



UNIVERSITI KUALA LUMPUR
INSTITUTE OF MEDICAL SCIENCE TECHNOLOGY

FINAL EXAMINATION
OCTOBER 2025 SEMESTER

COURSE CODE : HGB 10103
COURSE NAME : HUMAN ANATOMY AND PHYSIOLOGY
PROGRAMME NAME : BACHELOR OF ENVIRONMENTAL HEALTH (HONS)
DATE : 23 JANUARY 2026
TIME : 09.00 AM – 12.00 PM
DURATION : 3 HOURS



INSTRUCTIONS TO CANDIDATES

1. Please CAREFULLY read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of TWO (2) sections; Section A and Section B.
4. Answer ALL questions in Section A. For Section B, answer THREE (3) questions ONLY.
5. Please write your answers on the OMR answer script and answer booklet provided.
6. Answer all questions in English language ONLY.

THERE ARE 14 PAGES OF QUESTIONS, INCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

Answer ALL questions.

Please use the answer booklet provided.

1. Which of the following forms of birth control has the highest failure rate?
 - A. vasectomy
 - B. spermicides
 - C. oral contraceptives
 - D. complete abstinence

2. Which lymphatic organ is responsible for filtering blood and removing old red blood cells?

3. Which type of neuron carries impulses from receptors to the central nervous system?
 - A. Motor neurons
 - B. Interneurons
 - C. Sensory neurons
 - D. Association neurons

4. Which structure is the main site for gas exchange in the lungs?
 - A. Alveoli
 - B. Bronchi
 - C. Pleura
 - D. Trachea

5. The sympathetic division of the autonomic nervous system is responsible for _____.
- A. voluntary movement
 - B. fight-or-flight responses
 - C. memory formation
 - D. rest and digestion
6. Which of the following best describes the main function of lymph nodes?
- A. Produce red blood cells.
 - B. Produce digestive enzymes.
 - C. Store calcium.
 - D. Filter lymph and trap foreign particles.
7. Which of the following best describes the function of the epiglottis?
- A. Helps in gas exchange.
 - B. Produces sound.
 - C. Warms and humidifies air.
 - D. Prevents food from entering the trachea.
8. Which part of the brain controls the basic rhythm of breathing?
- A. Medulla oblongata
 - B. Cerebellum
 - C. Cerebrum
 - D. Hypothalamus

9. If fertilization occurs, which hormone from the developing embryo prevents degeneration of the corpus luteum?
- A. Prolactin
 - B. Follicle-stimulating hormone (FSH)
 - C. Luteinizing hormone (LH)
 - D. Human chorionic gonadotropin (hCG)
10. Which division of the nervous system controls voluntary muscle movements?
- A. Somatic nervous system
 - B. Parasympathetic nervous system
 - C. Autonomic nervous system
 - D. Sympathetic nervous system
11. The part of the brain responsible for coordination, balance, and fine motor control is the_____.
- A. cerebrum
 - B. hypothalamus
 - C. cerebellum
 - D. medulla oblongata
12. Which neurotransmitter is primarily involved in transmitting signals at neuromuscular junctions?
- A. Dopamine
 - B. GABA
 - C. Serotonin
 - D. Acetylcholine

13. The myelin sheath surrounding axons functions to_____.
- A. store calcium ions
 - B. regulate body temperature
 - C. produce neurotransmitters
 - D. speed up nerve impulse conduction
14. The protective membranes covering the brain and spinal cord are called_____.
- A. meninges
 - B. nodes
 - C. ganglia
 - D. ventricles
15. Which layer of the heart wall is responsible for the pumping action of the heart?
- A. Epicardium
 - B. Pericardium
 - C. Myocardium
 - D. Endocardium
16. Which cranial nerve is mainly responsible for transmitting visual information to the brain?
- A. Trigeminal nerve (CN V)
 - B. Optic nerve (CN II)
 - C. Olfactory nerve (CN I)
 - D. Vestibulocochlear nerve (CN VIII)

17. The structure in the inner ear that contains hair cells for hearing is the_____.
- A. semicircular canals
 - B. tympanic membrane
 - C. cochlea
 - D. eustachian tube
18. The spleen performs all the following functions except_____.
- A. removes old red blood cells
 - B. produces lymph in adults
 - C. filters blood
 - D. initiates immune responses to blood-borne antigens
19. Which of the following areas contains the highest concentration of lymph nodes?
- A. Abdomen
 - B. Heart
 - C. Brain
 - D. Neck, armpits, and groin
20. The thymus is essential for the development of which type of lymphocyte?
- A. B lymphocytes
 - B. Natural killer cells
 - C. Plasma cells
 - D. T lymphocytes

21. Which of the following is not considered part of the respiratory system?
- A. Trachea
 - B. Mouth
 - C. Throat
 - D. Larynx
22. The scrotum_____.
- A. regulates the temperature of the testes
 - B. is a single pouch of skin containing both testes
 - C. contains cremaster muscles that lower the testes
 - D. contains detrusor muscles that wrinkle the scrotum and elevates the testes
23. Estrogens are regulating hormones that _____.
- A. cause the endometrial lining to thin and be shed
 - B. increase blood cholesterol levels
 - C. relax the uterus by inhibiting contractions of the myometrium
 - D. promote the development and maintenance of female reproductive structures
24. Which of the following is not true of the ovaries?
- A. They produce FSH and LH.
 - B. They produce estrogens and progesterone.
 - C. They are homologous to the testes.
 - D. They produce gametes called secondary oocytes.

25. Which hormone plays the most important role in regulating Na^+ and K^+ balance?
- A. ADH
 - B. Androgen
 - C. PTH
 - D. Aldosterone
26. Normal constituents of urine include all of the following except _____.
- A. protein
 - B. water
 - C. urea
 - D. urobilinogen
27. Which of the following is true of nephrons?
- A. Most of the nephrons are located entirely in the renal medulla.
 - B. There are about a billion nephrons in each kidney.
 - C. They are the functional units of the kidneys.
 - D. The proximal convoluted tubules allow the kidney to concentrate or dilute urine.
28. Which of the following is not part of the alimentary canal?
- A. Pharynx
 - B. Esophagus
 - C. Tongue
 - D. Small intestine

29. The gallbladder_____.
- A. concentrates and stores bile
 - B. wall contains skeletal muscle
 - C. drains directly into the common hepatic duct
 - D. contains hepatocytes arranged around central veins
30. Which of the following is not a function of the lymphatic system?
- A. Defending the body against infection.
 - B. Producing red blood cells in adults.
 - C. Absorbing dietary fats from the intestine.
 - D. Returning excess interstitial fluid to the bloodstream.
31. Natural killer (NK) cells_____.
- A. are large, specialized monocytes
 - B. ingest microbes
 - C. constitute 50-70% of all lymphocytes in the blood
 - D. secrete perforin and granzymes to destroy target cells
32. The average life span of an erythrocyte is _____days.
- A. 20
 - B. 60
 - C. 120
 - D. 100

33. Each of the following is a lipid-soluble hormone except_____.
- A. aldosterone
 - B. insulin
 - C. cortisone
 - D. thyroid hormone
34. Janah has circulating anti-B, but not anti-A, antibodies. Which blood type does she have?
- A. A
 - B. B
 - C. O
 - D. AB
35. The airways that directly carry air to each lobe of a lung are the_____.
- A. terminal bronchioles
 - B. bronchioles
 - C. secondary bronchi
 - D. primary bronchi
36. Which of the following is not associated with aging of the respiratory system?
- A. Decreased lung compliance.
 - B. Decreased vital capacity.
 - C. Increased alveolar macrophage activity.
 - D. Increased susceptibility to respiratory infection.

37. Which type of receptor detects changes in temperature?
- A. Chemoreceptors
 - B. Thermoreceptors
 - C. Photoreceptors
 - D. Mechanoreceptors
38. All of the following mechanisms actually expel pathogens from the body except_____.
- A. vomiting
 - B. urination
 - C. defecation
 - D. phagocytosis
39. The pharynx_____.
- A. is usually called the voice box or Adam's apple
 - B. is a tube lined with a mucous membrane
 - C. is a tube composed of smooth muscle
 - D. begins at the external nares
40. Which part of the eye is mainly responsible for focusing light onto the retina?
- A. Iris
 - B. Lens
 - C. Cornea
 - D. Optic nerve

SECTION B (Total: 60 marks)

Answer THREE (3) questions only.

Please use the answer booklet provided.

Question 1

The blood is a vital connective tissue that plays an essential role in maintaining homeostasis in the human body. It consists of different components, each with specific structures and functions.

- (a) List and briefly describe the functions of blood. (9 marks)

- (b) What is the most abundant white blood cell in the body? (1 marks)

- (c) Briefly describe the blood circulation in the body. (10 marks)

Question 2

The digestive system plays a vital role in breaking down food into simpler substances that can be absorbed and used by the body. Each organ in the system contributes to different stages of the digestion process.

- (a) Explain the mechanical and chemical digestion that occurs in the mouth.
(6 marks)
- (b) Describe the role of the stomach in digestion, including enzymes and gastric secretions involved.
(7 marks)
- (c) Explain digestion and absorption of nutrients in the small intestine.
(7 marks)

Question 3

The reproductive system is responsible for producing gametes (sperm and eggs), enabling fertilization, and supporting the development of a new individual.

- (a) Describe the male reproductive system, including its main structures and their functions.
(10 marks)
- (b) Describe the female reproductive system, including its main structures, functions, and basic hormonal control.
(10 marks)

Question 4

The urinary system removes waste from the body and helps maintain the body's fluid and chemical balance.

- (a) Describe the main structures of the urinary system and their functions.
(7 marks)

- (b) Explain the basic structure and function of the nephron.
(7 marks)

- (c) Briefly discuss the role of the urinary system in maintaining homeostasis.
(6 marks)

END OF EXAMINATION PAPER

