

UNIVERSITY OF JAFFNA, SRI LANKA
FIRST EXAMINATION FOR MEDICAL DEGREES –MARCH- 2013
Physiology: Paper II

Date: 20.03.2013

Time: 03 hours

ANSWER ALL THE TEN QUESTIONS

1. Discuss,
 - 1.1. The role of Sodium in maintaining the fluid volumes (50 Marks)
 - 1.2. The role of Potassium in membrane potentials (50 Marks)

2. Describe the purpose, reliability and interpretation of the results of the following investigations,
 - 2.1. Haemoglobin concentration (25 Marks)
 - 2.2. Mean Corpuscular Volume (25 Marks)
 - 2.3. Mean Corpuscular Haemoglobin Concentration (25 Marks)
 - 2.4. Reticulocyte count (25 Marks)

3. A patient came to the hospital with the history of fever of 4 days and difficulty in breathing. The patient was cyanosed, the respiratory rate was 40/minute and the respiratory movements were reduced in the right chest. The patient was diagnosed to have extensive infection (Pneumonia) involving major portion of the right lung. Describe the physiological basis of the following:
 - 3.1. Cyanosis (40 Marks)
 - 3.2. Respiratory rate (30 Marks)
 - 3.3. Reduced chest movements in right chest (30 Marks)

4. Describe,
 - 4.1. Changes in aortic pressure in relation to cardiac cycle (50 Marks)
 - 4.2. Changes in right atrial pressure in relation to cardiac cycle (50 Marks)

5. A patient was brought to the hospital with cut injuries after assault with sword. His pulse rate was 110/minute, pulse volume was low (thready pulse), blood pressure was 80/50 and the skin was cold. Explain the physiological basis of the following:
 - 5.1. Blood pressure (25 Marks)
 - 5.2. Pulse rate (25 Marks)
 - 5.3. Pulse volume (25 Marks)
 - 5.4. Cold skin (25 Marks)

6. Describe the changes that can be observed in the following in a patient with hyperthyroidism and explain the physiological basis of the changes:
- 6.1. Metabolism (30 Marks)
 - 6.2. Pulse (40 Marks)
 - 6.3. Skin (30 Marks)
7. Describe,
- 7.1. Deglutition (50 Marks)
 - 7.2. Defecation (50 Marks)
8. The patient mentioned in question 5 was brought to the hospital with 6 hour delay after the incident. He had passed urine at the scene of incident but not afterwards. On catheterization, there was only 50 ml of urine in the bladder. The plasma bicarbonate was 16 meq/L. Explain the physiological basis of the following:
- 8.1. Passing urine at the scene (30 Marks)
 - 8.2. 50 ml urine produced in 6 hours (35 Marks)
 - 8.3. Plasma bicarbonate. (35 Marks)
9. Describe the physiological basis of the following:
- 9.1. Amenorrhea of pregnancy (30 Marks)
 - 9.2. Risk of abortion at 12 weeks of pregnancy (30 Marks)
 - 9.3. Increased pulse pressure in pregnancy (40 Marks)
10. Describe,
- 10.1. Distribution of receptors in the retina (40 Marks)
 - 10.2. The transmission of information after photons reacting with visual pigment up to the visual cortex (30 Marks)
 - 10.3. Visual field (30 Marks)