UNIVERSITY EXAMINATION

CHUKA  **UNIVERSITY**

RESIT/SPECIAL EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN NURSING

NURS 115: MEDICAL PHYSIOLOGY II

STREAMS: Y1S2 **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 05/05/2021 **11.30 A.M – 1.30 P.M**

INSTRUCTIONS:

1. **Do not write anything on the question paper.**
2. **Mobile phones and any other reference materials are NOT allowed in the examination room.**
3. **The paper has three sections. Answer ALL questions.**
4. **All your answers for Section I (MCQs) should be on one page.**
5. **Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet.**

Section A: Multiple Choice Questions (20 Marks)

1. Follicle stimulating hormone:
   a) Helps in maturation and growth of follicles
   b) In the presence of LH, facilitates release of estrogen by the theca interna of the graafian follicle
   c) Facilitates spermatogenesis
   d) All of the above

2. Secretion of HCl by parietal cells is needed for:
   a) Activation of pancreatic lipases
   b) Activation of pepsinogen to pepsin
   c) Activation of salivary lipases

d) Activation of intrinsic factor

3. Which of the following would cause an increase in the glomerular filtration rate (GFR)?
   a) Constriction of the afferent arteriole
   b) Constriction of the efferent arteriole
   c) Increased plasma protein concentration
   d) Constriction of the ureter

4. Which of the following is absorbed by facilitated diffusion?
   a) Fructose in duodenal cells
   b) Glucose in duodenal cells
   c) Dipeptides in duodenal cells
   d) Bile acids in ileal cells

5. Estrogen is responsible for development of female secondary sex characteristics, including:
   a) Narrow shoulders
   b) Broad hips and wider carrying angle
   c) Divergent arms
   d) Convergent thighs and wider pelvic inlet

6. The following hormones is released by axon endings in the posterior pituitary:
   a) Follicle stimulating hormone
   b) Thyroid-stimulating hormone
   c) Human growth hormone
   d) Antidiuretic hormone

7. Gastric acid secretion is increased by:
   a) Parasympathetic stimulation
   b) Parasympathetic inhibition
   c) Sympathetic stimulation
   d) Cholinergic antagonists

8. Which of the types of neurons communicates the information from the central to the peripheral nervous system?
   a) Sensory neuron
   b) Interneuron
   c) Motor neuron
   d) Afferent neuron

9. Thyroid hormone contains the amino acid
   a) Lysine

b) Leucine
c) Glycine
d) Tyrosine

10. 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

11. The pro-enzyme pepsinogen is secreted mainly from which of the following structures?
    a) Acinar cells of the pancreas
    b) Ductal cells of the pancreas
    c) Epithelial cells of the duodenum
    d) Gastric glands of the stomach

12. In controlling aldosterone secretion, angiotensin II acts on which of the following structures?
    a) Zona glomerulosa
    b) Zona fasciculata
    c) Zona reticularis
    d) Adrenal medulla

13. Which of the following changes tends to increase GFR?
    a) Increased afferent arteriolar resistance
    b) Decreased efferent arteriolar resistance
    c) Increased glomerular capillary filtration coefficient
    d) Increased Bowman's capsule hydrostatic pressure

14. All of the following contribute to the absorptive surface area of the small intestine except:
    a) Its length.
    b) The brush border.
    c) Haustra.
    d) Circular folds.

15. Angiotensin II causes:
    a) Increased tubular reabsorption of Na+ & H2O
    b) Decreased distal tubular reabsorption of Na+ & H2O
    c) Increased excretion of Na+ & H2O
    d) All the above

16. Where does fertilization normally take place?

a) Uterus
b) Cervix
c) Ovary
d) Ampulla of the fallopian tubes

17. The cells of the liver:
    a) Help to maintain the normal blood glucose level
    b) Deaminate amino acids to form NH4+ which is excreted as ammonium salts in the urine
    c) Synthesize vitamin D3 (cholecalciferol)
    d) Synthesize most of the immune globulins

18. The two hemispheres of the brain are connected by which nerve fibers or pathways?
    a) Lateral lemniscus
    b) Corticofugal fibers
    c) Corpus callosum
    d) Arcuate fasciculus

19. Cells of the adrenal medulla receive synaptic input from which of the following types of neurons?
    a) Preganglionic sympathetic neurons
    b) Postganglionic sympathetic neurons
    c) Preganglionic parasympathetic neurons
    d) Postsynaptic parasympathetic neurons

20. Erythrocytes are constantly dying and being replaced. Heme from the hemoglobin is converted to which of the following substances before being eliminated from the body?
    a) Bilirubin
    b) Cholesterol
    c) Cholic acid
    d) Globin

Section B: Short Answer Questions (40 Marks)

1. Explain any three (3) physiological effects of glucocorticoids (6 marks)
2. Explain three (3) physiological mechanisms that stimulate hydrochloric acid secretion by the parietal cells in the stomach (6 marks)
3. State four (4) physiologic functions of Sertoli cells (4 marks)
4. State five (5) functions of the skin (5 marks)
5. Explain the effects of sympathetic stimulation in the following body organs:
    a) Heart (3 marks)

b) Small intestine (3 marks)

6. Briefly describe the digestive processes that occur in the mouth (5 marks)
7. Explain how water is reabsorbed in the kidney (4 marks)
8. State four (4) functions of the hypothalamus (4 marks)

Section C: Long Answer Questions (40 Marks)

1. Discus the hormonal regulation of the female reproductive cycle (20 marks)

2. The first step in renal processing involves the filtration of plasma in the glomerulus:

a) Define glomerular filtration (1 mark)
b) Discuss the adaptations of the renal corpuscle that increase the efficiency of filtration. (9 marks)
c) Explain the hormonal regulation of glomerular filtration. (10 marks)
