

**UNIVERSITY OF JAFFNA, SRI LANKA****FIRST EXAMINATION (2nd) FOR MEDICAL DEGREES****June 2021****Physiology Paper II****Date: 16.06.2021.
hours****Time allowed: 3**

Answer all the ten questions.

1. 1.1 A 40 year old female patient was admitted to the hospital with a history of tiredness and palpitation on exertion. On examination, she had pale mucous membrane. Investigations revealed the following:
Hb – 7.5 g/dl
MCV – 70 μ^3
MCH – 24 pg
MCHC - 24%

1.1.1 Identify the condition giving reasons. (30 Marks)

1.1.2 List 2 possible causes for the above mentioned (1.1) condition (20 Marks)

1. 2. Briefly explain the physiological basis of the following statements.

1.2.1 Anaphylactic reactions can occur after exposure to an antigen. (25 Marks)

1.2.2 The response of the body to an antigen is faster when the same antigen enters the body second time than the first time. (25 Marks)

1. 2.

2. 2.1. Describe quiet breathing (inspiration and expiration) (50 Marks)

2.2 A 20 Year old male was asked to voluntarily hyperventilate for 3 minutes.

2.2.1 Mentioned the change in his respiration observed at the end of voluntary hyperventilation. (10 Marks)

2.2.2 Briefly explain basis for the change observed in 2.2.1 (40 Marks)

3. 3.1 Describe the events and the pressure changes in the left ventricle during a normal cardiac cycle (40 Marks)

3.2 Briefly explain the change in heart rate :

3.2.1. At the onset (beginning) of exercise (25 Marks)

3.2.2 After severe hemorrhage. (35 Marks)

4. Briefly explain the physiological advantages of the following.

4.1 Plateau phase in the action potential of cardiac muscle (40 Marks)

4.2 SA node being the pacemaker of the heart (30 Marks)

4.3 Presence of haemoglobin F in the fetus (30 Marks)





5. Briefly explain the effect of following hormones on blood glucose level.

5.1 Insulin (25 Marks)

5.2 Thyroxine (25 Marks)

5.3 Cortisol (25 Marks)

5.4 Growth hormone (25 Marks)

6. 6.1 Describe withdrawal reflex. (40 Marks)

6.2 Briefly explain the physiological basis of the following:

6.2.1 Pain around umbilicus during appendicitis (30 Marks)

6.2.2 Drunken gait in patients with lesion in cerebellum (30 Marks)

7. Briefly explain:

7.1 REM sleep (50 Marks)

7.2 Detection of frequency of sound (50 Marks)

8.

8.1 Describe the process of deglutition (50 Marks)

8.2. Briefly explain the basis of the following.

8.2.1 Giving omeprazole (proton pump inhibitor) to relieve the symptoms of gastritis (25 Marks)

9.

9.1 List the components of counter current mechanism in the kidney and outline its role in concentrating the urine (40 Marks)

9.2 Briefly describe the role of ADH in concentrating urine (30 Marks)

9.3 Briefly explain the basis of glycosuria when plasma glucose concentration is about 250 mg/dl (30 Marks)

10.

10.1. Monitoring of basal body temperature can be used as an indicator of ovulation (30 Marks)

10.2. Risk of miscarriage (abortion) is high during the 3rd month of pregnancy (40 Marks)

10.3 Males wearing tight underwear are at risk of infertility (30 Marks)