

This question paper contains 3 printed pages]

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S. No. of Question Paper : 5524

Unique Paper Code : 3182012401

Name of the Paper : Immunobiology

Name of the Course : B.Sc. (Hons.) Biomedical Science

(UGCF-NEP 2022)

Semester : IV

Duration : 3 Hours

Maximum Marks : 90

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all.

Question No. 1 is compulsory.

Give illustrations and examples wherever required.

Subparts of the questions should be attempted together.

1. (a) Briefly explain the following (any four) :

- (i) Cluster of differentiation
- (ii) Contribution of Louis Pasteur in vaccine development
- (iii) Adjuvant
- (iv) Physiological barrier
- (v) MALT.

2.5×4=10

P.T.O.

(b) Differentiate between (any *two*) :

(i) Class I MHC and class II MHC

(ii) Single immunodiffusion and double immunodiffusion

(iii) B cell epitope and T cell epitope

4×2=8

2. (a) Innate immunity is old while adaptive immunity has evolved recently in vertebrates. What are the advantages of adaptive immunity over innate immunity ? How possession of both types of immunity enhances protection against infection ?

(b) Antigen processing and presentation is a key event in the activation of the immune system. Explain how an APC process and present an antigen to a T_H cell.

(c) Draw a well labelled diagram of an IgM antibody molecule and discuss the functions associated with its different domains. 6,6,6

3. (a) Explain concisely the underlying principle of the any *two* methods :

(i). ELISPOT

(ii) Agglutination reaction

(iii) Western blotting.

6,6

(b) Killed vaccines are safer than inactivated vaccines. Discuss in detail. 6

4. (a) What is positive and negative selection of B cells ? Also, explain the different stages of B-cell development and differentiation in the bone marrow.

- (b) Cell lysis of pathogenic microorganisms is an important feature of defence mechanism. Explain how ADCC helps in the lysis of pathogenic microorganism ?
- (c) Complement proteins complement the action of antibodies. Discuss the statement with regard to the activation of classical pathway in the immune response to foreign antigens. 6,6,6
5. (a) The immunogenicity of an antigen is the ability to induce the immune response and it is influenced by many factors. What are the different characteristics of the immunogen which contribute to its immunogenicity ?
- (b) Discuss the role of M-cells in preventing infection in the digestive, respiratory and urogenital tracts.
- (c) What is primary immune response ? How is it different from secondary immune response ? 6,6,6
6. Write short notes on the following :
- (a) Cytokines
- (b) Hypersensitivity
- (c) Hapten
- (d) Lymph node. 4.5×4=18