POST GRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

POSTGRADUATE DIPLOMA IN MOLECULAR MEDICINE (E II)
(MODULE III) - EXAMINATION - DECEMBER 2020

Date:- 31st December 2020 **Time**:- 9.30 a.m. – 12.30 p.m.

SEQ PAPER
(MOLECULAR IMMUNOLOGY AND PATHOLOGY)

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

1.

1.1. Briefly describe the immune responses against extracellular pathogens. (30 marks)

1.2. Briefly describe how the immune system eliminates mycobacterial infections. (30 marks)

1.3. Discuss how you would investigate a patient with recurrent infections due to intracellular pathogens. (40 marks)

2.

2.1. Describe the structure of the T cell receptor using a diagram. (20 marks)

2.2. Briefly compare the phenotypes (surface markers) and characteristics of αβ and γδ T cells in peripheral blood. (30 marks)

2.3. Monoclonal antibodies are useful diagnostic and immunotherapeutic tools.

2.3.1. Outline the process/technology of producing monoclonal antibodies. (25 marks)

2.3.2. Outline the importance of using human monoclonal antibodies. (09 marks)

2.3.3. Give three (03) reasons why the production of human monoclonal antibodies is difficult using the conventional hybridoma technology. (06 marks)

2.3.4. Outline two (02) novel methods used to produce human/humanized monoclonal antibodies. (10 marks)

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3.

3.1. Briefly discuss the role of telomerase in cellular senescence and carcinogenesis. (30 marks)

3.2. Briefly discuss the mechanism and molecular basis of tumour metastasis. (70 marks)

4.

4.1. List the four (04) main categories of genes that are responsible for oncogenesis, giving two (02) examples for each. (25 marks)

4.2. TP53 is one of the most mutated genes in human cancers. Briefly discuss how p53 protein prevents neoplastic transformation of the cell. (75 marks)

5.

5.1. What is a thrombus? (10 marks)

5.2. Describe Virchow's triad in venous thromboembolism, giving examples for each of them. (50 marks)

5.3. What are the sequelae of a thrombus that develops in the femoral vein? (40 marks)

6.

6.1. Describe the steps in the activation of the complement cascade.(40 marks)

6.2. Describe the functions of the complement system. (40 marks)

6.3. Outline the infectious complications that can occur due to defects in the complement system. (20 marks)