

**UNIVERSITY OF SWAZILND  
FACULTY OF HEALTH SCIENCES**

**FINAL EXAMINATION PAPER: MAY 2007**

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

**COURSE CODE: HSC 101**

**TIME ALLOWED: THREE (3) HOURS**

**MARKS: 100**

**INSTRUCTIONS:**

- 1. THERE ARE FIVE (5) QUESTIONS IN THIS PAPER**
- 2. SECTION A IS COMPULSORY**
- 3. IN SECTION B ANSWER ALL QUESTIONS**
- 4. EACH CORRECT STATEMENT OR FACT CARRIES ONE (1) MARK**

**THIS QUESTION PAPER SHOULD NOT BE OPENED UNTIL PERMISSION  
HAS BEEN GRANTED BY THE INVIGILATOR**

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**SECTION A****PART I: Write the letter corresponding to the correct answer e. g. 1 = D**

1. Which of the following is true regarding a substance moving down its concentration gradient?

- A. it requires energy
- B. diffusion always involves such movement
- C. substances cannot move down a concentration gradient
- D. it cannot occur across a barrier such as a cell membrane

2. Movement of water molecules occurs by:

- A. diffusion
- B. active transport
- C. dilution
- D. osmosis

3. An alkaline solution is characterized by high levels of which ion?

- A. bicarbonate
- B. hydroxyl
- C. hydrogen
- D. sodium

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4. Which two organs are most important in maintaining the acid-base balance in the body by adjusting excretion of excess acid or base?

- A. lungs and liver
- B. lungs and kidneys
- C. kidneys and liver
- D. liver and kidneys

5. Osmosis is the movement of:

- A. any substance down its concentration gradient.
- B. any substance up its concentration gradient.
- C. water up its concentration gradient.
- D. water down its concentration gradient.

6. A sodium pump is an example of:

- A. active transport
- B. osmosis
- C. diffusion
- D. filtration

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7. The energy for active transport comes from:

- A. RNA
- B. ATP
- C. DNA
- D. ADP

8. Which of the following does not form part of the roof of the mouth?

- A. the palatine bones
- B. the soft palate
- C. the maxillary bone
- D. the palatine tonsil

9. Which of the following concerning the papillae is true?

- A. the circumvallate papillae are the smallest of the papillae
- B. papillae are found only at the front of the tongue
- C. filiform papillae lie towards the back of the tongue
- D. papillae at the tip of the tongue are mainly fungiform in type

10. Which of the following meals will remain longest in the stomach?

- A. mixed salad, low fat yoghurt, and an apple
- B. pasta in a tomato based sauce
- C. steak pie and chips
- D. chicken, mashed potatoes, and green beans

11. What is the main substance absorbed in the colon?

- A. water
- B. sugars
- C. proteins
- D. fatty acids

12. Which of the following **is not** found in bile?

- A. water
- B. mucus
- C. lipase
- D. cholesterol

13. The principal effect of aldosterone is to increase reabsorption of:

- A. potassium
- B. calcium
- C. urea
- D. sodium

14. Urine moves along the ureters by:

- A. gravity
- B. peristalsis
- C. active transport
- D. diffusion

15. The angle at which the ureters enter the bladder is:

- A. acute
- B. right
- C. square
- D. oblique

**PART II: TRUE or FALSE? Write the most correct response e. g. 1 = True**

16. Skeletal muscles are attached to bones by tendons. **True or false**
17. Chromatids are visible on microscopy during interphase. **True or False**
18. Both white and red blood cells have a nucleus. **True or False**

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19. Mitosis results in four daughter cells.

**True or False**

20. The daughter cells of mitosis are genetically identical.

**True or False**

**[20 MARKS]**

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**SECTION B****PLEASE ANSWER ALL THE FOUR (4) QUESTIONS IN THIS SECTION****Question 1**

- A. Describe the **functions** of the **integumentary system** (skin). (10)
- B. Explain the part played by **calcium ions** in **muscular contraction**? (4)
- C. Describe the differences between **humoral immune-response** and **cell-mediated** immune response. (6)

**[20 MARKS]****Question 2**

- A. With an aid of a diagram, **describe** the passage of the **blood through the heart**, naming all the **chambers, openings, and valves** in their proper order. (10)
- B. Follow a drop of **blood from the heart** to the **right hand** and back to the heart, naming the main blood vessels in correct order. (10)

**[20 MARKS]****Question 3**

- A. Describe the **rugae**? How do they differ from **circular folds**? (5)
- B. Differentiate **propulsion** from **absorption**. (4)
- C. Describe the **microscopic** structure of the **liver**. (5)
- D. Indicate the five **functions of saliva**. (4)

**[20 MARKS]**

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**Question 4**

- A. Describe **oxygen transportation** from the **lungs to tissues**? (5)
- B. Make a simplified drawing of a **nephron**, **label it** and describe **what happens** and **where**. (15)

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