

CHUKA



UNIVERSITY

## UNIVERSITY EXAMINATIONS

### SECOND YEAR EXAMINATION FOR BACHELOR OF SCIENCE IN NURSING

NURS 226: IMMUNOLOGY

STREAMS: B.Sc Nursing (Y2 S2)

TIME: 2 HOURS

DAY/DATE: TUESDAY 6 /07/ 2021

2.30 PM – 4.30 PM

#### INSTRUCTIONS:

1. Answer **ALL** questions
2. Do not write anything on the question paper
3. This is a **closed book exam**, No reference materials are allowed in the examination room
4. There will be **No** use of mobile phones or any other unauthorized materials
5. Write your answers legibly and use your time wisely

#### SECTION A (20 marks)

1. The following are major components of innate immunity EXCEPT
  - a. Immunoglobulins
  - b. Natural Killer cells
  - c. Gastric secretions
  - d. Complement
2. The initial immunoglobulin to be produced on first encounter to an antigen is
  - a. Ig A
  - b. Ig D
  - c. Ig G
  - d. Ig M
3. Part of the antibody molecule that gets into contact with the antigen is called \_\_\_\_\_
4. The main process by which T lymphocytes acquire the ability to distinguish self from non-self occurs in the \_\_\_\_\_
5. The bypassing of the antibody-requiring step in the activation of complement via the lectin pathway is facilitated by
  - a. Bacterial lipopolysaccharide
  - b. Viral particles
  - c. Mannose binding protein

- d. Convertase
- 6. The following is TRUE about both primary and secondary lymphoid organs
  - a. Increase in size on antigenic stimulation
  - b. Increase in cellular activity on antigenic stimulation
  - c. Lymphocytes are recruited
  - d. Lymphocytosis takes place
- 7. Immunodeficiency involving the membrane attack complex exposes one to the risk of
  - a. *Streptococcus pneumonia*
  - b. *Haemophilus influenzae* type b
  - c. *Staphylococcus aureus*
  - d. *Neisseria meningitidis*
- 8. Helper T lymphocytes sensitized by an antigen release lymphokines upon second contact with the same antigen. The lymphokines induce inflammation and activate macrophages, which, in turn, release various mediators. What type of hypersensitivity reaction is this?
  - a. Type I
  - b. Type II
  - c. Type III
  - d. Type IV
- 9. An immunological test in which the antibody cross-links antigen molecules in variable proportions, and aggregates is called
  - a. Agglutination
  - b. Precipitation
  - c. Immunofluorescence
  - d. Hemagglutination
- 10. The transfer of tissue between genetically identical individuals is called
  - a. Autograft
  - b. Xenograft
  - c. Syngeneic graft
  - d. Allograft
- 11. Which of the following immunoglobulins is associated with opsonization?
  - a. Ig G
  - b. Ig A
  - c. Ig D
  - d. Ig E
- 12. The antibody produced in the greatest amount in the fetus in utero is
  - a. Ig A
  - b. Ig D
  - c. Ig G
  - d. Ig M
- 13. One of the following is true about class II Major Histocompatibility (MHC) proteins
  - a. Present antigen to CD4-positive cells
  - b. Present antigen to CD8-positive cells
  - c. Found on surface of all nucleated cells
  - d. Composed of one peptide encoded in the HLA locus and a  $\beta_2$ -microglobulin

14. Which of the following is NOT TRUE about B cells?
- a. Regulator of antibody synthesis
  - b. Immunoglobulin synthesis
  - c. Has antigen receptors on the surface
  - d. Maturation in bursa or its equivalent
15. Which of the following play a major role in humoral immunity:
- a. Macrophages
  - b. Natural Killer cells
  - c. Neutrophils
  - d. Cytotoxic T cells

**For questions 16 – 20 indicate whether the statements are True (T) or False (F)**

16. Only CD8 T cells have CD3 proteins on their surface in association with antigen receptors.
17. Each type of immunoglobulin has a distinct Heavy chain.
18. Somatic hypermutation is the process in which a subset of plasma cells with improved hypervariable regions are more strongly and more frequently selected by an antigen.
19. The role of the adjuvant is to enhance the uptake of the antigen by antigen-presenting cells.
20. Loss of tolerance to self-antigens leads to autoimmune diseases.

**SECTION B (30 Marks)**

- 1. Describe the concept of super antigens (4 marks)
- 2. Describe the regulatory functions of the helper T-lymphocytes (6 marks)
- 3. State four (4) biologic effects of complement (4 marks)
- 4. Explain the process of graft rejection (5 marks)
- 5. Outline five (5) serological tests (5 marks)
- 6. Describe four (4) auto-immune diseases (6 marks)

**SECTION C (20 Marks)**

- 1. Describe the classical pathway of complement activation (20 marks)

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