



UNIVERSITY OF JAFFNA, SRI LANKA
FIRST EXAMINATION FOR MEDICAL DEGREES – JULY 2024
ACADEMIC YEAR 2021/2022



PHYSIOLOGY – PAPER II

Date: 02.08. 2024

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

Answer All the **TEN** Questions

Answer each part in **separate** answer book

PART A

1. Briefly explain the basis of:
 - 1.1. Anaemia in patients who have undergone resection of terminal ileum (35 Marks)
 - 1.2. Increased neutrophil count in patients with bacterial infection (30 Marks)
 - 1.3. Prolonged prothrombin time in patients with chronic liver cell disease (35 Marks)

2. Explain:
 - 2.1. Mental retardation in congenital hypothyroidism (30 Marks)
 - 2.2. Increased pigmentation in Addison's disease (30 Marks)
 - 2.3. Weight loss in uncontrolled diabetes mellitus (40 Marks)

3.
 - 3.1. Briefly explain the basis of bad smell of mouth in patients with reduced salivary secretion (30 Marks)
 - 3.2. Describe the regulation of gastric acid secretion (40 Marks)
 - 3.3. Briefly explain the basis of increased risk of peptic ulcer disease in patients taking aspirin (30 Marks)

4.
 - 4.1. Briefly describe the forces in the glomerular capillaries that are involved in glomerular filtration (40 Marks)
 - 4.2. Explain the basis of polyuria in:
 - 4.2.1 Diabetes insipidus (30 Marks)
 - 4.2.2 Patients taking loop diuretics (30 Marks)

5. Describe:
- 5.1. Adaptations to maintain optimal scrotal temperature (35 Marks)
 - 5.2. Indicators of ovulation (35 Marks)
 - 5.3. Functions of Progesterone during pregnancy (30 Marks)

PART B

6. A 15 year old boy was admitted to the hospital after an acute attack of asthma. He had more difficulty in expiration than inspiration. His oxygen saturation was **90 %** and respiratory rate was **32/min**. Spirometry report revealed FEV₁/FVC of **65%**.
- 6.1. List three (3) changes that could have occurred in the bronchioles of this boy (15 Marks)
 - 6.2. Explain the physiological basis of the following observations in the patient
 - 6.2.1. FEV₁/FVC of 65% (25 Marks)
 - 6.2.2. Oxygen saturation of 90% (30 Marks)
 - 6.2.3. Respiratory rate of 32/min (30 Marks)
- 7.
- 7.1. Describe the cardiovascular adjustments in physical exercise (50 Marks)
 - 7.2. Explain:
 - 7.2.1. The murmur in aortic regurgitation (25 Marks)
 - 7.2.2. Increased pulse pressure in aortic regurgitation (25 Marks)
8. Explain the physiological basis of the following
- 8.1. Increase in respiratory rate during pedaling an exercise bike at 30 km/hour for 5 minutes. (35 Marks)
 - 8.2. Increased risk of ventricular ischemia in aortic stenosis (40 Marks)
 - 8.3. Short QRS complex is observed in ECG of obese people (25 Marks)

9. A patient was admitted to the hospital few hours after a gun-shot injury. His X-ray showed damage in the right half of T₈ vertebra.

Explain the observations in the following and the physiological basis of those observations in both lower limbs of this patient:

- 9.1. Sensation of proprioception (30 Marks)
9.2. Tone of the muscles on admission (30 Marks)
9.3. Knee jerk after 3 weeks (40 Marks)



10. Briefly describe:

- 10.1. Localization of pain sensation (25 Marks)
10.2. Auditory localization of source of sound (25 Marks)
10.3. Fluent Aphasia (25 Marks)
10.4. Perception of colours (25 Marks)