CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

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

NURU 117: MEDICAL PHYSIOLOGICAL III

STREAMS: BSC NURU **TIME: 2 HOURS**

DAY/DATE: FRIDAY 06/12/2019 **2.30 P.M. – 4.30 P.M.**

INSTRUCTIONS:

- **All questions are compulsory.**

MULTIPLE CHOICE QUESTIONS (20MKS)

1. Some hormone receptors on the cell surface act through second messenger mechanism. The most common second messengers include the following except. (1 mark)

   a) Adenylyl cyclase –cAMP

   b) Calcium calmodulin

   c) Cell membrane phospholipid

   d) Arachidonic acid

2. Hormones that penetrate the cell membrane and act internally are (1 mark)

   a) Amines and polypeptides

   b) Steroids and thyroid hormones

   c) Thromboxanes and Leukotrienes

   d) Prostaglandins

3. The following is a neuroendocrine organ (1 mark)

   a) Pituitary gland

   b) Thyroid gland

   c) Gonads

   d) Hypothalamus

4. Posterior pituitary gland (1 mark)

   a) Secretes anti-diuretic hormone and oxytocin

   b) Function is regulated via negative feedback to hypothalamus

   c) Is located in medulla oblongata

   d) Control is via neural stimulation

5. Hormones secreted by hypothalamus include (1 mark)

   a) Adrenocorticotropic hormone

   b) Dopamine

   c) Thyroid stimulating hormone

   d) Human growth hormone

6. Adrenal glands androgens include (1 mark)

   a) Testosterone

   b) Estrogen

   c) Progesterone

   d) Androstenedione

7. One of the major hormones produced by Chromaffin cells of adrenal glands is (1 mark)

   a) Norepinephrine

   b) Acetylcholine

   c) Prostaglandins

   d) Dehydroepiandrosterone

8. Delta (D) cells of pancreatic islets produce (1 mark)

   a) Glucagon

   b) Insulin

   c) pancreatic polypeptide

   d) Somatostatin

9. Actions of glucagon includes the following except (1 mark)

   a) Increases in hepatic gluconeogenesis

   b) Increases in lipolysis

   c) Increases glycogenesis

   d) Increases protein breakdown

10. Pineal gland (1 mark)

    a) Is located adjacent to thymus

    b) Secretes melatonin

    c) Is not a true gland

    d) Participates in the body metabolism

11. Type II pneumocytes in alveoli (1 mark)

a) Are more numerous than type I pneumocytes

b) Possess flattened processes

c) Are the main sites of gas exchange

d) Produces surfactant factor

12. Internal respiration entails (1 mark)

a) Exchange of gases between blood in systemic capillaries and tissue cells

b) Metabolic reactions within cells that consume oxygen and give off carbon dioxide during the ATP production

c) Inhalation and exhalation of air

d) Exchange of gases between the alveoli and the blood in pulmonary capillaries across the respiratory membrane

13. The Vital lung capacity is (1 mark)

a) The volume of one breath

b) The total volume of exhaled air, from a maximum inspiration to a maximum exhalation

c) The total volume of air contained in the lungs

d) The air remaining in the lung after a complete exhalation

14. Most carbon dioxide is transported in blood plasma as (1 mark)

a) Bicarbonate ions

b) Carbamino compounds

c) Dissolved carbon dioxide

d) Carbonic acid

15. Factors that increase the affinity of hemoglobin for oxygen include (1 mark)

a) Increased PH

b) Increased temperature

c) Increased Partial pressure of carbon dioxide

d) 2, 3-bisphosphoglycerate

16. The respiratory center in brain is divided into 3 areas. The medullary rhythmicity area in the medulla oblongata (1 mark)

a) Controls the basic rhythm of respiration

b) Transmits inhibitory impulses to the inspiratory area

c) Sends stimulatory impulses to the inspiratory area

d) Is under limbic system control

17. In Chemoreceptor Regulation of Respiration, Central chemoreceptors respond to changes in

(1 mark)

a) Hydrogen ions concentration and PCO2

b) PCO2 and PO2

c) Hydrogen ions concentration and PO2

d) Only PO2

18. The normal PCO2 in arterial blood is (1 mark)

a) 20mmHg

b) 60 mmHg.

c) 40mmHg

d) 80mmHg

19. The atmospheric pressure at the sea level is (1 mark)

a) 760mmHg

b) 510mmHg

c) 910mmHg

d) 260mmHg

20. Peripheral chemoreceptors are concerned with control of ventilation. They are located

(1 mark)

a) In the head

b) In the heart

c) In the neck

d) In the lungs

SHORT ANSWER QUESTIONS (30 MARKS)

1. Differentiate between endocrine and exocrine glands giving examples. (4 marks)
2. Hormones are classified based on their chemical structures. State 4 classes of hormones.

(4 marks)

3. (i) List 2 types of cells found in thyroid gland and the hormones they secrete. (2 marks)

(ii) List 4 disorders of thyroid gland. (2 marks)

4. The cortex of adrenal gland is subdivided into 3 zones. State the function of each zone. (3 marks)
5. State 4 major metabolic effects of Insulin. (4 marks)
6. State 5 functions of the Respiratory System. (5 marks)
7. Describe the Pressure Changes and their effects during Pulmonary Ventilation. (6 marks)

LONG ANSWER QUESTION

1. Hypothalamus has a direct controlling effect on the pituitary gland and an indirect effect on most of the other glands.

   (i) Describe tropic hormones. (2 marks)

   (ii) Differentiate between negative feedback and positive feedback in control of hormone release, giving an example for each. (6 marks)

   (iii) List 6 hormones produced by anterior pituitary gland and outline their immediate functions in the body. (12 marks)
