

**The West Bengal University of Health Sciences**  
**3rd BMLT September, 2023 Examination**

Subject: Clinical Immunology Mycobacteriology and  
 Applied Microbiology



Time: 3 hrs.

Full Marks : 100

*Attempt all questions*

1. Answer the following questions : 10 x 1
- a) The inappropriate response of immune system towards a relatively harmless antigen causing harm to the host is referred as:
    - i) Hypersensitivity      ii) Auto-Immune Diseases      iii) Immunodeficiency      iv) Tolerance
  - b) Which of the following Ig is involved in mediating allergic reactions?
    - i) IgG      ii) IgM      iii) IgE      iv) IgA
  - c) Which one of the following is a cell mediated hypersensitive reaction
    - i) Type I      ii) Type II      iii) Type III      iv) Type IV
  - d) HIV attacks
    - i) T helper cells      ii) T cytotoxic cells      iii) B cells      iv) Mast cell
  - e) Name the congenital defect of thymus development that can lead to T-cell deficiency
    - i) Graves' disease      ii) Anaphylaxis      iii) DiGeorge's syndrome      iv) None of these
  - f) The major chemical messenger involved in hypersensitivity is
    - i) Interleukines      ii) Lymphokines      iii) Histamines      iv) Interferons
  - g) A living microbe with reduced virulence that is used for vaccination is considered:
    - i) A toxoid      ii) Dormant      iii) Virulent      iv) Attenuated
  - h) Large parasites such as helminthes may be killed extracellularly by the action of
    - i) Basophils      ii) Monocytes      iii) Eosinophils      iv) Neutrophils
  - i) In an agglutination reactions, the antigen is a..... and in a precipitation reaction, the antigen is a.....
    - i) Bacterium/virus      ii) Soluble molecule/whole-cell
    - iii) whole-cell/soluble molecule      iv) Protein/antibody
  - j) B cells that produce and release large amounts of antibody are called:
    - i) Memory cells      ii) Basophils      iii) Plasma cells      iv) Neutrophils
2. Answer **any four** the following questions. 4 x 5
- a) Type III hypersensitivity.
  - b) HAT medium.
  - c) Classical Complement Pathway.
  - d) Coombs Test.
  - e) Radio Immuno Assay.
3. Answer **any two** of the following :
- a) Explain antibody-independent cell-mediated cytotoxicity. Differentiate between active and passive immunity. Define Opsonization. 5+3+2
  - b) Describe the mechanisms for antigen processing and presentation via MHC class I and class II molecules to T lymphocytes. 10
  - c) Define structure and properties of immunoglobulin classes. Discuss about natural killer cells. 7+3

P.T.O.





4. Answer the following questions :

- a) Which one is considered to be the positive result of Presumptive test?
  - i) Production of acid after 24-48hrs of incubation
  - ii) Production of gas after 24-48hrs of incubation
  - iii) Production of both acid and gas after 24-48hrs of incubation
  - iv) None of these
- b) Which of the following organism is positive quality control strain of Albert staining?
  - i) Staphylococcus aureus
  - ii) Mycobacterium tuberculosis
  - iii) Clostridium tetani
  - iv) Corynebacterium diphtheriae
- c) The association which involves the exchange of nutrients between two species is called:
  - i) Mutualism
  - ii) Commensalism
  - iii) Syntrophism
  - iv) Antagonism
- d) Which of the following organism is the quality control strain of mannitol salt agar?
  - i) Staphylococcus aureus
  - ii) Streptococcus pyogenes
  - iii) Clostridium perfringens
  - iv) Bacillus anthracis
- e) Bacterial load in an operation theatre is determined by:
  - i) Slit sampler method
  - ii) Open petridish method
  - iii) Settle plate method
  - iv) all of the above
- f) Which bacteriocin is produced by E. coli ?
  - i) Pyocin
  - ii) Colicin
  - iii) Marcescin
  - iv) Klebicin
- g) Which of the following bacteria is present as normal flora in the acidic pH of the vagina?
  - i) Clostridium botulinum
  - ii) Lactobacillus acidophilus
  - iii) Neisseria gonorrhoeae
  - iv) Streptococcus mutans.
- h) Which of the following microorganism can be found as normal flora in the nasopharynx of healthy individuals?
  - i) Mycobacterium tuberculosis
  - ii) Streptococcus pneumonia
  - iii) Clostridium difficile
  - iv) Bacillus cereus
- i) Which of the following microorganism is a predominant flora of the skin?
  - i) Bacillus anthracis
  - ii) Clostridium perfringens
  - iii) Leptospira interrogans
  - iv) Staphylococcus epidermidis
- j) Which of the following bacteria are a part of normal flora present inside the mouth and also a frequent cause of bacterial dental caries?
  - i) Staphylococcus epidermidis
  - ii) Lactobacillus acidophilus
  - iii) Streptococcus mutans
  - iv) Candida albicans

4. Write short note on **any four** of the following :

4 x 5

- a) Quality control of staining technique.
- b) Any one method of measuring air contamination.
- c) Normal flora of Urogenital tract.
- d) Advantages and disadvantages of Normal flora of human body.
- e) Write down a short note on Membrane filter method.

5. Answer **any two** of the following :

- a) Describe the pathogenesis and clinical manifestations of TB. Write down the lab diagnosis of this disease. 3+3+4
- b) How can you isolate and enumerate microorganisms from soil sample? Which physical and chemical parameters should you check during a culture media preparation? 7+3
- c) Describe about the normal flora of GI tract. 10