



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

REGINA PACIS INSTITUTE OF HEALTH SCIENCES

MAIN EXAMINATION

JANUARY – APRIL 2018 TRIMESTER

FACULTY OF SCIENCES

DEPARTMENT OF NURSING

REGULAR PROGRAMME

NUR / UNUR 109: MEDICAL PHYSIOLOGY II

P.O. Box 62157
00200 Nairobi - KENYA
Telephone: 891601-6
Fax: 254-20-891084
E-mail: academics@cuea.edu

Date: APRIL 2018

Duration: 3 Hours

INSTRUCTIONS: Answer ALL Questions

MULTIPLE CHOICE QUESTIONS (MCQ) (20 MARKS)

- Q1. The pressure differential between the heart and the aorta is least in the
- a) Left ventricle during systole.
 - b) Left ventricle during diastole.
 - c) Right ventricle during systole.
 - d) Right ventricle during diastole.
- Q2. Sympathetic nerve activity would be expected to increase
- a) If glutamate receptors were activated in the NTS
 - b) If GABA receptors were activated in the RVLM.
 - c) If glutamate receptors were activated in the CVLM.
 - d) During stress.
- Q3. Which of the following has the highest total cross-sectional area in the body?
- a) Arteries
 - b) Arterioles
 - c) Capillaries
 - d) Venules
- Q4. Lymph flow from the foot is

- a) Increased when an individual rises from the supine to the standing position.
- b) Increased by massaging the foot.
- c) Increased when capillary permeability is decreased.
- d) Decreased when the valves of the leg veins are incompetent.

Q5. When the radius of the resistance vessels is increased, which of the following is increased?

- a) Systolic blood pressure
- b) Diastolic blood pressure
- c) Viscosity of the blood
- d) Capillary blood flow

Q6. The dicrotic notch on the aortic pressure curve is caused by

- a) Closure of the mitral valve.
- b) Closure of the tricuspid valve.
- c) Closure of the aortic valve.
- d) Closure of the pulmonary valve.

Q7. Starling's law of the heart

- a) Does not operate in the failing heart.
- b) Does not operate during exercise.
- c) Explains the increase in heart rate produced by exercise.
- d) Explains the increase in cardiac output that occurs when venous return is increased.

Q8. Currents caused by opening of which of the following channels contribute to the repolarization phase of the action potential of ventricular muscle fibers?

- a) Na⁺ channels
- b) Cl⁻ channels
- c) Ca²⁺ channels
- d) K⁺ channels

Q9. Which of the following hormones act on its target tissues by a steroid hormone mechanism of action?

- a) Thyroid hormone
- b) Parathyroid hormone (PTH)
- c) Antidiuretic hormone (ADH) on the collecting duct
- d) β_1 adrenergic agonists

Q10. Which of the following hormones originates in the anterior pituitary?

- a) Dopamine
- b) Growth hormone-releasing hormone (GHRH)

- c) Gonadotropin-releasing hormone (GnRH)
- d) Thyroid-stimulating hormone (TSH)

Q11. Which of the following functions of the sertoli cells mediates negative feedback control of follicle-stimulating hormone (FSH) secretion?

- a) Synthesis of inhibin
- b) Synthesis of testosterone
- c) Aromatization of testosterone
- d) Maintenance of the blood–testes barrier

Q12. Which of the following pancreatic secretions has a receptor with four subunits, two of which have tyrosine kinase activity?

- a) Insulin
- b) Glucagon
- c) Somatostatin
- d) Pancreatic lipase

Q13. Which of the following hormones acts by an inositol 1,4,5-triphosphate (IP3)-Ca²⁺ mechanism of action?

- a) 1,25-Dihydroxycholecalciferol
- b) Gonadotropin-releasing hormone (GnRH)
- c) Insulin
- d) Parathyroid hormone (PTH)

Q14. The forced vital capacity is

- a) The amount of air that normally moves into (or out of) the lung with each respiration.
- b) The amount of air that enters the lung but does not participate in gas exchange.
- c) The amount of air expired after maximal expiratory effort.
- d) The largest amount of gas that can be moved into and out of the lungs in 1 min.

Q15. Which of the following is responsible for the movement of O₂ from the alveoli into the blood in the pulmonary capillaries?

- a) Active transport
- b) Passive diffusion
- c) Secondary active transport
- d) Facilitated diffusion

Q16. Which of the following would cause an increase in both glomerular filtration rate (GFR) and renal plasma flow (RPF)?

- a) Hyperproteinemia
- b) A ureteral stone
- c) Dilation of the afferent arteriole
- d) Dilation of the efferent arteriole

Q17. Which of the following causes a decrease in renal Ca^{2+} clearance?

- a) Hypoparathyroidism
- b) Treatment with chlorothiazide
- c) Treatment with furosemide
- d) Extracellular fluid (ECF) volume expansion

Q18. Which of the following dietary components should enhance calcium uptake?

- a) Protein
- b) Oxalates
- c) Iron
- d) Vitamin D

Q19. Cholecystokinin (CCK) inhibits

- a) Gastric emptying
- b) Pancreatic HCO_3^- secretion
- c) Pancreatic enzyme secretion
- d) Contraction of the gallbladder

Q20. Which of the following abolishes "receptive relaxation" of the stomach?

- a) Parasympathetic stimulation
- b) Sympathetic stimulation
- c) Vagotomy
- d) Administration of gastrin

PART II

SHORT ANSWER QUESTION (SAQ) (40 MARKS)

- Q1. Describe 5 lung volumes and capacities **(5 marks)**
- Q2. Outline ventricular action potential **(5 marks)**
- Q3. Describe the cardiac cycle **(9 marks)**
- Q4. Outline 3 categories of classic hormones and give 2 examples of each **(6 marks)**
- Q5. Discuss hormonal changes in menstrual cycle **(9 marks)**

Q6. Out line how diferent characteristics of the glomerulus help in its function
(6 marks)

PART III

LONG ANSWER QUESTION (LAQ) (40 MARKS)

Q1. Explain

- a) Oxygen transport (10 marks)
- b) Carbon dioxide transport (10 marks)

Q2. Explain

- a) Carbohydrate digestion and absorption (15 marks)
- b) Vitamin B12 and Iron absorption (5 marks)

END