



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

SUPPLEMENTARY/SPECIAL EXAMINATION FOR THE DEGREE OF BACHELOR OF
MEDICINE AND SURGERY

HMP : MEDICAL PHYSIOLOGY

DATE: MONDAY 25TH SEPTEMBER 2017

TIME: 9.00 AM - 11.00 AM

INSTRUCTIONS:

Answer **ALL** questions in Section A, B and C

SECTION A – MULTIPLE CHOICE QUESTIONS

Answer all questions. Choose the single best answer. Indicate your answer by circling your choice option.

1. The conducting zone of the respiratory system includes all of the following passages, except
 - A. the trachea
 - B. alveolar ducts
 - C. tertiary bronchi
 - D. terminal bronchioles

2. A deficiency of lung surfactant result in
 - A. respiratory distress syndrome
 - B. low pulmonary elasticity
 - C. pneumothorax
 - D. chronic obstructive pulmonary disease

3. When the tubular load of a substance exceeds the tubular maximum, that substance will
- A. be actively transported into the blood.
 - B. diffuse into the blood.
 - C. appear in the urine.
 - D. cause a backflow of filtrate from Bowman's capsule into the glomerulus.
4. The micturition reflex is centered in the ____.
- A. medulla
 - B. sacral cord
 - C. hypothalamus
 - D. lumbar cord
5. Skeletal muscle tone
- A. Is a dynamic stretch reflex
 - B. Has a dynamic state
 - C. Is increased during rest
 - D. Is decreased during standing upright
6. Representation of the body in the primary motor area
- A. Is ipsilateral
 - B. Is upright
 - C. Is disproportionate to the actual anatomical size of the represented region
 - D. All the above are correct
7. Denervation super sensitivity of the muscle in LMN lesions is due to
- A. Increased release of neurotransmitter from the degenerating nerve terminals
 - B. Decreased release of neurotransmitter from the degenerating nerve terminals
 - C. Increased number of transmitter receptors in fibers of the denervated muscle
 - D. Decreased number of transmitter receptors in fibers of the denervated muscle

8. Vestibular hair cells
- A. Are provided with cilia all over their surface
 - B. Are innervated by cochlear nerve fibers
 - C. Are stimulated by a chemical transmitter released from the terminals of the innervating nerve fibers
 - D. Are sensitive to mechanical stimuli
9. Androgen binding Protein is produced by
- A. adrenals
 - B. hypothalamus
 - C. sertoli cells
 - D. leydig cells
10. All of the following are produced by the corpus leuteum except
- A. estrogens
 - B. progesteron
 - C. relaxin
 - D. F.S.H.
11. The accommodation reflex includes:
- A. Relaxation of the ciliary muscle
 - B. Dilation of pupil
 - C. Decrease in field of vision
 - D. Diplopia
12. Olfactory sensory cells

- A. Show phenomenon of adaptation
- B. Are epithelial cells which synapse with the underlying nerves
- C. Are of little importance in appreciating the flavor of food after it enters the mouth
- D. Relay with secondary neurons which pass to the thalamus

13. Which of the following organelle in the cytoplasm constitutes the bulk of it:

- A. Ribosomes
- B. Mitochondria
- C. Lysozomes
- D. Endoplasmic reticulum

14. D₂O(deuterium oxide) is used for measuring the volume of:

- A. Total body water
- B. Transcellular water
- C. Plasma
- D. Intracellular water

15. Tetrodotoxin would directly

- A. block depolarization of excitable cells.
- B. block repolarization of excitable cells.
- C. prevent neurotransmitter release.
- D. inhibit acetylcholinesterase.

16. Neuromuscular junction:

- A. Is a junction between the motor nerve and skeletal muscle fiber
- B. Is a junction between nerve and a muscle
- C. Nerve membrane is in close approximation with number of muscle membranes
- D. Is a potential space between a nerve and a muscle

17. Excitation contraction coupling involves all the following except:

- A. Release of Ca^{++} from troponin.
- B. Formation of cross bridges between actin and myosin.
- C. Spread of depolarization along the transverse tubules.
- D. Hydrolysis of ATP to ADP.

18. The first heart sound is created by:

- A. vibration of aortic walls and the walls of pulmonary artery, at the beginning of blood ejection;
- B. isovolumetric contraction;
- C. closure of Av valves;
- D. opening of AV valves;

19. Action potential in contractile heart cells has following characteristics:

- A. in atria is longer than in ventricles;
- B. starts with opening of K^{+} channels;
- C. starts with slow depolarization;
- D. plateau phase is present;

20. Which of the following substance is a vasoconstrictors?

- A. nitric oxide
- B. angiotensin;
- C. bradykinin;
- D. histamine;

SECTION B – SHORT ANSWER QUESTIONS

Answers all 8 questions in the space provided (5 marks each).

1. Elaborate on mechanisms involved in renal potassium excretion.
2. Outline the hormones produced by the anterior pituitary, indicating their primary actions.
3. Describe the Skin triple response to stimulation

4. List factors affecting spermatogenesis

5. Enumerate five factors affecting rate of diffusion across a cell membrane.

6. Classify nerve fibres according to Erlanger and Gasser ,and give an example of their function.

7. Explain mechanisms of auditory transduction

8. Outline the theories on pain mechanisms.

SECTION C – LONG ANSWER QUESTIONS.

Answer ALL questions on the answer booklet provided (10 marks each)

1. Explain the mechanisms of gastric mucosal barrier.
2. Describe the effect of hypoxia and gravity on pulmonary circulation
3. Describe the effect of stimulating different areas of the hypothalamus on vegetative function and behavior
4. Describe the regulation of heart rate.