



**UNIVERSITI KUALA LUMPUR
ROYAL COLLEGE OF MEDICINE PERAK**

**FINAL EXAMINATION
JULY SEMESTER 2025**

COURSE CODE : RPB13003
COURSE NAME : ANATOMY AND PHYSIOLOGY
PROGRAMME NAME : BACHELOR OF PHARMACY WITH HONOURS
DATE : 17 AUGUST 2025
TIME : 9.00 – 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 mark/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. Migraine is caused due to the excessive production of _____.
 - A. dopamine
 - B. glutamate
 - C. serotonin
 - D. gamma amino butyric acid
 - E. nor adrenaline

2. Identify the area of brain that is associated with the vision.
 - A. Frontal lobe of cerebrum
 - B. Parietal lobe of cerebrum
 - C. Occipital lobe of cerebrum
 - D. Temporal lobe of cerebrum
 - E. Cerebellum

3. Identify the area of the brain by which its degeneration can lead to Parkinson disease.
 - A. Hypothalamus
 - B. Pons
 - C. Cerebrum
 - D. Cerebellum
 - E. Substantia nigra

4. Identify the cranial nerve that is responsible for eye movement.
 - A. Olfactory nerve
 - B. Facial nerve
 - C. Vagus nerve
 - D. Trochlear nerve
 - E. Hypoglossal nerve

5. Which accessory organ of the eye produces tears containing lysozyme?
- A. Eyebrows
 - B. Eyelids
 - C. Ciliary glands
 - D. Lacrimal apparatus
 - E. Conjunctiva
6. Select the **CORRECT** statement about diseases of the eye.
- A. Cataract occurs when the lens becomes cloudy, reducing light transmission to the retina.
 - B. Conjunctivitis is always caused by a fungal infection.
 - C. Retinal detachment occurs when the lens separates from the sclera.
 - D. Diabetic retinopathy causes painless loss of peripheral vision.
 - E. Glaucoma is due to infection of the optic nerve.
7. Which structure contains sensory receptors to detect odour in the nose?
- A. Nasal septum
 - B. Olfactory epithelium
 - C. Olfactory bulb
 - D. Nasal cavity
 - E. Inferior concha
8. Select the **CORRECT** statement about the chambers of the heart.
- A. The right atrium receives oxygenated blood from the lungs.
 - B. The left ventricle pumps blood into the pulmonary artery.
 - C. The right ventricle pumps blood to the lungs via the pulmonary trunk.
 - D. The left atrium pumps blood directly into the body tissues.
 - E. The right atrium pumps blood directly to the aorta.
9. Select the **CORRECT** statement about the heart's conduction system.
- A. The sinoatrial (SA) node acts as the heart's natural pacemaker.
 - B. The atrioventricular (AV) node initiates the heartbeat.
 - C. The bundle of His generates electrical impulses for atrial contraction.
 - D. Purkinje fibers delay the electrical impulse to allow ventricular filling.
 - E. The SA node transmits impulses only to the ventricles.

10. Select the **CORRECT** statement about arteries.
- A. Arteries always carry oxygenated blood.
 - B. The tunica media in arteries is thicker than in veins to withstand higher pressure.
 - C. Arteries have valves to prevent backflow of blood.
 - D. The lumen of arteries is wider than that of veins.
 - E. All arteries carry blood away from the heart at low pressure.
11. Identify the blood vessel that carries oxygenated blood from the lungs to the heart.
- A. Pulmonary vein
 - B. Pulmonary artery
 - C. Aorta
 - D. Superior vena cava
 - E. Coronary vein
12. Which lymphoid organ filters lymph and contains macrophages to destroy debris and microorganisms?
- A. Spleen
 - B. Thymus
 - C. Lymph node
 - D. Tonsils
 - E. Appendix
13. Blockage of lymphatic vessels can result in:
- A. anemia
 - B. edema
 - C. hypertension
 - D. tachycardia
 - E. hyperventilation
14. Which statement describes external respiration?
- A. Exchange of gases between blood and tissue cells.
 - B. Diffusion of oxygen from alveoli into pulmonary capillaries.
 - C. Use of oxygen by cells to produce ATP.
 - D. Transport of carbon dioxide in the blood as bicarbonate ions.
 - E. Movement of air into and out of the lungs.

15. Which of the following organs produces bile?
- A. Pancreas
 - B. Stomach
 - C. Duodenum
 - D. Liver
 - E. Gallbladder
16. The primary function of the gallbladder is to _____.
- A. produce bile
 - B. digest lipids directly
 - C. neutralize stomach acid
 - D. absorb fatty acids
 - E. store and concentrate bile
17. Select the **CORRECT** statement about the ureters.
- A. They actively filter blood to form urine.
 - B. They transport urine from the kidneys to the urinary bladder.
 - C. They store urine until micturition occurs.
 - D. They secrete mucus to regulate urine pH.
 - E. They connect the bladder directly to the urethra.
18. Which of the following occurs during the luteal phase of the menstrual cycle?
- A. Estrogen rises sharply to stimulate ovulation.
 - B. The corpus luteum secretes progesterone to maintain the endometrium.
 - C. Follicle-stimulating hormone (FSH) triggers new follicle growth.
 - D. The endometrium begins to shed.
 - E. The luteinizing hormone (LH) surge reaches its peak.
19. Select the **CORRECT** statement about the prostate gland.
- A. It produces sperm cells for reproduction.
 - B. It secretes alkaline fluid that helps neutralize vaginal acidity.
 - C. It stores sperm until ejaculation.
 - D. It produces progesterone to support sperm maturation.
 - E. It connects the testis directly to the bladder

20. Select the **CORRECT** statement about the seminal vesicles.
- A. They store sperm until they mature.
 - B. They produce a fructose-rich fluid that provides energy for sperm.
 - C. They secrete alkaline mucus to neutralize urine in the urethra.
 - D. They produce testosterone in response to LH stimulation.
 - E. They are the primary site of sperm production.

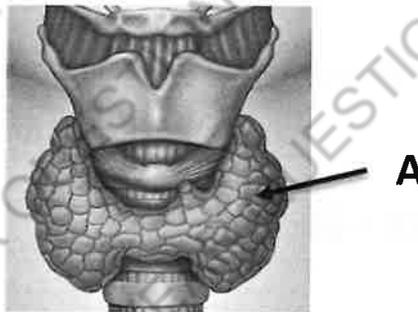
II) SHORT ANSWER QUESTIONS (20 marks)**INSTRUCTION: Answer ALL questions in the answer booklet provided.****Each question carries TWO (2) marks.**

1. Describe the positive feedback mechanism in blood clotting.
2. Which pigment is responsible for skin colour, and which cells produce it?
3. Describe endochondral ossification.
4. Explain the role of neuroglial cells.
5. Explain the role of aldosterone in maintaining blood pressure.
6. Calculate the cardiac output if the stroke volume is 75 ml per beat and the heart rate is 72 beats per minute.
7. Describe naturally acquired passive immunity.
8. Describe **TWO (2)** functions of respiratory system.
9. Compare the structure and function of the urethra in males and females.
10. Explain **TWO (2)** functions of the placenta during pregnancy.

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) i. Name **FOUR (4)** cells of gastric glands with their secretion. (8 marks)
- ii. Explain how gastrin contributes to the digestive process. (2 marks)

(b)



- i. Identify the structure A above. (1 mark)
- ii. Name **TWO (2)** hormones secreted by the structure A. (2 marks)
- iii. State **THREE (3)** functions of hormones stated in (b) ii. (3 marks)
- iv. Describe **TWO (2)** conditions resulting from an imbalance in hormone secretion by structure A. (4 marks)

Question 2

- (a) Describe **FIVE (5)** functions of the blood brain barrier (BBB). (10 marks)
- (b) A 20-year-old male athlete participates in a 100-metre sprint. Immediately after the race, his heart rate is significantly elevated compared to his resting state. Explain **THREE (3)** physiological factors that contribute to the increased heart rate in this situation. (6 marks)
- (c) Compare the structural differences between large arteries and arterioles based on their functions in a table. (4 marks)

Question 3

- (a) Describe the proliferative phase of the uterine cycle. (10 marks)
- (b) Describe **FIVE (5)** functions of the blood. (10 marks)

Question 4

- (a) Explain **FIVE (5)** roles of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) in regulating spermatogenesis. (10 marks)
- (b) Explain the mechanism of vasoconstriction after the injury. (7 marks)
- (c) Describe haemolytic anemia with an example. (3 marks)

END OF EXAMINATION PAPER