

# Question Paper

Date & Time: 04-May-2019 (02:00 PM - 05:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

Manipal Academy of Higher Education, Manipal MPharm Theory End-Semester Examinations.

MPharm - Pharmaceutical Biotechnology Specialization

MPharm Semester II - End Semester Examination, May, 2019

Date : 04/05/2019

### Immunotechnology [PBT-MPB202T]

Marks: 75

Duration: 180 mins.

#### SECTION - A

Answer all the questions.

Answer the following (10 marks x 5 = 50 marks)

Differentiate humoral from cell mediated immunity. Elaborate on the different types of T cells. (10)

What is autoimmunity? Classify autoimmune diseases and write briefly on them. Add a note on primary and secondary immunodeficiency. (10)

Draw a comparison of innate immunity with adaptive immunity and through schematic representation, describe the process of hematopoiesis. (10)

Indicate, the steps in sequence, for a bacterium to be phagocytosed and discuss the mechanisms of killing of phagocytosed microbes. (10)

Discuss vaccines as under: Definition, types, historical perspective, adjuvants and mode of action. (10)

#### SECTION - B

Answer all the questions.

Answer the following (5 marks x 5 = 25 marks)

Outline the various steps to be considered for developing an effective vaccine. (5)

Define the terms epitope and paratope. Explain the basis of monoclonal antibody production by hybridoma technology. (5)

Enlist the classes of immunoglobulins and write short notes on any two. (5)

What is autoimmunity? Write short notes on systemic autoimmune disease. (5)

Differentiate ELISA from RIA. (5)

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