

**UNIVERSITY OF SWAZILAND  
FACULTY OF HEALTH SCIENCES  
GENERAL NURSING DEPARTMENT**

**FINAL EXAMINATION PAPER MAY 2006**

**COURSE TITLE: ANATOMY AND  
PHYSIOLOGY**

**COURSE CODE: HSC 101**

**MARKS ALLOCATED: 100**

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

**INSTRUCTIONS:**

- 1. THERE ARE FOUR (4) QUESTIONS IN THIS PAPER**
- 2. ANSWER ALL QUESTIONS**
- 3. ALL QUESTIONS CARRY 25 MARKS**

## Question 1

### Multiple choice

Select the most appropriate answer for the following questions e.g. 30. d

1. The part of cell known as power plants and capable of providing the cell's ATP supply are the:
  - a. endoplasmic reticulum
  - b. mitochondria
  - c. ribosomes
  - d. lysosomes
  
2. Which of these cells are responsible for bone remodelling
  - a. osteoblasts and osteoclasts
  - b. chondrocytes and osteocytes
  - c. chondroblasts and osteoclasts
  - d. osteoblasts and osteocytes
  
3. Neurotransmitters are stored in synaptic vesicles within
  - a. myofibrils
  - b. motor units
  - c. terminal ends of axons
  - d. nerves
  
4. Worm infestation leads to a rise in which of the following type of leukocytes
  - a. neutrophils
  - b. basophils
  - c. lymphocytes
  - d. eosinophils
  
5. Which of the following phases of gastric secretion occurs before food enters the stomach
  - a. gastric phase
  - b. cephalic phase
  - c. salivary phase
  - d. intestinal phase
  
6. The tube that runs obliquely from the middle ear to the nasopharynx is the;
  - a. external auditory meatus
  - b. pharyngotympanic tube
  - c. cochlea
  - d. semicircular canal

7. Haematocrit refers to:
- an abnormal excess of erythrocytes
  - the percentage of red blood cells in a blood sample
  - a critical level of red blood cells in plasm
  - the production of erythrocytes
8. The following statements are true about cardiac output except
- it is constant
  - it is the blood pumped by each ventricle in one minute
  - it is equal to heart rate multiplied by the stroke volume
  - it increases when stroke volume increases
9. Hormones are produced by:
- the salivary glands
  - indocrine glands
  - exocrine glands
  - mammary glands
10. Aldosterone
- enhances diuresis
  - enhances renal secretion of sodium
  - enhances renal absorptiuon of sodium
  - is produced by the posterior pituitary gland
11. Rhodopsin is all these except
- needs vitamin A for its formation
  - is bleached in darkness
  - is the visual pigment of cones
  - is a neurotransmitter
12. When cold person smuggles closer to a warm person:
- the warm person loses heat by radiation
  - the cold person gains heat by convection
  - the cold person gains heat by conduction
  - the warm person loses heat by evaporation
13. Pain receptors are also known as :
- mechanoreceptors
  - baroreceptors
  - painoceptors
  - nociceptors

14. When a plasma membrane has a high concentration of sodium ions in its interior than exterior:
- the membrane is at rest
  - the membrane has achieved, its resting potential
  - the membrane is depolarised
  - the membrane is repolarized
15. Micturition can be inhibited or facilitated by:
- micturition reflex
  - spinal cord reflex
  - voluntary relaxation of the external sphincter
  - centres in the brainstem cerebral cortex
16. Vestibule cochlear damage would result in:
- inability to see
  - sensorineural deafness
  - conduction deafness
  - vertigo, nausea and vomiting
17. The effect of agglutinogens is to:
- enable blood grouping to be done
  - enable blood coagulation to occur
  - enable blood to be freely transfused to people
  - ensure all the above to occur
18. One of the factors affecting lung compliance:
- residual volume
  - elasticity of the lung
  - vital capacity
  - increase partial pressure of oxygen
19. Which of the following is true regarding intra pleural pressure?
- it is higher than atmospheric pressure
  - it is equal to atmospheric pressure
  - it is lower than atmospheric pressure
  - it changes with position
20. Ascending pathways in the spinal cord convey
- motor impulses
  - sensory impulses
  - commissural impulses
  - all of the above are correct responses

21. Olfactory tract damage would probably affect your ability to
- a. see
  - b. hear
  - c. feel pain
  - d. smell

B State the functions of the nose (4)

Total 25 marks

Question 2

- a) List and explain three factors affecting each of the following
- i) diffusion (3)
  - ii) glomerular filtration (6)
  - iii) gas exchange in lungs (6)
- b) You have just had a slice of cheese. Describe the chemical digestion of what you have eaten (10)

TOTAL 25 MARKS

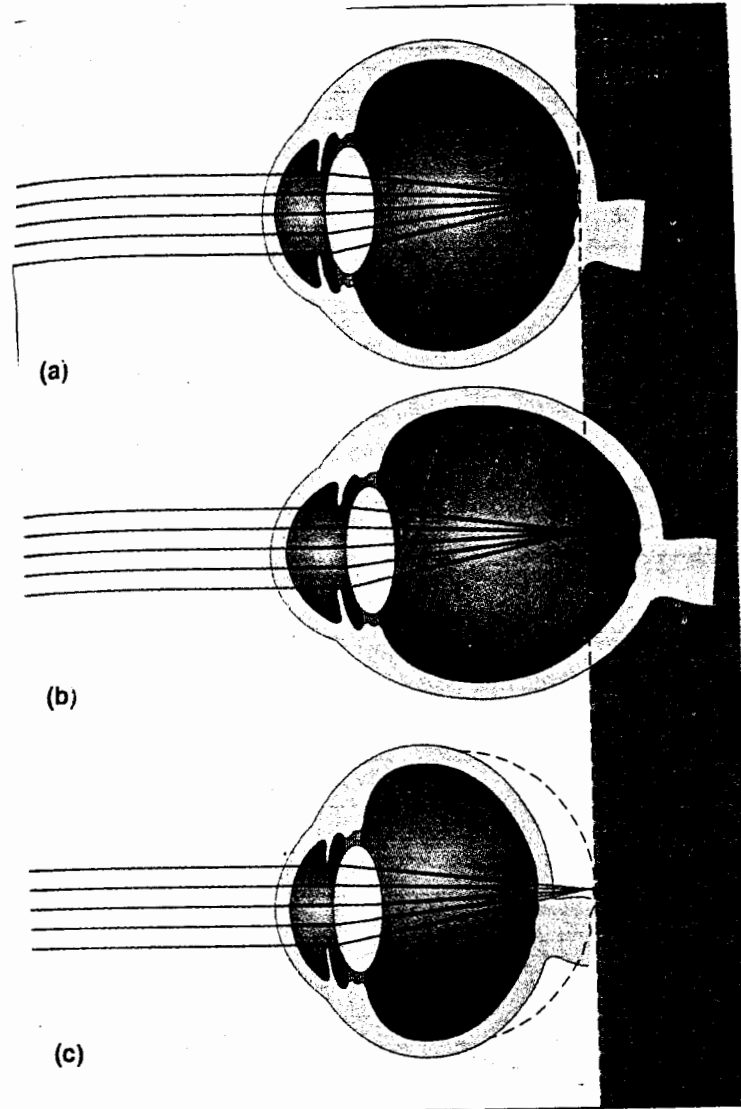
Question 3

- a) What role is played by calcium ions in muscle contraction? (5)
- b) Indicate the results of sympathetic activation of the following structures
- i) sweat glands
  - ii) eye pupils
  - iii) adrenal medulla
  - iv) heart
  - v) lungs
  - vi) penis (6)
- c) Describe the path of a glucose molecule from the intestines until it reaches the left carotid artery (14)

TOTAL 25 MARKS

Question 4

a) The diagrams below show 3 people looking at an object which is 10m away



- i) Explain how clearly the object is seen by all three (6)
- ii) Explain the type of lens needed (if any) to correct each of the person's vision and how the lens will achieve this (3)
- iii) Describe how a normal eye focus for close vision. (9)

- b) A patient was brought into casualty department with a knife wound in the left side of his thorax. The diagnosis was pneumothorax and atelectasis.
- i) Define these two conditions and explain why they happened in this patient (5)
  - ii) Why was only one lung involved? (2)