



TECHNICAL UNIVERSITY OF MOMBASA
FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

BMLS 14S

AML 4207: IMMUNOLOGY

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date May 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt **ALL** questions.

Circle the correct answer in section A.

Section A

Q1. The immune system functions properly through which of the following central features?

- a) Self, non-self recognition
- b) Retaining memory
- c) Being specialized
- d) Being specific
- e) Being naïve

Q2. Which of the following are components of the innate immunity?

- a) Plasma cells
- b) IL-2 molecules
- c) IL-7 molecules
- d) C21 molecules
- e) Lectin molecules

Q3. In the phases of adaptive immune system, antigen recognition is immediately followed by which of the following events?

- a) Antigen presentation

- b) Signal transduction
- c) Clonal expansion
- d) Differentiation
- e) Effector responses

Q4. Innate immune responses may result in the following except

- a) Prevent infection
- b) Control infection
- c) Eliminate infection
- d) Stimulate adaptive immunity
- e) Initiate the classical pathway

Q5. Which of the following cytokines stimulate inflammation?

- a) TNF
- b) IFN-gamma
- c) IL-12
- d) IL-15
- e) IL-10

Q6. Which of the following functions are not mediated by T cells?

- a) Direct antigen recognition
- b) Antigen presentation through MHC I
- c) Cell mediated responses
- d) Down regulate activities of other cells
- e) Antigen recognition through MHC II

Q7. In which of the following organs may immature lymphocytes develop and commit to particular antigenic specificity?

- a) Appendix
- b) Lymph nodes
- c) Peyer's patches
- d) Spleen
- e) Tonsils

Q8. Which of the following cell types kill a variety of target cells?

- a) Dendritic cells
- b) Macrophages
- c) NK cells
- d) Mast cells
- e) Basophils

Q9. An allotype is determined by which of the following?

- a) Heavy chains
- b) Light chains
- c) Genetic differences

- d) Antigen binding specificity
- e) Number of constant regions

Q10. Which of the following antibody class is the first to be produced in a primary response?

- a) IgA
- b) IgD
- c) IgG
- d) IgE
- e) IgM

Q11. IgA may exist in any of the following forms except

- a) Dimer
- b) Pentamer
- c) Tetramer
- d) Monomer
- e) Trimer

Q12. Which of the following immunoglobulins binds very tightly to Fc receptors on basophils and mast cells?

- a) IgA
- b) IgD
- c) IgG
- d) IgE
- e) IgM

Q13. Which of the following represents the number of diversity genes that exist in the germline that contribute to the generation of antibody diversity?

- a) 200
- b) 20
- c) 12
- d) 5
- e) 4

Q14. Polyanions of microbes may be recognized by which of the following pattern recognition receptors?

- a) Complement receptors
- b) Mannose-binding protein receptors
- c) TLR-2
- d) TLR-4
- e) Scavenger receptors

Q15. The human leukocyte antigen genes are located on which of the following chromosomes?

- a) Chromosome 12
- b) Chromosome 2
- c) Chromosome 6

- d) Chromosome 17
- e) Chromosome 20

Q16. Which of the following antigen receptors of T cells recognize antigens expressed through receptors of other cells?

- a) MHC molecules
- b) TCR molecules
- c) BCR molecules
- d) FcR molecules
- e) CD220 molecules

Q17. For which of the following viruses is prophylactic vaccination important?

- a) Mumps virus
- b) Measles virus
- c) Rabies virus
- d) Nairovirus
- e) Bunyamwera virus

Q18. Which of the following is phylogenetically the oldest pathway of complement activation?

- a) Classical pathway
- b) Alternative pathway
- c) Lectin pathway
- d) MBL pathway
- e) None of the above

Q19. Which of the following immune responses are mediated by follicular B cells in secondary organs?

- a) T cell – dependent
- b) T cell – independent
- c) B cell – dependent
- d) B cell – independent
- e) B and T cell – independent

Q20. Which of the following is a mechanism of immune evasion by extracellular bacteria with polysaccharide-rich capsules?

- a) Inhibition of complement
- b) Inactivation of complement products
- c) Antiphagocytic mechanisms
- d) Genetic variation of surface antigens
- e) Scavenging of reactive oxygen intermediates

Q21. Which of the following is a mechanism of immune evasion by Epstein-Barr viruses?

- a) Infection of immunocompetent cells
- b) Blockage of TAP transporter
- c) Removal of class I molecules from the ER

- d) Production of immunosuppressive cytokines
- e) Production of cytokine receptor homologs

Q22. Which of the following techniques is used to purify and identify proteins?

- a) ELISA
- b) Radioimmuno assay
- c) Immunoprecipitation
- d) Western blotting
- e) Northern blotting

Q23. Which of the following techniques can be used to enumerate and study functional responses of T cells?

- a) FACS
- b) Treatment with phytohemagglutinin
- c) Equilibrium dialysis
- d) SDS-PAGE
- e) Affinity chromatography

Q24. Which of the following cell types promote differentiation of B cells?

- a) B cells
- b) Helper T cells
- c) Cytotoxic T cells
- d) Macrophages
- e) Dendritic cells

Q25. All tissue that is not directly involved in primary function of hematopoiesis in the bone is the

- a) White marrow
- b) Connective tissue
- c) Red marrow
- d) Stroma
- e) Yellow marrow

Q26. Which of the following is a ring of packed B cells surrounding germinal centers containing proliferating B cells?

- a) Medulla
- b) Primary follicle
- c) Secondary follicle
- d) Paracortex
- e) Cortex

Q27. Which of the following organs has its major function as filtering antigens from the lymph?

- a) Lymph nodes
- b) Spleen
- c) Thymus
- d) Adenoids
- e) Payer's patches

Q28. The region of the spleen where active immune responses through humoral and cell mediated pathways take place is?

- a) Medulla
- b) Cortex

- c) Paracortex
- d) White pulp
- e) Red pulp

Q29. Which of the following may act as antibodies in cellular fluids functioning to capture and eliminate antigenic determinants?

- a) Ig
- b) MHC
- c) TCR
- d) BCR
- e) FcR

Q30. Which one of the following causes scalded skin syndrome?

- a) Staphylococcus pyogenic exotoxins
- b) Staphylococcus exfoliating toxins
- c) Streptococcus pyogenic exotoxins
- d) Streptococcus enterotoxins
- e) Staphylococcus toxic shock toxins

Section C

Q31. Draw two well labeled diagrams of MHC I and II molecules (20 marks)

Q32. Discuss the phases of the adaptive immune system (20 marks)