

**UNIVERSITY OF JAFFNA, SRI LANKA**  
**SECOND EXAMINATION FOR MEDICAL DEGREES –January- 2012**  
**Physiology Paper II**

Date: 01.02.2012

Time: 03 hours

ANSWER ALL THE **TEN** QUESTIONS

Answer each **PART** in separate answer books

Part A

1. Mrs. Masilamany, 50 year old lady, came to the hospital with the complaint of fever of 20 days duration. The fever was intermittent, starting with chills (feeling cold) and rigors (violent shivering) which subsided after 4-5 hours with generalized sweating. She was anaemic and the colour of the urine was red after the onset of fever. Her reticulocyte count was increased. Examination of blood film confirmed the diagnosis of Malaria.  
Explain the physiological basis of the following in this patient:
  - 1.1. Anaemia (30 Marks)
  - 1.2. Red coloured urine (30 Marks)
  - 1.3. Increased reticulocyte count (40 Marks)
  
2. Explain the physiological basis of the following in the patient mentioned in question 1:
  - 2.1. Fever (25 Marks)
  - 2.2. Chills (25 Marks)
  - 2.3. Rigors (25 Marks)
  - 2.4. Generalized sweating (25 Marks)
  
3. Mr. Mahendran, 60 year old retired clerk was admitted to the emergency unit. He had retro-sternal pain, tightening in nature, started suddenly 30 minutes before admission and radiating to left arm. He also had profuse sweating and orthopnoea. His pulse rate was 120 per minute and blood pressure was 90/60.  
ECG revealed myocardial infarction.  
Explain the physiological basis of,
  - 3.1. Retro-sternal pain radiating to left arm. (30 Marks)
  - 3.2. Orthopnoea (30 Marks)
  - 3.3. Pulse rate of 120 per minute (40 Marks)
  
4. Describe the following:
  - 4.1. Post-prandial alkaline tide [increased alkalinity after meals] (30 Marks)
  - 4.2. Swallowing (30 Marks)
  - 4.3. Colicky pain in intestinal obstruction (40 Marks)

5. Explain the physiological basis of,
- 5.1. Tone of the muscles (30 Marks)
  - 5.2. Profuse sweating in patients with myocardial infarction (30 Marks)
  - 5.3. Better bone conduction in the ear with damaged tympanic membrane than in the normal ear. (40 Marks)

Part B

6. Write short notes on:
- 6.1. Synaptic transmission (35 Marks)
  - 6.2. Tetani (30 Marks)
  - 6.3. Parasympathetic out flow (35 Marks)
7. A patient was sent to the Department of Physiology for measurements of
- a. Respiratory rate,
  - b. Vital capacity (VC),
  - c. FEV<sub>1</sub> and
  - d. Pulmonary ventilation.
- 7.1. Define vital capacity (10 Marks)
  - 7.2. Define pulmonary ventilation (10 Marks)
  - 7.3. Briefly describe the interpretation of the results of a, b, c, and d. (40 Marks)
  - 7.4. Briefly write a laboratory method which you can use to determine VC (40 Marks)
8. Explain the physiological mechanisms leading to the following conditions in diseases of Kidney.
- 8.1. Acidosis (35 Marks)
  - 8.2. Osteomalasia (35 Marks)
  - 8.3. Oedema (30 Marks)
9. Write short notes on
- 9.1. Addison's disease (30 Marks)
  - 9.2. Acromegaly (35 Marks)
  - 9.3. Cretinism (35 Marks)
- 10.
- 10.1. List the hormones that control the function of mammary gland. (20 Marks)
  - 10.2. Briefly explain the effects of the hormones mentioned in 10.1 on mammary gland (50 Marks)
  - 10.3. Briefly explain the physiological mechanism of action of oral contraceptive. (30 Marks)