



UNIVERSITI KUALA LUMPUR
ROYAL COLLEGE OF MEDICINE PERAK

FINAL EXAMINATION
MARCH 2026 SEMESTER

COURSE CODE	: RCB10403
COURSE NAME	: HUMAN ANATOMY & PHYSIOLOGY
PROGRAMME NAME	: BACHELOR IN PHARMACEUTICAL TECHNOLOGY (HONOURS)
DATE	: 29 JUNE 2026
TIME	: 9.00 AM – 11.00 AM
DURATION	: 2 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read **CAREFULLY** 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 **WITH AT LEAST ONE (1)** question from question 3 or question 4.
5. Please write your answers on the OMR answer script and answer booklet provided.
6. Answer all questions in English language **ONLY**.

THERE ARE 8 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**I) MULTIPLE CHOICE QUESTIONS (20 marks)****INSTRUCTION: Answer ALL questions.****Use the OMR sheet provided.**

1. Select the **CORRECT** order of structural organization levels in the human body.
 - A. Chemical → Cellular → Tissue → Organ → System → Organism
 - B. Chemical → Cellular → Tissue → Organism → System → Organ
 - C. Chemical → Organ → System → Cellular → Tissue → Organism
 - D. Chemical → Organism → Cellular → Tissue → Organ → System
 - E. Chemical → Tissue → Cellular → Organ → System → Organism

2. Identify the cell that is required to carry oxygen throughout the body.
 - A. Macrophage
 - B. Nerve cell
 - C. Sperm
 - D. Fibroblast
 - E. Erythrocyte

3. Which of the following statements describes hypodermis?
 - I. Located below the dermis layer.
 - II. The site of hypodermic injections.
 - III. Contains blood vessels, lymphatic vessels, nerves, collagen, elastic fibers, and connective tissue.
 - IV. Composed of adipose and loose connective tissue.
 - A. I and II
 - B. II and III
 - C. I, II, and III
 - D. I, II, and IV
 - E. I, III, and IV

4. Select the **CORRECT** statement regarding apocrine glands.
- A. Apocrine glands are found in armpits, around nipples, and in groin.
 - B. Apocrine glands flush microorganisms and harmful chemicals from the skin.
 - C. Apocrine glands are bigger than merocrine glands.
 - D. Apocrine glands are widely distributed on body surface, especially on palms and soles.
 - E. Apocrine glands produce a watery secretion that contains 99% H₂O, NaCl, and organic waste.
5. Identify the connective tissue sheath that surrounds the individual muscle cell.
- A. Endomysium
 - B. Perimysium
 - C. Epimysium
 - D. Sarcomere
 - E. Fascicle
6. What is the type of ear cartilage?
- A. Hyaline cartilage
 - B. Fibrocartilage
 - C. Elastic cartilage
 - D. Costal cartilage
 - E. Articular cartilage
7. What part of the neuron receives incoming signals?
- A. Axon
 - B. Myelin sheath
 - C. Synaptic terminal
 - D. Cell body
 - E. Dendrite
8. Which lobe of the brain is primarily responsible for vision?
- A. Frontal lobe
 - B. Occipital lobe
 - C. Parietal lobe
 - D. Temporal lobe
 - E. Orbital lobe

9. Select the **CORRECT** function of myelin sheath.
- A. Store neurotransmitters.
 - B. Synthesize neurotransmitters.
 - C. Speed up the transmission of nerve impulses.
 - D. Secrete growth factor for the function of nerve cells.
 - E. Protect the brain and nerve cells.
10. Select the **CORRECT** example of the inner layer of the eye's wall.
- A. Retina
 - B. Sclera
 - C. Cornea
 - D. Choroid
 - E. Ciliary body
11. Choose the **CORRECT** characteristic of outer ear.
- A. It consists of tympanic cavity with auditory ossicles and auditory tube.
 - B. It is a house for the receptors for equilibrium and hearing.
 - C. It consists of auricle and external acoustic meatus.
 - D. It contains endolymph.
 - E. It is an irregularly shaped air-filled cavity.
12. Identify the component of carbaminohemoglobin.
- A. Haemoglobin and oxygen
 - B. Haemoglobin and carbon dioxide
 - C. Haemoglobin and carbon monoxide
 - D. Globin and oxygen
 - E. Globin and hydrogen
13. Identify the blood disease characterized by low blood platelet count.
- A. Sickle cell anemia
 - B. Leukemia
 - C. Thalassemia
 - D. Thrombocytopenia
 - E. Leukopenia

14. Choose the **CORRECT** statements about heart.
- I. Heart lies in the thoracic cavity in the mediastinum between the lungs.
 - II. Heart walls are composed of epicardium and myocardium.
 - III. Heart base is attached to the aorta, pulmonary arteries, veins, and vena cava.
 - IV. Apex of the heart is directed towards the left hip and rests on the diaphragm.
- A. I and II
 - B. II and III
 - C. I, II, and IV
 - D. I, III, and IV
 - E. I, II, III, and IV
15. Choose the components of saliva.
- I. Amylase
 - II. Mucin
 - III. Lysozyme
 - IV. Pepsin
- A. II and III
 - B. I, II, and III
 - C. I, II, and IV
 - D. I, III, and IV
 - E. I, II, III, and IV
16. Identify disorders of the digestive system.
- I. Epilepsy
 - II. Gastric
 - III. Celiac disease
 - IV. Crohn's disease
- A. I and II
 - B. I and III
 - C. I, II, and III
 - D. II, III, and IV
 - E. I, II, III, and IV

17. Select the component in the kidney responsible for urine production.
- A. Nephron
 - B. Cortex
 - C. Ureter
 - D. Medulla
 - E. Pelvis
18. Select the **CORRECT** statement regarding ureteric orifices.
- A. Responsible for urine filtration.
 - B. Located in the bladder neck.
 - C. Connect the kidney to the bladder.
 - D. There are three ureteric orifices in the bladder.
 - E. Located at the anterior-lateral angle of the bladder.
19. What is the function of the corpus luteum?
- A. Promote ovulation
 - B. Facilitates fertilization
 - C. Triggers menstruation
 - D. Stimulates follicles maturation
 - E. Maintains the endometrium
20. Which male reproductive gland contributes a fructose-rich fluid to nourish sperm?
- A. Pineal gland
 - B. Bulbourethral gland
 - C. Pituitary gland
 - D. Adrenal gland
 - E. Seminal vesicle

II) SHORT ANSWER QUESTIONS (20 marks)**INSTRUCTION: Answer ALL questions in the answer booklet provided.****Each question carries TWO (2) marks.**

1. State **TWO (2)** major organs of the respiratory system.
2. State **TWO (2)** anterior body cavities.
3. State **TWO (2)** outcomes of melanocytes malfunction.
4. Describe **TWO (2)** functions of the aqueous humor of the eyes.
5. Describe olfactory nerves.
6. State **TWO (2)** types of blood circulation in humans.
7. State **TWO (2)** components of the lymphatic system.
8. State **TWO (2)** types of cells in the gastric gland.
9. Describe the mechanism of angiotensin II in promoting water reabsorption by the kidneys.
10. Describe **TWO (2)** functions of the epididymis.

SECTION B: MODIFIED ESSAY QUESTIONS (Total: 60 marks)

INSTRUCTION: This section consists of **FOUR (4)** questions.

You are required to answer **THREE (3)** questions in the answer booklet provided.

Question 1 and 2 are COMPULSORY.

Answer EITHER Question 3 OR 4.

Question 1

- (a) Explain the roles of the integumentary system. (5 marks)
- (b) Explain the physiological effects of aging on the integumentary system. (5 marks)
- (c) Explain the function of spleen. (6 marks)
- (d) Explain lymph nodes and their functions. (4 marks)

Question 2

- (a) Outline the mechanism of muscle contraction. (10 marks)
- (b) Illustrate the type of antigen and antibody present in Type B Positive (B+) blood group. (5 marks)
- (c) Explain the process of cardiac conduction in maintaining normal heart rhythm. (5 marks)

Question 3

- (a) i. Outline the co-stimulation of hormones involved during lactation. (5 marks)
- ii. Explain hypothyroidism. (5 marks)
- (b) Explain the components of solute in the urine. (5 marks)
- (c) Outline the phases of the endometrial cycle, including the hormonal regulation and histological changes occurring in the endometrium. (5 marks)

Question 4

- (a) i. Outline the release of a dominant hormone in women that is responsible for the thickening of the endometrial lining or supporting pregnancy. (5 marks)
- ii. Explain hyperthyroidism. (5 marks)
- (b) Explain the glomerulus component of the nephron. (5 marks)
- (c) Outline the process of sperm formation in the testis. (5 marks)

END OF EXAMINATION PAPER