



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

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR**

SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN NURSING(DL UPDRADING)**

COURSE CODE: NCD 123

COURSE TITLE: PHYSIOLOGY IV(GIT& GENITOURINARY)

DATE: Tuesday 9/4/2024

TIME: 3:00 pm-6:00 pm

INSTRUCTIONS TO CANDIDATES

All questions are compulsory

TIME: 3Hours

MMUST observes ZERO tolerance to examination cheating

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

SECTION A MCQS

1. The myenteric plexus is found.
 - A) Between circular and longitudinal smooth muscles
 - B) Between submucosa and mucosa
 - C) Between submucosa and muscularis externa layer.
 - D) Between longitudinal muscles and serosa.
2. Obstruction of the hepatopancreatic sphincter impairs digestion by reducing the availability of:
 - A) Bile and HCl,
 - B) HCl and intestinal juice,
 - C) Pancreatic juice and intestinal juice,
 - D) Pancreatic juice and bile
3. The site of production of VIP and cholecystokinin is:
 - A) The stomach,
 - B) The small intestine,
 - C) The pancreas,
 - D) The large intestine
4. The functions of the hydrochloric acid produced by the stomach is:
 - A) Activate pepsin to pepsinogen
 - B) It breaks down proteins into smaller substance
 - C) Help in absorption of vitamin 12.
 - D) Helps in the digestion of carbohydrates
5. The layer responsible for absorption and secretions in the digestive system is:
 - A) Mucosa
 - B) Sub mucosa
 - C) Muscularis
 - D) Serosa
6. The digestive enzyme produced in the salivary glands and the pancreas is:
 - A) Amylase
 - B) Maltase
 - C) Nuclease
 - D) Lipase
7. The sphincter that keeps the chyme in the stomach until it reaches the right consistency to pass into the small intestine
 - A) Esophageal sphincter
 - B) Intrinsic sphincter
 - C) Cardiac sphincter
 - D) Pyloric sphincter
8. The site where most of the chemical and mechanical digestion is carried out:
 - A) Fundus
 - B) Stomach
 - C) Large intestine
 - D) Small intestine

9. Parietal cells secret;

- A) Serotonin
- B) Mucus
- C) Pepsinogen
- D) Hydrochloric Acid

10. The protein molecule will be digested by enzymes secreted by;

- A) The mouth, stomach, and colon,
- B) The stomach, liver, and small intestine,
- C) The small intestine, mouth, and liver,
- D) The pancreas and stomach

11. The movement and the flow of chemicals into the stomach is controlled by

- A) Nervous system
- B) Pancreas
- C) Various digestive system hormones
- D) Both the nervous system and various digestive system hormones

12. The function of the Ileum is:

- A) Absorb nutrients
- B) Absorb vitamin B12 and bile salts
- C) To introduce bile and pancreatic juices
- D) Absorb alcohol and aspirin

13. The liver:

- A) Stores glycogen
- B) Synthesis plasma protein
- C) Produces bile
- D) All of the above

14. The peritoneal cavity:

- A) Is the same thing as the abdominopelvic cavity
- B) Is filled with air,
- C) Like the pleural and pericardial cavities is a potential space containing serous fluid,
- D) Contains the pancreas and all of the duodenum

15. The action of an enzyme is influenced by

- A) Its chemical surroundings,
- B) Its specific substrate,
- C) The presence of needed cofactors or coenzymes,
- D) all of these.

16. The action of an enzyme is influenced by:

- A) Its chemical surroundings,
- B) Its specific substrate,
- C) The presence of needed cofactors or coenzymes,
- D) all of these.

17. Carbohydrates are acted on by:
A) peptidases, trypsin, and chymotrypsin,
B) amylase, maltase, and sucrase,
C) lipases,
D) peptidases, lipases, and galactase.
18. The parasympathetic nervous system influences digestion by:
A) Relaxing smooth muscle,
B) Stimulating peristalsis and secretory activity,
C) Constricting sphincters,
D) None of these.
19. The digestive juice product containing enzymes capable of digesting all four major foodstuff categories is:
A) Pancreatic,
B) gastric,
C) Salivary,
D) Biliary.
20. The vitamin associated with calcium absorption is:
A) A,
(B) K,
C) C,
D) D.
21. While reading a blood test I notice a high level of creatinine, I could assume from this that
A) There is a possibility of a UTI
B) There is a possibility of diabetes
C) There is a possibility of kidney failure
D) There is nothing wrong, this is normal
22. Why do substances in the glomerulus enter the Bowman's capsule?
A) The magnetic charge of the Bowman's capsule attracts the substances
B) The substances are actively transported into the Bowman's capsule
C) Blood pressure of the glomerulus is so great that most substances in blood move into capsule
D) Little green men force it in with their ray guns
23. The countercurrent exchange system includes _____ and _____.
A) Glomerulus and macula densa
B) Proximal convoluted tubule and distal convoluted tubule
C) Loop of Henle and collecting tubule
D) Afferent arteriole and efferent arteriole
24. Sodium balance is regulated primarily by control of amount(s);
A) Ingested,
B) excreted in urine,
C) lost in perspiration,
D) Lost in feces
25. In an individual with metabolic acidosis, a clue that the respiratory system is compensating is provided by ;
A) high blood bicarbonate levels,

- B) low blood bicarbonate levels,
- C) rapid, deep breathing,
- D) Slow, shallow breathing.

26. The pH of blood varies directly with;

- A) HCO_3^- ,
- B) P_{CO_2} ,
- C) H^+ ,
- D) CH^-

27. The lowest blood concentration of nitrogenous waste occurs in the:

- A) hepatic vein,
- B) inferior vena cava,
- C) renal artery,
- D) renal vein.

28. The glomerular capillaries differ from other capillary networks in the body because they

- A) have a larger area of anastomosis,
- B) are derived from and drain into arterioles,
- C) Are not made of endothelium,
- D) Are sites of filtrate formation.

29. Damage to the renal medulla would interfere first with the functioning of the:

- A) glomerular capsules,
- B) distal convoluted tubules,
- C) collecting ducts,
- D) Proximal convoluted tubules.

30. Which is reabsorbed by the proximal convoluted tubule cells?

- A) Na^+ ,
- B) K^+ ,
- C) amino acids,
- D) all of the above

31. Glucose is not normally found in the urine because it:

- A) does not pass through the walls of the glomerulus,
- B) is kept in the blood by colloid osmotic pressure,
- C) is reabsorbed by the tubule cells,
- D) Is removed by the body cells before the blood reaches the kidney.

32. Filtration at the glomerulus is inversely related to

- A) water reabsorption,
- B) capsular hydrostatic pressure,
- C) arterial blood pressure,
- D) Acidity of the urine.

33. Tubular reabsorption:

- A) of glucose and many other substances is a T_m -limited active transport process,
- B) of chloride is always linked to the passive transport of Na^+ ,
- C) is the movement of substances from the blood into the nephron,

- D) of sodium occurs only in the proximal tubule.
34. If a freshly voided urine sample contains excessive amounts of urochrome, it has
- A) An ammonia-like odor
 - B) A pH below normal,
 - C) A dark yellow color,
 - D) A pH above normal.
35. Conditions such as diabetes mellitus, starvation, and low-carbohydrate diets are closely linked to:
- A) ketonuria,
 - B) pyuria,
 - C) albuminuria,
 - D) Hematuria.
36. Which of the following is/are true about ADH?
- A) It promotes obligatory water reabsorption,
 - B) it is secreted in response to an increase in extracellular fluid osmolality,
 - C) it causes insertion of aquaporins in the PCT,
 - D) it promotes Na^+ reabsorption.
37. Body water content is greatest in
- A) Infants,
 - B) Young adults,
 - C) Elderly adults.
 - D) Adolescents
38. Potassium, magnesium, and phosphate ions are the predominant electrolytes in
- A) plasma,
 - B) interstitial fluid,
 - C) Intracellular fluid.
 - D) Extracellular fluid
39. Sodium balance is regulated primarily by control of amount(s)
- A) ingested,
 - B) excreted in urine,
 - C) lost in perspiration,
 - D) Lost in feces.
40. Part of an important chemical buffer system in plasma:
- A) ammonium ions
 - B) bicarbonate
 - C) calcium
 - D) chloride
41. The gender sex of the child is determined by the?
- A) The sex chromosomes in the testis
 - B) The sex chromosomes of the oocyte
 - C) The sex chromosome of the sperm
 - D) The timing of conception.
42. Sertoli cells:
- A Produce sperms

- B) Produce testosterone
- C) Nourish and protect the sperms
- D) Are same as leydig cells

43. In sexual homology, the glans penis in the male is equal to _____ in the female

- A) Clitoral hood
- B) Clitoris
- C) Clitoral glans
- D) Clitoral crura

44. These become engorged with blood in an erection:

- A) Corpora cavernosa
- B) Fibrous envelope
- C) Septum pectiniforme
- D) Integument

45. The release of LH in woman causes;

- A) Menstruation
- B) Ovulation
- C) Increase of endometrial lining
- D) Decrease of endometrial lining.

46. The false statement about ovulation is:

- A) There is approximate 1°C temperature rise.
- B). Cervical mucus decreases and becomes thick, and spinnbarkeit can be formed,
- C) Mittelschmerz (pain in the middle) may be felt.
- D) Spotting is associated with the fall of hormone support for the endometrium at midcycle

47. Which will occur as a result of nondescent of the testes?

- A) Male sex hormones will not be circulated in the body,
- B) sperm will have no means of exit from the body,
- C) inadequate blood supply will retard the development of the testes,
- D) Viable sperm will not be produced.

48. In females the effect of follicle stimulating hormone is

- A) The final maturation of the ovarian follicles and the release of oestrogen
- B) The early maturation of the ovarian follicles and the release of progesterone
- C) The final maturation of ovarian follicles and the release of progesterone
- D) The early maturation of the ovarian follicles and the release of progesterone

49. The structure that draw an ovulated oocyte into the female duct system are

- A) Ampulla
- B) Fimbriae,
- C) Microvilli,
- D) Stereocilia.

50. The usual site of embryo implantation is :

- A) The uterine tube,
 - B) The peritoneal cavity,
 - C) The ampulla,
 - D) the uterus
51. Which of the following is correct relative to female anatomy?
- A) The vaginal orifice is the most dorsal of the three openings in the perineum,
 - B) The urethra is between the vaginal orifice and the anus,
 - C) The anus is between the vaginal orifice and the urethra,
 - D) The urethra is the more ventral of the two orifices in the vulva.
52. Secondary sex characteristics are;
- A) Present in the embryo,
 - B) A result of male or female sex hormones increasing in amount at puberty,
 - C) The testis in the male and the ovary in the female,
 - D) Not subject to withdrawal once established.
53. Which of the following produces the male sex hormones?
- A) seminal vesicles,
 - B) corpus luteum,
 - C) developing follicles of the testes,
 - D) interstitial cells.
54. The normal diploid number of human chromosomes is;
- A) 48,
 - B) 47,
 - C) 46,
 - D) 23,
55. Relative to differences between mitosis and meiosis, choose the statement that apply only to events of mitosis.
- A) tetrads present,
 - B) produces two daughter cells,
 - C) produces four daughter cells,
 - D) reduces the chromosomal number by half,
56. The menstrual cycle can be divided into three continuous phases. Starting from the first day of the cycle, their consecutive order is
- A) Menstrual, proliferative, secretory.
 - B) Menstrual, secretory, proliferative.
 - C) Secretory, menstrual, proliferative.
 - D) Proliferative, menstrual, secretory.
57. Spermatozoa are to seminiferous tubules as oocytes are to:
- A) fimbriae,
 - B) corpus albicans,
 - C) ovarian follicles,
 - D) Fallopian tubes.

58. Which of the following does not add a secretion that makes a major contribution to semen?

- A) Prostate,
- B) Bulbourethral glands,
- C) Testes,
- D) Vas deferens.

59. The corpus luteum is formed at the site of

- A) Fertilization,
- B) Ovulation,
- C) Menstruation,
- D) Implantation.

60. A drug that “reminds the pituitary” to produce gonadotropins might be useful as;

- A) A contraceptive,
- B) A diuretic,
- C) A fertility drug,
- D) An abortion stimulant.

SECTION B SHORT ANSWER QUESTIONS

1. Describe 4 adaptation of the stomach for its function in the gastrointestinal system.(4 marks)
2. Explain the role of the accessory glands in the male reproductive system.
(6 marks)
3. Describe the events and possible consequences of menopause.(5marks)
4. Describe the gastrointestinal hormones and their specific role in the GIT. (5marks)

LONG ANSWER QUESTIONS

1. a) With the help of a diagram ,trace the flow of the glomerular filtrate from the time of ultrafiltration to excretion explaining what happens in each part of the nephron.(15 marks)
b) Outline 5 functions of the urinary system (5 marks)

