



KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR PHARMACY (LEVEL III)

HMP 220: MEDICAL PHYSIOLOGY

2ND SEMESTER 2021/2022

TIME: 3Hours

INSTRUCTIONS:

SECTION A: MCQs

SELECT THE SINGLE MOST APPROPRIATE ANSWER

1. The following are true regarding puberty EXCEPT:
 - a. Girls attain Tanner 5 pubic hair distribution about 2 years after increased androgens production
 - b. Age of menarche depends on acquisition of a certain amount of body fat
 - c. Adrenarche is the increase in adrenal androgens with the simultaneous increase in ACTH
 - d. Exposure to oestrogen will not stimulate gametogenesis in a five year old girl
2. The following statements is INCORRECT about menopause:
 - a. Menopause occurs at about fifty one years of age
 - b. Osteoporosis is common among women after menopause
 - c. Hot flushes affect mainly the upper part of the body
 - d. The most common oestrogen found in the women after menopause is oestradiol
3. The following is NOT a function of sertoli cells:
 - a. Secreting Mullerian Inhibiting Substance
 - b. Phagocytose pathogens
 - c. Secrete inhibin that inhibits FSH secretion from the hypothalamus and anterior pituitary
 - d. Selective filtration of nutrients from the blood to nourish sperms

4. Select the true statement
- Regarding the Breast , during the menstrual cycle progesterone cause growth of lobules and alveoli
 - Menstrual flow which lasts as long as seven days in an abnormal condition
 - Blood loss of more than 80ml in a menstrual flow is a normal occurrence
 - Menstrual cycle in which ovulation fail to occur can be considered as normal
5. The following statement regarding human reproduction is INCORRECT:
- Male gametes are known as sperm.
 - A mature sperm is a haploid cell.
 - Cross over occurs in the fertilized ova.
 - A zygote is formed when an ovum and a sperm fuse.
6. The following statements regarding the testes is FALSE.
- Leydig cells secrete testosterone
 - Testosterone inhibits the secretion of LH by negative feedback regulation.
 - Sertoli cells respond to testosterone by synthesising androgen binding protein
 - Sertoli cells line the seminiferous tubules nourishing the developing sperm.
7. The INCORRECT statement regarding the menstrual cycle is...
- The development of the antral follicle depends on the expression of receptors for FSH and LH
 - Ovulation occurs in response to a sudden increase in plasma LH
 - The luteal phase is associated with a large increase in plasma progesterone
 - The endometrium proliferates under the influence of progesterone.
8. The following statement regarding male gamete formation is NOT TRUE:
- Spermatids are formed from spermatocytes following the completion of the second meiotic division.
 - The nucleus of each spermatid contains 23 autosomes
 - Spermatids develop into sperm by the process of spermiogenesis
 - During spermatogenesis the spermatids divide by mitosis but remain linked by cytoplasmic bridges.

9. The following statement is FALSE:

- a. FSH and LH are secreted in the adenohypophysis
- b. Cervical mucus becomes thick and scanty under the influence of progesterone
- c. Cervical mucus becomes thin and stretchable under the influence of estrogen
- d. Each spermatogonia gives rise to 16 sperms making one produce 128 million sperm daily.

10. Androgens are secreted in the following EXCEPT:

- a. Testis by the seminiferous tubules.
- b. Fetus in greater quantities than in early childhood.
- c. In the female by the ovary.
- d. In the male by the adrenal cortex.

11. Which of the following is NOT an origin of the corticospinal tract :-

- a. premotor area in the frontal lobe
- b. prefrontal area in the frontal lobe
- c. supplemental motor area in the frontal lobe
- d. somatic sensory area in the parietal lobe

12. The Rubrospinal tract :-

- a. originates from the pontine reticular formation
- b. descends contralaterally
- c. controls activity of axial muscles
- d. is a component of the medial motor system

13. The reticulospinal tracts :-

- a. Are inhibitory to muscle tone
- b. Are excitatory to muscle tone
- c. Are either excitatory or inhibitory to muscle tone
- d. Have no effect on muscle tone

14. which of the following does NOT give neural afferents to the primary motor area :-

- a. basal ganglia
- b. cerebellum
- c. hypothalamus
- d. thalamus

15. Which one of the following is NOT a function of the supplemental motor area
- Adjusting posture
 - Orienting responses
 - Motor programming
 - Coordinating bilateral movements
16. Which of the following is NOT a chemical transmitters in the basal :-
- Gamma Amino Butyric Acid (GABA)
 - Dopamine
 - Glutamate
 - Glycine
17. Which one of the following is NOT a function of the cerebellum:
- Coordinating the muscle contractions required to execute a movement.
 - Directly stimulating motor neurons required to make a movement.
 - Receiving feedback from muscles that execute the movement.
 - Involved in the planning of a movement.
18. The tectospinal tract is mainly concerned with :-
- Control of posture
 - Motor programming
 - Coordinating bilateral movements
 - coordinate movements of both the head and the eyes
19. Parkinson's disease results from damage of :-
- Caudate nucleus
 - Subthalamic nucleus
 - Globus pallidus
 - Substantia nigra
20. Which of the following is NOT true of the lateral corticospinal tract:
- It contains 80% fiber of the corticospinal pathway.
 - It decussates at the level of medullary pyramids.
 - It is involved in control of distal muscles and fine skilled movements
 - It controls axial muscle mainly and is very important for posture regulation

21. The following are the parts of peripheral nervous system:

- a. brain, spinal cord, and vertebral column
- b. the corpus collosum
- c. sympathetic and parasympathetic nervous system
- d. the cerebral cortex

22. The main divisions of the nervous system are

- a. the sensory system and the motor system
- b. the peripheral nervous system and central nervous system
- c. the dendritic and the axonal systems
- d. the sympathetic and parasympathetic systems

23 The peripheral nervous system includes the nerves whose neurons have cell bodies that found in the _____.

- a. sympathetic nervous system
- b. dorsal root ganglia
- c. motor system
- d. autonomic system

24 The PNS nerves are part of either the somatic system or the

- a. motor system
- b. autonomic system
- c. sympathetic system
- d. parasympathetic system

25. The somatic system contains nerves that control

- a. skeletal muscles
- b. internal organs, joints, and glands
- c. skeletal muscles, skin, and glands
- d. smooth muscles, cardiac muscles and glands

26. How many pairs of cranial nerves do humans have?

- a. 4
- b. 12
- c. 16
- d. 21

27. The peripheral nervous system includes mixed nerves that

- a. serve the muscular and skeletal system
- b. serve the sympathetic system
- c. serve the parasympathetic system
- d. contain both sensory and motor fibers

28. The sensory neurons that come from internal organs send impulses to the CNS where reflex actions

- a. are critical to conscious decision making
- b. help maintain homeostasis
- c. trigger all neurotransmitters
- d. control our emotional moods

29. The following are characteristic of the sympathetic system:

- a. inhibits the digestive tract
- b. inhibits respiration
- c. accelerates the heartbeat
- d. all of the above

30. The parasympathetic system is involved in:

- a. readying the body for "fight or flight."
- b. vegetative functions
- c. accelerates gastric emptying
- d. all of the above

SECTION B: Short answer questions (5 Marks Each)

Indicate your answers on the answer booklet provided

1. List any five factors that affect the onset of puberty.
2. Outline at least five parameters assessed during semenalysis.
3. Describe the functions of the following hormones in pregnancy
 - a. β HCG (2 mks)
 - b. Oestrogen (3 mks)
4. Outline the key events that occur during ovulation.
5. Describe the function of the basal ganglia in facilitating motor action
6. Explain the basis of topographical representation of various body muscles in the motor cortex
7. Outline the function of the cerebellum.
8. Explain the effects of parasympathetic nervous system activation on the gastro-intestinal system
9. With the help of a labelled diagram, describe the withdrawal reflex
10. Describe the posterior column pathway and its functions:

SECTION C: Long answer

Indicate your Answers on the Answer Booklet Provided. (10 Marks Each)

1. Describe endocrine control during male sexual differentiation.
2. Describe the origin and function of the extrapyramidal system tracts

INVOLVEMENT IN ANY EXAMINATION IRREGULARITY SHALL LEAD TO DISCONTINUATION

3. Describe with examples the three classifications of sensory receptors
4. Describe the functions of the Vagus Nerves in the visera: