loud noise.

i. Describe and explain physiologically the probable response by his body to this exposure?

[5]

ii. Discuss the possible recommendation that you will make in the interest of maintenance of good health to Mr X?

[2]

**[Total 20 Marks]**