

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

POSTGRADUATE DIPLOMA IN MOLECULAR MEDICINE (E II)
EXAMINATION – JANUARY 2019

Date :- 14th January 2019

Time:-9.30 a.m. – 12.30 p.m.

SEQ PAPER
(MOLECULAR IMMUNOLOGY & PATHOLOGY – MODULE III)

Answer all six (06) questions.

Answer each question in a **separate** answer book.

1.
 - 1.1. Briefly describe the immune response against infectious agents. (40 marks)
 - 1.2. Describe the clinical features that would make you suspect a primary immune deficiency. (30 marks)
 - 1.3. Discuss how you would diagnose severe combined immune deficiency (30 marks)
2.
 - 2.1. An 11-month-old baby develops acute urticaria and vomiting 10 minutes after been given cow's milk.
 - 2.1.1. Name two (02) tests that can be done to determine if this baby is allergic to cow's milk. (10 marks)
 - 2.1.2. Name the type of immunological reaction that is responsible for the above clinical scenario. (05 marks)
 - 2.1.3. Describe the immunological mechanisms named in 2.2.(45 marks)
 - 2.2. A 35-year-old patient is bitten by a dog and rabies hyperimmune immunoglobulin was given as post exposure prophylaxis. Seven days later, she developed joint pain, a non-blanching reddish urticarial rash and fever.
Describe the immunological basis of the above reaction. (40 marks)

3.
 - 3.1. Briefly outline the structure of the B-cell receptor and functions of its different components. (10 marks)
 - 3.2. Briefly describe the changes that occur in gene expression in different stages of B cell development. (40 marks)
 - 3.3. Briefly outline four (04) mechanisms that generate antibody diversity. (20 marks)
 - 3.4. Monoclonal antibodies are useful tools for immunotherapy. Discuss the use of mouse versus human/humanized monoclonal antibodies for immunotherapy and methodology to produce human/humanized monoclonal antibodies. (30 marks)

4.
 - 4.1. Describe how a clot is formed at the site of injury to a blood vessel. (20 marks)
 - 4.2. Define thrombosis. (10 marks)
 - 4.3. Describe Virchow's triad in the pathogenesis of thrombosis giving examples. (30 marks)
 - 4.4. List the molecular based tests that are performed as screening for thrombophilia. (15 marks)
 - 4.5. A 23-year-old woman in her 1st pregnancy develops swelling of her left calf and a diagnosis of deep vein thrombosis (DVT) is made. Describe the sequelae of DVT. (25 marks)

Contd.../3-

5.

5.1. Give an account on oncogenic viruses and related mechanisms of carcinogenesis. (60 marks)

5.2. Briefly describe the role of cyclin and cyclin dependent kinases and inhibitors in regulating cell cycle checkpoints. (40 marks)

6.

6.1. Heavy metals are known to cause harmful effects.

6.1.1. List four (04) heavy metals which cause harmful effects in humans. (10 marks)

6.1.2. Briefly outline the harmful effects of each heavy metal you mention in 6.1.1. (40 marks)

6.2. Briefly discuss the molecular basis of apoptosis. (50 marks)