



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

FIRST YEAR, SECOND TRIMESTER EXAMINATIONS

FOR THE DEGREE

OF

BACHELOR OF SCIENCE IN PHYSIOTHERAPY

COURSE CODE: BSP 122

COURSE TITLE: MEDICAL PHYSIOLOGY II

DATE: MONDAY 17TH April 2023

TIME: 8:00-10:00 AM

INSTRUCTIONS TO CANDIDATES

Answer all Questions

Sec A: Multiple Choice Questions (MCQ) 20 Marks

Sec B: Short Answer Questions (SAQ) (40 marks)

Sec C: Long Answer Questions (LAQ) (40 marks)

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over.

SECTION A: MULTIPLE CHOICE QUESTIONS 20 MARK

1. Which of the following is an encapsulated receptor found deep in the skin throughout the body as well as in fascial layers where they detect indentation of the skin (pressure) and movement across the surface (vibration)?
 - A. Pacinian corpuscle
 - B. Meissner's corpuscle
 - C. Free nerve endings
 - D. Ruffini's endings
2. Which of the following substances enhances the sensitivity of pain receptors but does not directly excite them?
 - A. Bradykinin
 - B. Serotonin
 - C. Potassium ions
 - D. Prostaglandins
3. Hypoventilation has which of the following effects on neuronal activity?
 - A. Depresses neuronal activity
 - B. Increases neuronal activity
 - C. Increases synaptic delay
 - D. Increases neurotransmitter release
4. Which of the following best describes the concept of specificity in sensory nerve fibers that transmit only one modality of sensation?
 - A. Frequency coding principle
 - B. Concept of specific nerve energy
 - C. Singularity principle
 - D. Labeled line principle
5. Which of the following is the system that transmits somatosensory information with the highest degree of temporal and spatial fidelity?
 - A. Anterolateral system
 - B. Dorsal column–medial lemniscal system
 - C. Corticospinal system
 - D. Spinocerebellar system
6. Which of the following hormones is both synthesized and stored in the pituitary gland?
 - A. Growth hormone (GH)
 - B. GH releasing hormone (GHRH)
 - C. ADH
 - D. Somatostatin
7. Release of which of the following hormones is an example of neuroendocrine secretion?
 - A. Growth hormone
 - B. Cortisol
 - C. Oxytocin

- D. Prolactin
8. Which of the following hormones is not stored in its endocrine-producing gland?
- A. T₄
 - B. PTH
 - C. Aldosterone
 - D. ACTH
9. All of the following are hormones of the anterior pituitary except:
- A. Human growth hormone (GH).
 - B. Follicle-stimulating hormone (FSH).
 - C. Parathyroid hormone(PTH).
 - D. Thyroid-stimulating hormone (TSH).
10. If a woman hears her baby cry, she may experience milk ejection from the nipples even before the baby is placed to the breast. What is the explanation for this?
- A. The sound of the hungry baby's cry elicits secretion of oxytocin from the posterior pituitary, which reaches the breast and causes contraction of the myoepithelial cells.
 - B. The sound of the hungry baby's cry causes a reflex relaxation of the myoepithelial cells, allowing the milk to flow.
 - C. The sound of the hungry baby's cry elicits a surge of prolactin from the anterior pituitary, which promptly stimulates milk production from the breast.
 - D. The sound of the hungry baby's cry elicits sympathetic nervous system discharge that causes contraction of the myoepithelial cells.
11. Inhibition of the iodide pump would be expected to cause which of the following changes?
- A. Increased synthesis of thyroxine (T₄)
 - B. Increased synthesis of thyroglobulin
 - C. Increased metabolic rate
 - D. Decreased thyroid-stimulating hormone secretion
12. Why is milk produced only after delivery, not before?
- A. Levels of luteinizing hormone and follicle-stimulating hormone are too low during pregnancy to support milk production.
 - B. High levels of progesterone and estrogen during pregnancy suppress milk production
 - C. The alveolar cells of the breast do not reach maturity until after delivery.
 - D. High levels of oxytocin are required for milk production to begin, and oxytocin is not secreted until the baby stimulates the nipple.
13. What is the name of the condition whereby the lens of the eye becomes almost totally unaccommodating in persons over 70 years of age?
- A. Amblyopia
 - B. Hyperopia
 - C. Myopia
 - D. Presbyopia

14. Which compartment of the cochlea contains the organ of Corti?
- A. Ampulla
 - B. Saccule
 - C. Scala media
 - D. Scala tympani
15. Which of the following statements regarding the transmission of taste information from the tongue to the cerebral cortex is correct?
- A. Majority of thalamic neurons in taste pathway synapse in the occipital lobe
 - B. Nerve fibers carrying taste information from the tongue have no synapse in the brainstem
 - C. Nerve fibers carrying taste information from the tongue synapse in the solitary nucleus
 - D. Thalamic nucleus involved in the taste pathway is the dorsal medial nucleus
16. The stereocilia of hair cells are embedded in which membrane?
- A. Basilar
 - B. Reissner's
 - C. Tectorial
 - D. Tympanic
17. Visual contrast is enhanced due to lateral inhibition by which retinal cells?
- A. Amacrine cells
 - B. Bipolar cells
 - C. Ganglion cells
 - D. Horizontal cells
18. Functions of basal ganglia include all the following, except :-
- A. planning and programming of voluntary movements
 - B. initiation of reflex movement.
 - C. postural regulation
 - D. executing learned pattern of movement.
19. Which of the following statements about antidiuretic hormone is true?
- A. It is synthesized in the posterior pituitary gland
 - B. It increases salt and water reabsorption in the collecting tubules and ducts
 - C. It stimulates thirst
 - D. It has opposite effects on urine and plasma osmolality
20. Which of the following is non-inhibitory neurotransmitter ?
- A. GABA
 - B. Glycine
 - C. Glutamate
 - D. Dopamine

SECTION B: SHORT ANSWER QUESTIONS 40 MARKS

1. Explain how static equilibrium is achieved through the ear 5 marks
2. Discuss the pathway of light through the retina 5 marks
3. Discuss the similarities between taste and smell 5 marks
4. Explain the neuroendocrine reflex in the regulation of posterior pituitary responses 5 marks
5. Explain how blood glucose levels are regulated 5 marks
6. Discuss how tympanic membrane works and how it relates to ossicular system 5 marks
7. Explain the characteristics of a substance to have to be smelled 5 marks
8. Explain the control of thyroid hormone secretion 5 marks

SECTION C: LONG ANSWER QUESTIONS 40 MARKS

1. Glucose homeostasis is important physiological process. Discuss 20 marks
2. Discuss the neuronal order of processing stepwise from perception to the brain