



- a) There is no possibility for reversion of virulence
- b) They produce a weaker immune response
- c) They are stable and far less susceptible to changes of temperature, humidity, light etc.
- d) Immune response is for shorter duration

Q.1) vi) substances that, when mixed with an antigen and injected with it, enhance the immunogenicity of that antigen, is known as-

- a) Adjuvants,
- b) Antigens,
- c) Immunogen,
- d) Haptens

Q.1) vii) Tonsil is an example of –

- a) Primary lymphoid organ,
- b) Secondary lymphoid organ,
- c) Not associated with lymph nodes,
- d) Lymphoma

Q.1) viii) The precipitins react with antigens that are soluble molecules and form immune complex large enough to precipitate: this process is called as-

- a) Precipitation,
- b) Agglutination,
- c) Opsonization,
- d) None of the above

Q.1) ix) When the cells are cultured in HAT medium, only the \_\_\_\_\_ cells grow, while the rest will slowly disappear.

- a) Lymphocytes,
- b) Myeloma,
- c) Hybridoma,
- d) None of the above

Q.1) x) The P chain V domain contains a fourth hyper-variable region, which does not appear to participate in antigen recognition but is the binding site for microbial products called-

- a) Super-antigen,
- b) Antigen,
- c) Immunogen,
- d) Adjuvant

**GROUP B (10 x 3 = 30 MARKS )**

Q.2) C) i) What is the Principle of ELISA test? (3)

Q.2) C) ii) Name two most commonly used enzyme labels in ELISA. (2)

Q.2) C) iii) Label the following apparatus related to ELISA. (2)

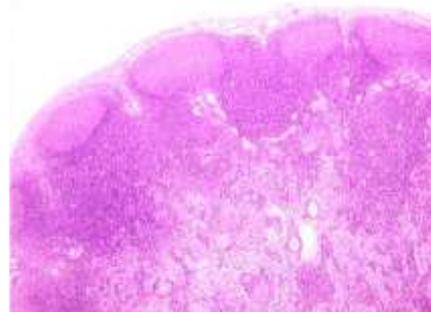


Q.2) C) iv) Write a note on ELISA data interpretation. (3)

Q.2) C) v) Identify the following slide images and write down the identifying features. 5 x 2 = 10



**A**

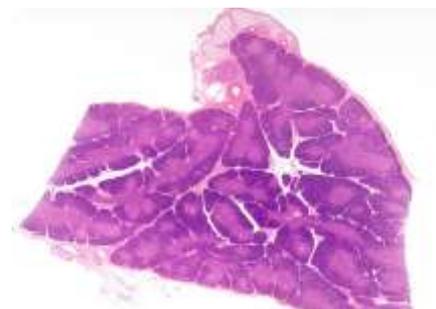


**B**

Q.2) C) vi) Identify the following slide images and write down the identifying features. 5 x 2 = 10



**A**



**B**

**GROUP C (20+30 = 50 MARKS)**

Q.3. Answer all the short type questions given below:-

10 x 2 = 20

i) Define cytokines. Enumerate the different types of cytokines studied by you.

Q.3. ii) What is MHC?

Q.3.iii) What is opsonisation?

Q.3.iv) What do you know about formation of Immune complexes?

Q.3.v) LAV's

Q.3.vi) Mention two limitations of RIA.

Q.3.vii) What is opsonisation?

Q.3.viii) Mention two functions of IgA.

Q.3.ix) State two differences between red and yellow bone marrow.

Q.3.x) What is ITAM? Mentions its function.

Answer any six from the following long type questions:-

6 x 5 = 30

Q.4. Discuss the mannose binding lectin pathway of complement activation with appropriate illustrations.

Q.5. Write a note on Type IV type of hypersensitivity reactions.

Q.6. How are recombinant antigen vaccines synthesized? Explain with diagram.

Q.7. Briefly describe the role of anatomical barriers in immune system.

Q.8. Distinguish between primary and secondary immune response. How does Epitope differ from Paratope?

Q.9. Briefly describe the structure of class II MHC molecule.

Q.10. Briefly describe the structure and function of CD8 molecule with suitable diagram.

Q.11. Briefly describe the Sandwich ELISA with suitable diagram. Mention its two advantages.