



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

**UNIVERSITY EXAMINATIONS
2021 / 2022 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 (SUP/SPECIAL
EXAM)**

DATE: MONDAY 3RD / 9/2022

TIME: 8AM - 11AM

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.



SECTION A: MULTIPLE CHOICE QUESTIONS (MCQS); 20 MARKS

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

- Q1. The receptors that respond to stroking in the human body are referred to as
- Proprioceptors
 - Nociceptors
 - Chemoreceptors
 - Mechanoreceptors
- Q2. The cardiac control center that regulates the rate of cardiac function is located in?
- Diencephalon
 - Cerebrum
 - Cerebellum
 - Medulla oblongata
- Q3. The sympathetic response in a 'fight or flight' reaction causes a decrease in?
- The arterial blood pressure
 - The diameter of the pupil
 - The resistance of the airways
 - The blood glucose concentration
- Q4. The part of the brain mainly concerned with regulation of primitive functions for survival is?
- Cerebellum
 - Brainstem
 - Cerebrum
 - Diencephalon
- Q5. Which taste bud has been matched correctly with its site?
- Sweet taste buds are situated at the back of the tongue
 - Salt taste buds are situated at the middle of the tongue
 - Sour taste buds are on either side of the front of tongue
 - Bitter taste buds are in the front of the tongue
- Q6. Loss of the sense of taste on the posterior 1/3 of the tongue might be due to injury to
- Cranial nerve VII
 - Cranial nerve III
 - Cranial nerve IX
 - Cranial nerve V.

- Q7. The color of the skin is affected by three substances namely;
- Melanin, heamoglobin level, genetics
 - Heamoglobin level, bile pigmentation, genetics
 - Melanin, heamoglobin level, bile pigmentation
 - Melanin, bile pigmentation, genetics
- Q8. The following parts of the brain are associated with skeletal muscle control **EXCEPT**
- Cerebrum
 - Cerebellum
 - Cerebral motor cortex
 - Basal ganglia
- Q9. Cerebral lobe that contains the visual cortex is?
- Temporal lobe
 - Insula lobe
 - Frontal lobe
 - Occipital lobe
- Q10. Receptors of hearing are located in the?
- Utricle
 - Cochlea
 - Semicircular canals
 - sacculae
- Q11. Cortical level of the brain undertakes the following activities
- Control of blood pressure, respiration, hunger
 - Control of blood pressure, respiration, anger
 - Excitement, sexual response, hunger
 - Excitement, defecation, urination
- Q12. Three layers of the eye are?
- Sclera, retina and Iris
 - Iris, Choroid and Retina
 - Retina, Sclera and Iris
 - Sclera, Choroid and Retina
- Q13. The receptor cells serving taste
- Are stimulated when chemicals diffuse through the overlying epithelium to reach them.
 - Are primary sensory neurones.
 - For sweetness are more common at the tip than at the back of the tongue
 - Are histologically different for the four primary taste modalities.
- Q14. The spinal cord communicates with the brain via
- Tracts of white matter

- b. Tracts of grey matter
- c. The sympathetic nervous system
- d. Sensory neurons in the spinal cord.

Q15. Regarding cardiac physiology preload is ?

- a. Amount of blood pumped out of the heart per unit time
- b. Maintenance of blood flow and pressure in diastole
- c. Maximum amount of blood in the ventricles at the end of ventricular relaxation
- d. The resistance the heart muscles have to overcome to pump blood out of the heart

Q16. The following are regulated by the autonomous nervous system EXCEPT

- a. Accommodation for far vision
- b. Dilatation and constriction of blood vessels
- c. Size of the pupil
- d. Adjustment of the rate and force of cardiac contraction

For question 17 and 18, Match the function with correct areas of control in the brain.

Q17. Thirst and water _____

Q18. Control of rate and depth of breathing _____

Control in the Brain

- a. Medula oblongata
- b. Pons
- c. Hypothalamus
- d. Temporal lobe

Q19. A. The abducens nerve is a very small mixed nerve that emerges from nucleus within the midbrain and passes from the cranium through the superior orbital fissure of the orbit. It innervates the superior oblique muscle of the eye ball with both motor and sensory fibres.

- a. True
- b. False

Q19. B. The M1 muscarinic receptors are located in the heart

- a. True
- b. False

Q20. The iris has special role in regulating the amount of light entering the eye. Bright light causes the _____

- a. Circular muscle of the iris to contract, causing pupil constriction
- b. Circular muscle of the iris to relax, causing pupil constriction
- c. Circular muscles of the iris to contract, causing pupil dilation
- d. Radial muscles of the iris to contract causing the pupil to dilation

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

Q1. State five (5) types of muscarinic receptors (5 marks)

Q2. Outline the Components of a Reflex Arc (8 marks)

Q3. State six (6) functions of the nose (6 marks)

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

Q5. Explain four (4) functions of the skin (8 marks)

Q6. State five (5) cranial nerves whose nuclei are located in the midbrain, pons and medulla oblongata (5 marks)

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

Q1. 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)

- Effects to each organ(2 marks
 - Eye
 - Heart, arterial blood pressure, cardiac output, muscles, glucose concentration
 - Lungs
 - Intestines
 - Mental activities and alertness

Q2. . Discuss the functions of the hypothalamus (20 marks)

End