

UNIVERSITY OF JAFFNA, SRI LANKA
FIRST EXAMINATION FOR MEDICAL DEGREES –July 2015
Physiology: Paper II



Date: 29.07.2015

Time: 03 hours

ANSWER ALL THE TEN QUESTIONS

1. A patient came to the hospital with swelling of both legs, which is less in the morning and becomes worse by evening. The liver was enlarged. He was diagnosed to have right heart failure.
 - 1.1. Describe the tissue fluid formation and reabsorption in a normal person. (40 Marks)
 - 1.2. Explain the physiological basis of the swelling of legs in the above patient. (30 Marks)
 - 1.3. Explain the difference in the swelling between the morning and evening (15 Marks)
 - 1.4. Briefly explain the reason for liver enlargement in the above patient (15 Marks)

2. A 60-year-old male developed carcinoma of the stomach and underwent an operation to remove the stomach. He was advised to take periodical injections of vitamin B₁₂. The patient ignored this advice.
 - 2.1. Give the reason for vitamin B₁₂ being given as injection after operation and not by mouth (20 Marks)
 - 2.2. Explain the changes and their physiological basis you would see in his bone marrow and blood if the injections are not given (50 Marks)
 - 2.3. Describe what would happen to reticulocyte count when B₁₂ injections are given to correct the above defects. (30 Marks)

3. A 25-year old male sustained chest injury in a road traffic accident. His 7th and 8th right ribs were broken. He had severe difficulty in breathing which was becoming worse. He was diagnosed to have tension pneumothorax.
 - 3.1. Mention the first aid measure that would save his life. (20 Marks)
 - 3.2. Describe the changes in pleural pressure and the role of surface tension in normal breathing. (50 Marks)
 - 3.3. Describe the development of tension pneumothorax in this patient (30 Marks)

4. Write notes on the following:
 - 4.1. Cardiac output (25 Marks)
 - 4.2. SA node (25 Marks)
 - 4.3. Arterial pulse (25 Marks)
 - 4.4. ECG (25 Marks)

5. Describe the physiological basis of the following:
 - 5.1. Wasting of muscles in insulin deficiency (25 Marks)
 - 5.2. Cold intolerance in hypothyroidism (25 Marks)
 - 5.3. Tetany in hypoparathyroidism (25 Marks)
 - 5.4. Reduced resistance to infection in treatment with corticosteroids (25 Marks)

6. Explain the physiological basis of the following:
- 6.1. Bad smell from mouth in dehydration (40 Marks)
 - 6.2. Reduced intestinal motility in peritonitis (30 Marks)
 - 6.3. Intermittent severe pain in intestinal obstruction (30 Marks)
7. Describe the effect of the following on urine flow:
- 7.1. Drinking 1 liter of water (40 Marks)
 - 7.2. Injection of furosemide (30 Marks)
 - 7.3. Reduced secretion of aldosterone (30 Marks)
8. Explain the physiological basis of the following tests:
- 8.1. Sperm count in subfertility (35 Marks)
 - 8.2. Progesterone level in subfertility (35 Marks)
 - 8.3. hCG to confirm pregnancy (30 Marks)
9. Describe the physiological basis of the following:
- 9.1. Premature babies are kept in temperature-controlled warm environment (40 Marks)
 - 9.2. Sweating is increased in warm-moist environment (30 Marks)
 - 9.3. The skin is dry in cold environment (30 Marks)
10. Describe the physiological basis of the following:
- 10.1. Neurogenic shock in multiple fracture (25 Marks)
 - 10.2. Pulling leg up when placed on a pointed object (25 Marks)
 - 10.3. Double vision in alcohol intoxication (25 Marks)
 - 10.4. Hearing loss in old age (25 Marks)