

UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES

FINAL EXAMINATION

MAY 2014

COURSE CODE: EHM 108

TITLE OF PAPER: PRINCIPLES OF ANATOMY AND PHYSIOLOGY

DURATION: 2 HOURS

MARKS: 75

INSTRUCTIONS

- 1. THIS PAPER CONSISTS OF TWO (2) SECTIONS: SECTION 1 –OBJECTIVE QUESTIONS AND SECTION 2 – ESSAY QUESTIONS.**
- 2. ANSWER ALL QUESTIONS**
- 3. READ QUESTIONS AND INSTRUCTIONS CAREFULLY.**

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

SECTION 1

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

1. Which of the following statements is **NOT** correct about endocrine glands?
 - A. They have long ducts
 - B. They are arranged in cords and branching networks
 - C. They release hormones into surrounding tissue fluid
 - D. They influence metabolic activity

2. The following are hormones produced by the anterior pituitary gland **EXCEPT**
 - A. Prolactin
 - B. Gonadotropin
 - C. Oxytocin
 - D. Growth hormone

3. Which one of the following muscles is not striated?
 - A. Skeletal muscles
 - B. Smooth muscles
 - C. Cardiac muscles
 - D. All of the above

4. Which of the following chambers of the heart receives blood from the systemic circulation?
 - A. Right atrium
 - B. Right ventricle
 - C. Left atrium
 - D. Left ventricle

5. The inner lining of the heart is called the -----

- A. Pericardium
- B. Myocardium
- C. Endometrium
- D. Endocardium

Situation: Skin cancer is one of the leading cancers affecting millions of people worldwide. As an Environmental Health Officer, you are tasked to give awareness to your community about the importance of protecting the skin.

Question 6 – 8 relates to the above situation.

6. Which of the following behaviours pose as a major risk factor for developing skin cancer?

- i) Overuse of sunblock when exposed to UV radiation in sunlight
- ii) Overexposure to the UV radiation in sunlight
- iii) Being a farmer and working long hours in the fields
- iv) Born in a family with skin cancer

- A. i and ii
- B. ii and iv
- C. ii and iii
- D. iii and iv

7. Which type of skin cancer is most dangerous and resistant to chemotherapy?

- A. Melanoma
- B. Squamous cell carcinoma
- C. Basal cell carcinoma
- D. Squamous benign carcinoma

8. "Prevention is better than cure": To reduce chances of developing skin cancer, how would you advise your community to do?

- i) Use sunscreen regularly
- ii) Examine the skin regularly
- iii) Avoid exposing the skin to high intensity sunlight
- iv) Avoid working in the fields for long hours

- A. i and ii only
- B. i and iii only
- C. iii and iv only
- D. i, ii, iii only

9. Which of the following cytoplasmic organelles is considered the power plant of a cell?

- A. Golgi apparatus
- B. Ribosomes
- C. Mitochondria
- D. Lysosomes

10. Epidermal cells that function as a sensory receptor for touch are called-----

- A. Fat cells
- B. Merkel cells
- C. Keratinocytes
- D. Melanocytes

11. The following structures are layers of the epidermis **EXCEPT:**

- i. Basal layer
 - ii. Reticular layer
 - iii. Granular layer
 - iv. Papillary layer
- A. i and ii only
 - B. ii and iii only
 - C. i and iii only
 - D. iii and iv only

12. The straw-colored and sticky fluid of blood is called -----

- A. Red blood cells
- B. Plasma
- C. Platelets
- D. White blood cells

13. 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. Anatomy is the branch of science that deals with how we do things and physiology deals with how the body parts are organised.
14. When a hand is jerked away from a painful stimulus such as fire, this is the example of a -----
-----.
- A. Negative feedback
 - B. Positive feedback
 - C. Negative feedback followed by positive feedback
 - D. Positive feedback followed by negative feedback
15. When a blood vessel is injured and platelets cling to the injured site to form clots. This is an example of a -----
- A. Positive feedback
 - B. Negative feedback
 - C. Negative feedback followed by positive feedback
 - D. Positive feedback followed by negative feedback
16. Which of the following structures is surrounded by a double membrane?
- A. The cell
 - B. The nucleus
 - C. Ribosomes
 - D. Mitochondria

17. Which of the following statements is **NOT** correct about exocytosis?

- i. A cell ingests small patches of plasma membrane and moves substances from the cell exterior to the cell interior.
 - ii. A cell ejects substances from the cell interior into the extracellular fluid
 - iii. Infolding plasma membrane surrounds a small volume of extracellular fluid and fuses it with an endosome.
 - iv. A cell engulfs large material, ingests and finally destroys it.
- A. i and ii
 - B. i, ii and iii
 - C. iii and iv
 - D. ii, iii and iv

18. Diabetes Mellitus is caused by -----

- i) Hypersecretion of calcitonin
 - ii) Hyposecretion of insulin
 - iii) Hyposecretion calcitonin
 - iv) Hypersecretion of glucagon
- A. i and ii
 - B. ii and iv
 - C. ii only
 - D. i and iii only

Match each of the following types of muscle tissues with the correct corresponding characteristic(s) e.g 23 A, B. NOTE: Answers may be **equal or less than four (4)** in each question.

TYPES OF MUSCLE TISSUE	CHARACTERISTICS
19. Skeletal muscles	A. Involuntary
20. Smooth muscles	B. Striated
21. Cardiac muscles	C. Also known as myosin
	C. Single nucleus
	D. Contracts and relaxes rapidly
	E. Pumping action of the heart
	F. Contracts and relaxes slowly
	G. Voluntary
	H. Many nuclei
	I. None striated
	J. Have external extension

Total: 30 Marks

SECTION 2

SHORT ESSAY QUESTIONS

Question 1

A. State one (1) main function of each of the following cell organelles:

- i) Cytoskeleton
- ii) Golgi apparatus
- iii) Peroxisomes

(1 mark each = 3 Marks)

B. Differentiate between simple diffusion and facilitated diffusion. (4)

C. Describe with the aid of examples any five (5) factors that normally contribute to skin color. (10)

D. Explain any two (2) protective functions of blood. (4)

Question 2

A. Sequentially list and define the six (6) major processes occurring during the digestive system activity (12)

B. Describe with the aid of examples the four (4) physical and chemical properties of urine. (12)

Total: 45 Marks