

**UNIVERSITY OF JAFFNA, SRI LANKA**  
**FIRST EXAMINATION FOR MEDICAL DEGREES –MARCH 2026**  
**ACADEMIC YEAR 2023/2024**

**PHYSIOLOGY – PAPER II**

Date: 05.03.2026

Duration: 9.00 a. m – 12.00 p. m (3 Hours)

Answer All the TEN Questions

Answer each part in **separate** answer book

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**PART A**

1. Explain the physiological basis of:
  - 1.1. Increased thirst in an individual after hemorrhage (30 Marks)
  - 1.2. Hypocalcemia following transfusion of large volumes of blood (30 Marks)
  - 1.3. Prolonged bleeding time in patients with bone marrow suppression (40 Marks)
  
2. Explain the physiological basis of:
  - 2.1. Increased lean body mass in gigantism (30 Marks)
  - 2.2. Checking TSH level of a newborn baby (30 Marks)
  - 2.3. **Gradually reducing** the dose of steroids when high dose is given to patients for long periods (40 Marks)
  
3.
  - 3.1. Describe the control of gastric acid secretion by Gastrin (30 Marks)
  - 3.2. Explain the basis of:
    - 3.2.1. Yellowish discoloration of sclera in patients with chronic liver cell disease (40 Marks)
    - 3.2.2. Steatorrhea in individuals with chronic pancreatitis (30 Marks)

- 4.
- 4.1 Briefly explain the autoregulation of glomerular filtration rate during hypovolemia (40 Marks)
- 4.2 Explain the physiological basis of the following:
- 4.2.1. Ability to concentrate urine is high in individuals consuming high protein diet. (30 Marks)
- 4.2.2. Hypokalemia is seen in individuals with persistent vomiting (30 Marks)
- 5.
- 5.1 Describe the hypothalamic-pituitary-ovarian axis (30 Marks)
- 5.2 Explain the physiological basis of the following:
- 5.2.1. Sperm count below 15 million/ml leads to subfertility (35 Marks)
- 5.2.2. Risk of miscarriage is high at 8 – 12 weeks of pregnancy (35 Marks)

#### PART B

6. A 40-year-old male was brought to the emergency unit following a stab injury in the right chest during an assault. On admission, shallow breathing and signs of respiratory distress were noticed. Examination revealed the following:
- Respiratory rate: 34/min
  - Oxygen saturation: 82% on room air
  - Absent breath sounds on the **right side**
  - Hyper-resonance to percussion on the right chest
  - Tracheal deviation to the **left**
  - Distention of neck veins
  - Blood Pressure: 80/40 mm Hg
  - Pulse rate: 120/min
- The respiratory distress was worsening progressively.
- 6.1. Write the diagnosis of the condition. (10 Marks)
- 6.2. Explain the physiological basis of the following in this patient.
- 6.2.1. Absent breath sounds on the **right side** (25 Marks)
- 6.2.2. Oxygen saturation: 82% on room air (30 Marks)
- 6.2.3. Pulse rate of 120/min (35 Marks)

7. A 70-year-old male with poorly controlled diabetes mellitus came to the hospital complaining of dizziness when he suddenly gets up from the bed. The symptoms improve when he lies down.
- 7.1. Explain the physiological basis of dizziness in this patient. (50 Marks)
- Later during the hospital stay he developed stroke after straining to defecate and found unconscious.
- 7.2 Explain the possible mechanism that could have led to development of stroke in this patient. (50 Marks)
8. Explain the physiological basis of the following.
- 8.1 Tachycardia in fever (20 Marks)
- 8.2. Bradycardia in complete heart block (20 Marks)
- 8.3. Dilatation of the heart is disadvantageous for the cardiac function (25 Marks)
- 8.4. Arterial PO<sub>2</sub> was **98 mm Hg** in a person while resting and it was **100 mm Hg** during moderate physical exercise (35 Marks)
- 9.
- 9.1. Describe biceps reflex. (40 Marks)
- 9.2. Explain the physiological basis of the following:
- 9.2.1. When the appendix is inflamed, pain is felt around the umbilicus (30 Marks)
- 9.2.2. People with loss of proprioceptive sensation tend to fall when closing their eyes (30 Marks)
10. Briefly explain the physiological basis of the following.:
- 10.1. Explosion closer to a person can cause deafness (35 Marks)
- 10.2. Small object which is directly focused in the dim light cannot be seen (35 Marks)
- 10.3. Taste of the food is not perceived in dehydration (30 Marks)