



**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY**

**(MMUST)**

**UNIVERSITY EXAMINATIONS  
2022/2023 ACADEMIC YEAR**

**FIRST YEAR FIRST TRIMESTER EXAMINATIONS  
FOR THE DEGREE OF  
BACHELOR OF SCIENCE IN NURSING  
(DISTANCE LEARNING)**

**COURSE CODE: NCD 114**

**COURSE TITLE: MEDICAL PHYSIOLOGY II**

**DATE: WEDNESDAY 12/4/2023**

**TIME: 3PM – 6PM**

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**INSTRUCTIONS TO CANDIDATE**

- Write your registration no, on every piece of paper used. Do not write your name.
- Read carefully any additional instructions preceding each section.

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 5 Printed Pages. Please Turn Over.



**MULTIPLE CHOICE QUESTIONS (MCQS); 20 MARKS**

**Choose the most appropriate answer which gives you (1 mark)**

Q1. People with albinism have a defect in tyrosinase, an oxidase that helps to control skin pigment production. In what epidermal layer is tyrosinase active?

- a. Stratum Lucidum
- b. Stratum Granulosum
- c. Stratum Basale
- d. Stratum Spinosum

Q2. The phenomenon known as “goosebumps” is often combined with shivering to reduce heat loss. What integumentary layer is most directly related to this reflex?

- a. Papillary dermis
- b. Epidermis
- c. Hypodermis
- d. Reticular dermis

Q3. The function of sebaceous glands is to produce:

- a. sebum
- b. sweat
- c. melanin
- d. Keratin

Q4. Why does eating peppers feel “hot”?

- a. Molecules in the pepper trigger vasodilation through endothelial receptors in blood vessels
- b. Molecules in pepper destroy cells, which triggers a pain response that follows the same pathway as the heat response
- c. Molecules in pepper bind the same receptors responsible for thermoregulation
- d. Molecules in the pepper stimulate the posterior pituitary, like the heat response

Q5. Which system is not regulated by a centre in the medulla oblongata?

- a. The cardiovascular system
- b. The respiratory system
- c. The immune system
- d. The digestive system

Q6. The cerebellum is located between the cerebrum and the brain stem in the back of the head. It helps in \_\_\_\_\_

- a. Breathing and controlling blood pressure
- b. Voluntary movement
- c. Balance and coordination
- d. Speech and hearing

Q7. Which of the following structure is supplied with the parasympathetic division of the autonomic nervous system?

- a. sweat glands
- b. blood vessels of skeletal muscle
- c. Skin
- d. none of the above

Q8. Autonomic nervous system affects \_\_\_\_\_

- a. Reflex actions
- b. Sensory organs
- c. Visceral organs
- d. None of the mentioned

Q9. The brain area that most directly controls the activity of the autonomic nervous system is the \_\_\_\_\_

- a. Pituitary gland
- b. Medulla oblongata
- c. Cerebellum
- d. Hypothalamus

Q10. Transmission of sound wave through the inner ear occurs through

- a. Ossicles
- b. Air
- c. Fluid
- d. Nerves

Q11. The idea of a voluntary movement is thought to originate in the

- a. Primary sensory cortex
- b. Primary motor cortex
- c. Motor association cortex
- d. Cerebellum

Q12. The following is true about the frontal lobe

- a. Controls gait
- b. Is the center for intelligence
- c. Is the center for memory
- d. Is one of the centers for sensation of smell

Q13. In comparison to the cones, the rods are more

- a. concentrated in the fovea region
- b. sensitive to dim light
- c. important for colour vision
- d. sensitive to detail

Q14. The order in which sound travels through the auditory system is

- a. external auditory meatus, tympanic membrane, round window, scala tympani, scala vestibuli, oval window

- b. external auditory meatus, tympanic membrane, ossicles, oval window, scala tympani, scala media, round window
- c. external auditory meatus, tympanic membrane, ossicles, round window, scala vestibuli, scala tympani, oval window
- d. external auditory meatus, tympanic membrane, ossicles, oval window, scala vestibuli, scala tympani, round window

Q15. In general, afferent nerves carry sensory information

- a. to the central nervous system
- b. to the peripheral nervous system
- c. from the central nervous system
- d. from the cortex

Q16. A deer is frightened by a predator and runs away. Which of the following would not occur due to the action of epinephrine and norepinephrine?

- a. There would be increased blood flow to the skeletal muscles.
- b. There would be increased activity of the digestive system.
- c. There would be increased blood flow to the lungs and heart.
- d. Blood pressure would increase.

Q17. Taste receptors are called

- a. Taste buds
- b. Gustatory receptors
- c. Olfactory receptors
- d. Taste pores

Q18. A person with an abnormally short eyeball (anterior to posterior) would be \_\_\_\_ and would wear \_\_\_\_ lenses to correct their vision.

- a. Nearsighted/concave
- b. Farsighted /concave
- c. Nearsighted / convex
- d. Farsighted convex.

Q19. Loss of the sense of taste on the posterior 1/3 of the tongue might be due to injury to

- a. cranial nerve VII
- b. cranial nerve III
- c. cranial nerve IX
- d. cranial nerve V.

Q20. Which describes the effect of the sympathetic system on the eye pupil and the muscles involved in the action?

- a. Dilates / circular muscles
- b. Constricts circular muscles
- c. Dilates / radial muscles
- d. Constricts radial muscles.

**SECTION B: SHORT ANSWER QUESTIONS (SAQS); 40 MARKS**

Q1. State eight (8) functions of the cerebral spinal fluid (CSF) ( Marks)

Q2. Explain four (4) reflexes of the body (8 Marks)

Q3. State eight functions (8) of the hypothalamus (8 marks)

Q4. Explain the physiology of taste (8 marks).

Q5. Outline the Components of a Reflex Arc (8 marks)

**SECTION C: LONG ESSAY QUESTIONS (LEQS); 40 MARKS**

Q1. Explain six (6) ways in which the skin helps the body in maintaining homeostasis (20 marks)

Q2. The sympathetic Nervous System prepares the body for 'Fight or Flight'. Discuss therefore the activities of the sympathetic nervous system on different parts of the body during a stressful situation (20 Marks)

***END***