



THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

REGINA PACIS INSTITUTE OF HEALTH SCIENCES

MAIN EXAMINATION

AUGUST – DECEMBER 2017 TRIMESTER

FACULTY OF SCIENCES

DEPARTMENT OF NURSING

REGULAR PROGRAMME

NUR / UNUR 109: HUMAN PHYSIOLOGY II

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Duration: 3 Hours

INSTRUCTIONS: Answer ALL Questions

PART I MULTIPLE CHOICE QUESTIONS (MCQ)

(20 MARKS)

Q1. Which of the following has the highest pH?

- a) Gastric juice
- b) Colonic luminal contents
- c) Pancreatic juice
- d) Saliva

Q2. Pancreatic failure can lead to:

- a) Steatorrhea
- b) Hyperglycemia
- c) Metabolic alkalosis
- d) Hyperaminocidemia

Q3. Water is absorbed in the jejunum, ileum, and colon and excreted in the feces. Arrange these in order of the amount of water absorbed or excreted from greatest to smallest.

- a) Colon, jejunum, ileum, feces
- b) Feces, colon, ileum, jejunum
- c) Jejunum, ileum, colon, feces
- d) Colon, ileum, jejunum, feces

Q4. Which of the following substances is secreted in response to an oral glucose load?

- a) Secretin
- b) Gastrin
- c) Cholecystokinin (CCK)
- d) Glucose-dependent insulinotropic peptide (GIP)

Q5. The second heart sound is caused by

- a) closure of the aortic and pulmonary valves.
- b) vibrations in the ventricular wall during systole.
- c) ventricular filling.
- d) closure of the mitral and tricuspid valves

Q6. 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.

Q7. Maximal expired air is

- a) \dot{V}_E (TV)
- b) vital capacity (VC)
- c) expiratory reserve volume (ERV)
- d) residual volume (RV)

Q8. Compared with the apex of the lung, the base of the lung has

- a) a higher pulmonary capillary PO_2
- b) a higher pulmonary capillary PCO_2
- c) a higher ventilation/perfusion (V/Q) ratio
- d) the same V/Q ratio

Q9. Most of the CO_2 transported in the blood is

- a) Dissolved in plasma.
- b) In carbamino compounds formed from plasma proteins.
- c) In carbamino compounds formed from hemoglobin.
- d) In HCO_3^- .

Q10. 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

Q11. Carbon dioxide (CO₂) regulates blood flow to which one of the following organs?

- a) Heart
- b) Skin
- c) Brain
- d) Skeletal muscle

Q12. Which of the following can be synthesized to either estrogen or testosterone

- a) 17 α -hydroxyprogesterone
- b) Estrone
- c) Relaxin
- d) Pregnenolone

Q13. During which phase of the cardiac cycle is ventricular volume lowest?

- a) Atrial systole
- b) Isovolumetric ventricular contraction
- c) Rapid ventricular ejection
- d) Isovolumetric ventricular relaxation

Q14. To maintain normal HCO₃⁻ balance, total daily excretion of HCO₃⁻ should equal the daily

- a) fixed acid production plus fixed acid ingestion
- b) HCO₃⁻ excretion
- c) HCO₃⁻ filtered load
- d) titratable acid excretion

Q15. Which of the following substances has the highest renal clearance?

- a) Para-aminohippuric acid (PAH)
- b) Inulin
- c) Glucose
- d) Na⁺

Q16. Secretion of K⁺ by the distal tubule will be decreased by

- a) metabolic alkalosis
- b) a high-K⁺ diet
- c) hyperaldosteronism
- d) spironolactone administration

Q17. Glucose reabsorption occurs in the

- a) proximal tubule.
- b) loop of Henle.
- c) distal tubule.
- d) cortical collecting duct.

Q18. Which of the following is the most potent vasoconstrictor

- a) vasopressin.
- b) angiotensin II.

- c) norepinephrine.
- d) atrial natriuretic peptide.

Q19. Cardiac output of the right side of the heart is what percentage of the cardiac output of the left side of the heart?

- a) 25%
- b) 50%
- c) 75%
- d) 100%

Q20. Which of the following causes increased aldosterone secretion?

- a) Decreased blood volume
- b) Administration of an inhibitor of angiotensin-converting enzyme (ACE)
- c) Hyperosmolarity
- d) Hypokalemia

PART II SHORT ANSWER QUESTION (SAQ) (40 MARKS)

- Q1. Define gonadal sex and phenotypical sex (2 marks)
- Q2. State the functions of testosterone (3 marks)
- Q3. Outline the swallowing reflex (5 marks)
- Q4. Concerning renal tubular transport, describe reabsorption and secretion at different anatomical renal tubules (10 marks)
- Q5. List 5 functions of the liver (2.5 marks)
- Q6. List 5 functions of the kidney (2.5 marks)
- Q7. Describe the cardiovascular changes during exercises (5 marks)
- Q8. List hormones of anterior and posterior pituitary gland (5 marks)
- Q9. Discuss oxygen dissociation curve (5 marks)

PART III LONG ANSWER QUESTION (LAQ) (40 MARKS)

- Q1. Discuss the menstrual cycle including reproductive organ changes and hormonal changes. (20marks)
- Q2. Discuss
 - a) Protein digestion and absorption (10 marks)
 - b) Gastrointestinal motility in the stomach, ileum and colon (10 marks)

END