POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

POSTGRADUATE DIPLOMA IN MOLECULAR MEDICINE (E1)
EXAMINATION – DECEMBER 2020

Date: 23rd December 2020 **Time:** 9.30 a.m. – 12.30 p.m.

SEQ PAEPR – MODULE II
(Human Biology, Medical Microbiology and Parasitology)

Answer **all six (06)** questions.
Answer each question in a **separate** answer book.

1.

1.1. Draw a labelled diagram to show the microscopic structure of an intestinal villus. (20 marks)

1.2. Write a brief account on the thyroid follicle. (30 marks)

1.3. Briefly describe the structural adaptations of the terminal bronchioles to their function. (30 marks)

1.4. List in order, the transport pathway of bile from the hepatocyte to the duodenum. (20 marks)

2. Briefly describe the following.

2.1. Changes that occur in the uterus during a menstrual cycle with reference to the relevant hormones. (35 marks)

2.2. Structural adaptations of the sperm in fertilization of the ovum. (35 marks)

2.3. The embryological basis of atrial septal defects. (30 marks)

3.

3.1. Define the term cardiac output and state its determinants. (10 marks)

3.2. Outline the relationship between the ventricular end diastolic volume and cardiac output. (20 marks)

3.3. Outline the effect of parasympathetic stimulation on the cardiac output. (20 marks)

3.4. Outline the mechanism of systemic blood pressure reduction using

3.4.1. Angiotensin converting enzyme inhibitors. (30 marks)

3.4.2. Alpha -1 receptor antagonists. (20 marks)

Contd……./2-

4.

4.1. Hypoxanthine - guanine phosphoribosyltransferase (HGPRT) is an enzyme in the salvage pathway of purine synthesis. Explain how the deficiency of HGPRT results in hyperuricemia leading to gout. (30 marks)

4.2. Ornithine transcarbamylase (OTC) deficiency is characterized by complete or partial lack of the enzyme ornithine transcarbamylase (OTC) in the urea cycle. The following biochemical parameters are increased in patients with OTC deficiency. Explain. (30 marks)

(a) Plasma ammonia
(b) Plasma glutamine
(c) Urinary orotic acid

4.3. The most common causes of familial hypercholesterolemia are pathogenic variants of the low density lipoprotein receptor (LDL-R) gene. Discuss how LDL-R defects lead to elevated LDL cholesterol in plasma. (40 marks)

5.

5.1. Explain the differences in cell walls of Gram positive and Gram negative bacteria. (15 marks)

5.2. Briefly outline the methods available to diagnose bacterial infections giving an example for each method. (35 marks)

5.3. A patient presented with an infected wound following a road traffic accident.

5.3.1. Briefly outline the collection and transport of a specimen of pus from this patient. (25 marks)

5.3.2. How would you process the specimen in the laboratory? (25 marks)

Contd...../3-

6.

6.1. Name the vector/s and the parasite/s of the following parasitic diseases reported in Sri Lanka. (18 marks)

Disease	Vector/s	Parasite/s
Malaria		
Lymphatic filariasis		
Leishmaniasis		

6.2. Name the infective stage of the parasites to human host for each of the three parasitic diseases mentioned in 6.1. (12 marks)

6.3. Briefly describe the clinical presentations of,

6.3.1. Cutaneous leishmaniasis (15 marks)

6.3.2. Visceral leishmaniasis (15 marks)

6.4. Name two laboratory tests **each** that will help you to diagnose.

6.4.1. Malaria (10 marks)

6.4.2. Leishmaniasis (10 marks)

6.5. Outline **three** methods to control the vector of leishmaniasis you have mentioned in 6.1. (20 marks)