



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

**UNIVERSITY EXAMINATION FOR:**

**DMLS**

**AML 2209 : IMMUNOLOGY II**

**END OF SEMESTER EXAMINATION**

**SERIES: DECEMBER 2016**

**TIME: 2 HOURS**

**DATE:** Pick Date Dec 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.**

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## Section A

Q1. Which of the following is made up of heat labile proteins?

- a) The innate immune system
- b) The complement system
- c) The adaptive immune system
- d) The inflammation system

Q2. Which of the following is evolutionarily the oldest pathway?

- a) The alternative pathway
- b) The classical pathway
- c) The mannan binding pathway
- d) None of the above

Q3. Which of the following is the first step in the classical pathway of complement activation?

- a) Binding of antibodies to C1 protein
- b) Binding of C1 to the microbe
- c) Binding of antibodies to the microbe
- d) Binding of C1 to the antibody

Q4. Which of the following initiates the late steps of complement activation?

- a) Activation of C3
- b) Cleavage of C3
- c) Formation of C3 convertase
- d) Formation of C5 convertase

Q5. The naïve B lymphocyte expresses which of the following molecules on its surface?

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

Q6. The following are principal innate immune mechanisms against extracellular bacteria except?

- a) Complement activation
- b) Activation of natural killer cells
- c) Phagocytosis
- d) Activation of inflammation

Q7. Which of the following will raise temperature and suppress growth of microbes?

- a) Inflammatory response
- b) B cell response
- c) Activation of phagocytosis
- d) Destruction of antibodies

Q8. Which of the following is the function of humoral immunity to extracellular bacteria?

- a) Phagocytosis of microbes
- b) Killing of infected cells
- c) Blocking of infection
- d) Activation of the complement system

Q9. The effector adaptive immune mechanisms to extracellular pathogens include the following except?

- a) Neutralization
- b) Opsonization and phagocytosis
- c) Activation of the complement pathway
- d) Activation of the alternative pathway

Q10. Which of the following is the principal injurious consequence of host responses to extracellular bacteria?

- a) Inflammation
- b) Antibody activation
- c) Opsonization
- d) Phagocytosis

Q11. Which of the following causes host injury in infections by intracellular microbes?

- a) Microbial depletion of host tissue
- b) Microbial destruction of host cells
- c) Host immune response to the microbes
- d) Microbial destruction of CD4+ T cells

Q12. Innate immunity to intracellular microbes is mediated by which of the following cell types?

- a) CD4+ T cells
- b) CD8+ T cells
- c) Microfold cells
- d) NK cells

Q13. Which of the following tends to colonize the brain in immunodeficient hosts?

- a) *S. Typhi*
- b) *C. neoformans*
- c) Infectious mononucleosis
- d) *L. pneumophila*

Q14. Innate and adaptive immune responses to viral infections aim to \_\_\_\_\_?

- a) Block infection
- b) Kill the viruses directly
- c) Propagate viral replication
- d) Cause pathogenesis

Q15. Protozoan and helminthic parasites are often able to survive and replicate in their hosts due to \_\_\_?

- a) Infecting immunocompromised individuals
- b) Short incubation period
- c) Absence of responses from T cells
- d) Well adaptation to resisting host immune defenses

Q16. Defense against helminth infections is mediated by activation of which of the following cell types?

- a) CTLs
- b) Macrophages
- c) Th cells
- d) NK cells

Q17. Antigen shedding is a mechanism of immune evasion by which of the following parasites?

- a) Plasmodium
- b) Entamoeba
- c) Trypanosomes
- d) Schistosomes

Q18. Transplantation in which a graft is placed in a different site from its normal anatomic location is called \_\_\_\_\_?

- a) Organ donation
- b) Heterotopic transplantation
- c) Orthotopic transplantation
- d) Allo-transplantation

Q19. Which of the following is the biggest impediment to transplantation success today?

- a) Immune responses
- b) Availability of organs
- c) Art of transplantation
- d) Studies on organs

Q20. Which of the following rejection mechanisms takes place within minutes to hours after transplantation?

- a) Acute rejection
- b) Hyperacute rejection
- c) Chronic rejection
- d) None of the above

Q21. Sustained immunosuppression required for prolonged graft survival may lead to which of the following?

- a) Death of the individual
- b) Activation of immune responses
- c) Susceptibility to virus-associated tumors
- d) Rejuvenation of the initial graft

Q22. Which of the following is the principal limitation to the success of bone marrow transplantation?

- a) Immune responses to T cells
- b) Immune responses to B cells
- c) Graft vs host reactions
- d) Availability of bone marrow for transplantation

Q23. Routine HLA typing focuses on which of the following molecules?

- a) HLA-A, B, and DR
- b) HLA-A, C, and DP
- c) HLA-A, B, and DP
- d) HLA-A, C, and DR

Q24. In western blotting, visualization is done by which of the following?

- a) Florescent lighting
- b) Normal light
- c) Labeled antibodies
- d) Labeled cytokines

Q25. Which of the following best defines immunological tolerance?

- a) Anergy
- b) Unresponsiveness due to previous exposure of certain antigens
- c) Functionally unresponsive cells
- d) None of the above

Q26. Peripheral tolerance may be induced in which of the following cell types?

- a) Immature T cells in the thymus
- b) Mature T cells in the thymus
- c) Immature T cells in the lymph nodes
- d) Mature T cells in the lymph nodes

Q27. Autoimmunity results from a failure of mechanisms normally responsible for maintaining self tolerance in which of the following cell types?

- a) NK cells
- b) M cells
- c) B cells
- d) Mast cells

Q28. Plasmapheresis works by which of the following mechanisms?

- a) Separating proteins based on size
- b) Depleting circulating antibodies
- c) Destroying antibody specific B cells
- d) Repopulating the circulatory system with non-defective cells

Q29. Which of the following is the principal consequence of immunodeficiencies?

- a) Suppressing T cells
- b) Lack of NK cells
- c) Susceptibility to infections
- d) Increased autoimmune incidences

Q30. A decrease in all serum Ig isotype and reduced B cell numbers may be observed in which of the following conditions?

- a) X-linked agamaglobulinemia
- b) Hypoagaglobulinemia
- c) X-linked hyper-IgM syndrome
- d) ICF syndrome

Q31. Which of the following diseases are associated with defects in T cell activation?

- a) Bare lymphocyte syndrome
- b) Selective IgG2 deficiency
- c) Combined variable immunodeficiency
- d) Chediak Higashi syndrome

Q32. The following are therapeutic approaches for congenital immunodeficiencies except?

- a) Bone marrow transplantation
- b) Passive immunization
- c) Enzyme replacement therapy
- d) Graft versus leukemia effect

Q33. Acute HIV disease may be manifested by the following symptoms except?

- a) Fever
- b) Generalized lymphadenopathy
- c) Rashes
- d) Declining CD4+ T cell amount

Q34. Which of the following is a factor in the growth of malignant tumors?

- a) Presence of other diseases
- b) Ability of the immune system to eradicate infections
- c) Ability of the tumor cells to evade host immune defenses
- d) Ability of the immune system to differentiate between self and non-self

Q35. Which of the following antigens are expressed on tumor cells but not on other cells?

- a) Tumor antigens
- b) Tumor specific antigens
- c) Tumor associated antigens
- d) None of the above

Q36. Which of the following are ligands for NKG2D activating receptor on NK cells?

- a) MICA
- b) MHC II
- c) MHC I
- d) MICD

Q37. Reactions against one's own cells and tissues may result to which of the following?

- a) Transplantation rejection
- b) Hypersensitivity diseases
- c) Infectious diseases
- d) Immunodeficiencies

Q38. Which of the following diseases has a major inflammatory component triggered by cytokines produced by CD4+ T<sub>H</sub>2 cells?

- a) AIDS
- b) X-linked agammaglobulinemia
- c) Type I hypersensitivity diseases
- d) Non-hodgkins lymphomas

Q39. Which of the following types of hypersensitivity reactions are also called atopies?

- a) Type I
- b) Type II
- c) Type III
- d) Type IV

Q40. The following are typical features of typical features of many common allergens except?

- a) Glycosylation
- b) Acetylation
- c) Low molecular weight
- d) High solubility in body fluids

#### Section B

Q41.

- a) Differentiate between factors that favor tolerance from those that favor immunogenicity (10 marks)
- b) Explain four mechanisms by which intracellular microbes evade host immune responses (10 marks)

Q42. Discuss how ELISA works using a specific example of a disease (20 marks)

Q43.

- a) Explain two types of immunodeficiencies (10 marks)
- b) Describe acute and hyperacute rejections (10 marks)