CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

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

NURU 118: MEDICAL PHYSIOLOGY IV

STREAMS: BSC NURSING **TIME: 2 HOURS**

DAY/DATE: MONDAY 4/12/2017 **8.30 A.M – 10.30 A.M**

INSTRUCTIONS:

- **Do not write on the question paper.**
- **Mobile phones and any other reference materials are not allowed in the examination room**
- **The paper has three sections. Answer all questions in section I and II and one question in section III**
- **All your answers for section I (MCQs) should be on one page.**
- **Number all your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet.**
- **Write your answers legibly and use your time wisely**

SECTION A: MULTIPLE CHOICE QUESTIONS (20MARKS)

1. The liver is the principal site for:

   (a) Synthesis of plasma albumin

   (b) Synthesis of plasma globulins

   (c) Synthesis of vitamin B_{12}

   (d) Storage of vitamin C

2. The following nephron segment reabsorbs the highest amount of water under normal conditions:

(a) Proximal convoluted tubule

(b) Ascending limb of the loop of henle

(c) Distal convoluted tubule

(d) Collecting ducts

3. Concerning the bile salts, the following statement is incorrect:

(a) Are the only constituents of bile necessary for digestion

(b) Are a characteristic molecule, part water-soluble and part fat –soluble

(c) Are reabsorbed mainly in the upper small intestine

(d) Are derived from cholesterol

4. HCL secretion in the stomach:

(a) Is a function of peptic cells

(b) Required no energy

(c) Occurs by passive diffusion of both H^+ and Cl^- in the gastric human

(d) Require presence of carbonic anhydrase enzyme

5. The cells of the liver:

(a) Help to maintain the normal blood glucose level

(b) Deaminate amino acids to from NH_4^+which is excreted as ammonium salts in the urine

(c) Synthesis vitamin D_3 (cholecalciferol)

(d) Synthesis most of the immune globulins

6. Angiotensin II causes:

(a) Increase tubular reabsorption of Na^+ & H_20

(b) Decreased distal tibular reabsorption of Na^+ & H_20

(c) Increased excretion of Na^+ & H_20

(d) All the above

7. In the normal menstrual cycle:

(a) The proliferative phase depends on estrogen secretion

(b) Cervical mucus becomes more fluid around the time of ovulation

(c) Ovulation is followed by a surge in blood luteinizing horone

(d) Basal body temperature is higher after ovulation.

8. Which of these processes can move a solute against its concentration gradient?

(a) Osmosis

(b) Passive transport

(c) Active transport

(d) Facilitated diffusion

9. When blood glucose levels fall:

(a) Insulin is released

(b) Glucagon is released

(c) Peripheral cells take up less glucose

(d) Protein synthesis decreases

10. 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

11. Renal tubules normally reabsorb:

(a) More water every hour than the entire plasma volume

(b) All filtered amino acids

(c) More potassium than chloride

(d) All filtered plasma proteins

12. The following is involved in the regulation of the glomerular filtration rate (GFR)?

(a) Tubuloglomerular feedback

(b) Sympathetic nervous system

(c) Angiotensin II

(d) All of the above

13. Concerning the chemical classification of hormones:

(a) The hormones from the adrenal medulla and thyroid gland are amino acid derivatives

(b) The gonadal hormones are either proteins or peptides

(c) Preostaglandins are fatty acid derivatives.

(d) Steroidal hormones are structurally related to cholesterol

14. Fertilization of ovum normally occurs in:

(a) Uterus

(b) Cervix of uterus

(c) Fallopian tube

(d) None of the above

15. The following is not a metabolic effect of insulin:

(a) Increased conversion of glucose to glucose 6 phosphate in the liver

(b) Increased protein synthesis

(c) Increae liver gluconeogenesis

(d) Increased muscle amino acid uptake

16. Kidney produce:

(a) Erythropoietin

(b) Antidiuretic hormone

(c) Angiotensin II

(d) Atrial natriuretic peptide

17. The average glomerular filtration rate (GFR) in a normal 70 kg man is:

(a) 25ml/min

(b) 50ml/min

(c) 100ml/min

(d) 125 ml/min

18. Concerning spermatogenesis:

(a) It begins with spermatogonia

(b) It begins with primary spermatogonia

(c) It begins during adolescence

(d) It takes 65-75 days in humans

19. Gastric acid secretion is increased by:

(a) Parasympsthetic stimulation

(b) Parasympsthetic inhibition

(c) Sympathetic stimulation

(d) Cholinergic antagonists

20. The following statement about peptide or protein hormones id true:

(a) They have longer half-lives than steroid hormones

(b) They have receptors on the cell membrane

(c) They have a slower on set of action than both steroid and thyroid hormones.

(d) They are not stored in endocrine- producing glands

SECTION B: SHORT ANSWER QUESTIONS (30MARKS)

1. State six (6) physiological functions of estrogen. [6marks]
2. Explain how the following hormones control the testicular function:
   (a) Luteinizing hormone [2marks]

(b) Follicle stimulating hormone. [2marks]

3. Explain how the following hormones regulate the process of tubular re-absorption and secretion;
   (a) Aldosterone [3marks]
   (b) Parathyroid hormone [3marks]
4. State five (5) physiological functions of the liver. [5marks]
5. Describe the digestive processes that occur in the mouth. [5marks]
6. Explain the re-absorption of water in the kidney. [4marks]

SECTION C :LONG ANSWER QUESTIONS (20MARKS]

1. The first step in renal processing involves the filtration of plasma in the glomerulus:
   a. Define glomerular filtration. [1mark]
   b. State (4) constitutes of plasma that are normally filtered in the glomerulus. [4marks]
   c. Explain the mechanisms that regulate glomerular filtration. [15marks]
2. Explain the physiology of the small intestine under the following headings:
   (a) Digestion of carbohydrates [5marks]
   (b) Digestion of proteins [5marks]
   (c) Aborption of monosaccharaides [5marks]
   (d) Absorption of lipids. [5marks]
