



(University of Choice)

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

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

YEAR ONE SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE

OF

BACHELOR OF SCIENCE IN NURSING

COURSE CODE: NCD 123

COURSE TITLE: MEDICAL PHYSIOLOGY IV

DATE: 4TH OCTOBER 2022

TIME: 3-6 PM

INSTRUCTIONS TO CANDIDATES

ANSWER ALL QUESTIONS

TIME: 3 HOURS

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of Printed Pages. Please Turn Over.

SECTION I; MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. Which structure carries urine from the kidneys to the bladder?
 - a. Urethra.
 - b. Ureter.
 - c. Nephron.
 - d. Bladder.
2. When substances move from the tubule into the surrounding afferent arteriole, this is known as
 - a. Re-absorption
 - b. Filtration
 - c. Tubular secretion
 - d. Excretion
3. The hormone secreted by the hypothalamus to increase fluid re-absorption is
 - a. Antidiuretic hormone
 - b. Renin
 - c. Aldosterone
 - d. Angiotensin
4. The blood vessel which carries blood to the glomerulus is the
 - a. Peritubular capillaries
 - b. Renal vein
 - c. Afferent arteriole
 - d. Renal artery
5. More urine is passed in cold weather than in warm weather because of
 - a. Increased production of aldosterone
 - b. Decreased sweating
 - c. Decreased renal function
 - d. Decreased production of anti-diuretic hormones
6. The centre of the kidney where urine collects before leaving the kidneys is the
 - a. Distal tubule
 - b. Glomerulus
 - c. Pelvis
 - d. Proximal tubule
7. Which electrolyte is most abundant in the extracellular fluid?
 - a. Potassium
 - b. Magnesium
 - c. Calcium
 - d. sodium
8. Which part of the human body produces urea?
 - a. bone marrow
 - b. kidneys
 - c. liver

- d. muscles
 - e. brain
9. Through which vessel does blood leave the glomerulus?
- a. afferent arteriole
 - b. interlobular vessel
 - c. efferent arteriole
 - d. renal vein
10. Which cranial nerves are involved in normal functioning of the gastrointestinal tract:
- a. II
 - b. IV
 - c. VI
 - d. X
11. The following hormones is not important for the normal function of the gut:
- a. Gastrin
 - b. Secretin
 - c. Cholecystokinin-pancreozymin (CCK-PZ)
 - d. Vaso-active intestinal peptide (VIP)
12. which ion is reabsorbed in exchange for sodium?
- a. Chloride
 - b. Potassium
 - c. Calcium
 - d. Magnesium
13. What is the average glomerular filtration rate?
- a. 10 L per day
 - b. 180 L per day
 - c. 1,500 ml per day
 - d. 1 ml per minute
14. The lytic enzyme released by sperm is _____
- a. Ligase
 - b. Acrosome
 - c. Androgamone
 - d. Hyaluronidase
15. Number of autosomes in human primary spermatocyte is _____
- a) 46
 - b) 44
 - c) 23
 - d) 22
16. In the absence of acrosome, the sperm can not _____
- a. penetrate the egg
 - b. get energy
 - c. get food

- d. swim
17. Which of the following organ is devoid of gland?
- Vulva
 - Oviduct
 - Uterus
 - Vagina
18. Which phase of the ovarian cycle is characterized by growth and development of follicles?
- luteal phase
 - ovulation
 - menstruation
 - follicular phase
19. What is the steroid hormone which is produced by a corpus luteum after ovulation?
- progesterone
 - prolactin
 - Testosterone
 - Inhibin
20. What is the physiological process that marks the onset of the first menstrual period?
- menopause
 - menarche
 - menorrhagia
 - amenorrhea

SECTION II; SHORT ESSAY QUESTIONS (40 MARKS)

- Define the following terms as used in physiology (3 marks)
 - homeostasis
 - mineral balance
 - active transport
- Fluid balance exists when water gains equal water losses, using a diagram describe the water gains and losses that occur in the digestive system that result in homeostasis (9 marks)
- State the significance of two important body minerals: sodium and calcium (4 marks)
- List 4 ions that are absorbed through active transport and 4 ions transported through carrier mediated diffusion (4 marks)
- Describe the 4 processes through which each of the four nutrients digested in the duodenum are absorbed in the jejunum (8marks)
- State 5 reasons why the enteric nervous system has been described as a second brain (10 marks)
- State any 2 functions of the uterus. (2 marks)

SECTION III; LONG ESSAY QUESTION (40 MARKS)

1. The kidney is one of the major organs that plays a role in maintaining homeostasis in the body through ultra-filtration, selective absorption and secretion of substances. Describe the ten steps in the process of urine formation. (20 marks)
2. Describe the digestive processes that occurs in the gastrointestinal tract from the mouth to the anus (20 Marks)