

2020

**BIOCHEMISTRY — HONOURS**

**Sixth Paper**

**(Module – XI)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

Answer **question no. 1** and **any two** more questions, taking **one** from each of **Unit – I** and **Unit – II**.

1. Answer the following questions : 2×5
- (a) How does adjuvant enhance the immunogenicity of an antigen?
  - (b) Briefly state the characteristics of a cytokine and give one example of it.
  - (c) IgM functions more effectively than IgG in bacterial agglutination. — Explain.
  - (d) What is the difference between heat killed and attenuated vaccine?
  - (e) What is Erythroblastosis fetalis?

**Unit - I**

2. (a) What is clonal selection in activation of antibody producing cell?
- (b) What are the biological activities of IgG in human?
- (c) Explain the chemical composition and heterogeneity of an antigen as a function of immunogenicity.
- (d) Draw a labelled diagram illustrating the general structure including different domains of class I MHC molecule.
- (e) Discuss briefly how S-IgA molecules come into lumen of intestine.
- (f) What is primary lymphoid organs? Give example of them.
- (g) What is meant by antigenic determinants of Immunoglobulin? Explain. 3+2+4+4+3+2+2
3. (a) Discuss briefly the role of Natural killer cell (NK) in immunity.
- (b) What do you mean by endogenous and exogenous antigen?
- (c) What are epitope and paratope?
- (d) Differentiate between monocyte and macrophage.

**Please Turn Over**

- (e) Why HAT medium is used in the preparation of monoclonal antibody?
- (f) What is meant by antibody affinity and avidity? Which of these properties of an antibody better reflects its ability to contribute to humoral response to invading pathogen and why?  
4+3+3+3+3+(2+2)

**Unit - II**

4. (a) What is conjugate vaccine? Give one example.
- (b) Describe the function of 'RhoGAM'.
- (c) Explain the principle of ELISA in reference to detection of HIV infection.
- (d) Severe clinical consequence can result from a genetic deficiency of complement component C3. Briefly discuss the consequence of such deficiency for each of the following :
- (i) Activation of classical and alternative pathway
  - (ii) Phagocytosis of infected bacteria.
- (e) Indicate which type of hypersensitivity reaction (I – IV) occur in following conditions :
- (i) occur as a result of mismatched blood transfusion
  - (ii) can be induced by pollens in sensitive individual.
- (f) What are anaphylatoxin? Explain why serum IgM can't activate complement by itself.
- (g) What are the significant mediators of type I hypersensitive reaction?  
3+3+3+(2+2)+(2×2)+(1+1)+1
5. (a) List the three types of purified macromolecules that are currently used as vaccine. What are the advantage and disadvantage of using live attenuated organism as vaccine?
- (b) Why Rheumatoid Arthritis is considered as hypersensitive reaction? What is Chemiluminescence method for detection of Ag–Ab binding?
- (c) What is the clinical significance of tumor associated antigen? Name two antigen that are helpful for diagnosis of tumor by immunological screening.
- (d) IgM and IgG can activate classical complement pathway. Explain how.
- (e) Is it possible to perform 'Ouchterlony Assay' using a Fab fragment as the antibody? Explain.
- (f) An individual who had never been immunized with tetanus vaccine is exposed to tetanus. What type of treatment is appropriate to save the life?
- (g) What is prozone effect?
- (h) Enveloped viruses cannot be lysed by complement because their outer envelope is resistant to pore formation. — Justify.  
(3+3)+(3+3)+(1+1)+2+2+1+1
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