



# 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. The complement system is activated through the following pathways except?

- a) The classical pathway
- b) The indigenous pathway
- c) The alternative pathway
- d) The lectin pathway

Q2. Which of the following cleaves C4 in the classical pathway of complement activation?

- a) C1q
- b) C1s
- c) C1r
- d) C1t

Q3. The late steps of complement activation ultimately lead to which of the following events?

- a) Formation of the C3 convertase
- b) Formation of the C5 convertase
- c) Formation of the C5bC6C7 complex
- d) Formation of the membrane attack complex

Q4. Which of the following pathways is initiated by binding of ficolins to the microbial surface?

- a) Classical pathway
- b) Alternative pathway
- c) Indigenous pathway
- d) MBL pathway

Q5. The process by which B cells change to secrete different antibodies is called?

- a) Affinity maturation
- b) Maturation of B cells
- c) Isotype switching
- d) Antibody secretion

Q6. Extracellular bacteria may cause pathogenesis by which of the following process?

- a) Induction of inflammation
- b) Activation of T cells
- c) Activation of B cells
- d) Activation of the complement pathway

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Q7. Which of the following innate immune mechanism leads to lysis of extracellular bacteria?

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

Q8. The following may contribute to septic shock except?

- a) TNF
- b) IFN- $\gamma$
- c) IL-12
- d) IL-7

Q9. Immunity to intracellular bacteria may be mediated by which of the following?

- a) Cells
- b) Antibodies
- c) Inflammation
- d) Complement activation

Q10. The adaptive immunity to intracellular bacteria is majorly mediated by which of the following?

- a) Antibodies
- b) Compliment activation
- c) Macrophage activation by T cell signals
- d) B cell activation

Q11. *Legionella pneumophila* escapes host immunity by which of the following mechanisms?

- a) Inactivation of reactive oxygen species
- b) Inactivation of reactive nitrogen species
- c) Antigen shedding
- d) Inhibition of phagolysosome formation

Q12. Fungal infections are also called \_\_\_\_\_?

- a) Atopies
- b) Mycoses
- c) Infectious mononucleosis
- d) Amoebiosis

Q13. Which of the following is reason why antifungal immunity is less well understood?

- a) Not many researchers care about fungal infections
- b) It is not economically feasible to study fungal infections
- c) Most fungal infections occur in immuno-compromised individuals
- d) Fungal infections are too few

Q14. Candida infections are prevented from spread into tissues by which of the following mechanism?

- a) Cell mediated immunity
- b) Antibody mediated immunity
- c) Activation of inflammation
- d) Activation of complement

Q15. Elimination of viruses that reside within cells is mediated by which of the following cell types?

- a) Th cells
- b) Follicular B cells
- c) Marginal zone B cells
- d) CTLs

Q16. Which of the following cause tissue injury in non-cytopathic viral infections?

- a) CTLs
- b) Antibodies
- c) Th cells
- d) Neutrophils

Q17. Which of the following accounts for greater morbidity and mortality than any other class of infectious organism?

- a) Viral infections
- b) Parasitic infections
- c) Diarrheal infections
- d) Fungal infections

Q18. Which of the following is the principal defense mechanism against protozoan infections?

- a) B cell activation
- b) Neutrophils activation
- c) Macrophage activation
- d) Eosinophil activation

Q19. Acquired resistance to complement and CTLs is a mechanism of immune evasion by which of the following parasites?

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

Q20. Which of the following is a donor?

- a) The graft taken to someone who needs it
- b) One to whom a graft goes
- c) One that performs grafting
- d) One from whom a graft comes

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Q21. Which of the following are molecules recognized as foreign on allografts?

- a) Alloantigens
- b) Alloreactivins
- c) Xenoantigens
- d) Autografts

Q22. Which of the following molecules are responsible for strong rejection reactions?

- a) TCR molecules
- b) BCR molecules
- c) MHC molecules
- d) Antibody molecules

Q23. Which one of the following is the most important goal in preventing transplantation rejection?

- a) Development of general immunosuppressive drugs
- b) Donation of transplants
- c) Obtaining transplants from animals
- d) Induction of donor specific tolerance

Q24. The following are forms of acute vascular rejection in xenogeneic transplantation except?

- a) Delayed xenogeneic rejection
- b) Intravascular rejection
- c) Accelerated acute rejection
- d) Acute vascular rejection

Q25. Graft versus host rejection may be caused by which of the following?

- a) Grafted mature T cells reacting to the host antigens
- b) Host mature T cells reacting to the graft antigens
- c) Grafted mature B cells reacting to the host antigens
- d) Host antibodies reacting to graft antigens

Q26. Preformed antibodies may be as a result of the following previous events except?

- a) Pregnancies
- b) Transfusions
- c) Donation
- d) Transplantation

Q27. The difference between RIA and ELISA techniques is \_\_\_\_\_?

- a) The spellings used
- b) The labels used
- c) The buffers used
- d) The sensitivity obtained

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Q28. Antigens that induce tolerance are called \_\_\_\_\_?

- a) Allergens
- b) Antigens
- c) Alloantigens
- d) Tolerogens

Q29. Under normal circumstances, the interaction between a lymphocyte and an antigen can lead to the following except?

- a) Proliferation and differentiation
- b) Anergy
- c) Deletion
- d) Change in antigen specificity

Q30. Which of the following are thymus dependent antigens?

- a) Polysaccharides
- b) Lipids
- c) Proteins
- d) Monosaccharides

Q31. Which of the following drugs are used to block T cell activation?

- a) Methotrexate
- b) Cyclosporine**
- c) B7 co-stimulators
- d) Plamapheresis

Q32. Acquired immunodeficiencies may develop as a consequence of the following except?

- a) Malnutrition
- b) Germline DNA malformations
- c) Treatment with immunosuppressive drugs
- d) Disseminated cancers

Q33. X-linked agamaglobulinemia is caused by which of the following?

- a) Defects in T lymphocyte development
- b) Defects in NK cell maturation
- c) Defects in macrophage activation
- d) Defects in B lymphocytes development

Q34. Which of the following is a major aim in therapeutic approaches for congenital immunodeficiencies?

- a) Reduce malnutrition
- b) Reduce pain
- c) Suppress T cell growth
- d) Control infections

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Q35. Theoretically, the therapy of choice for congenital disorders of lymphocytes is to replace the defective gene in which of the following cell types?

- a) Stem cells
- b) B lymphocytes
- c) T lymphocytes
- d) B and T lymphocytes

Q36. Tumors arise from which of the following?

- a) Autoimmunity
- b) Transplantation of bone marrow cells
- c) Uncontrolled proliferation and spread of transformed cells
- d) Stem cells

Q37. The immune system can be activated by external stimuli to effectively kill tumor cells and eradicate tumors. This statement implies that \_\_\_\_\_

- a) It is possible to die from cancer
- b) It is possible to get cancer by being attacked by the immune system
- c) It is possible to make vaccines against cancer
- d) The immune system can always eradicate tumors when activated

Q38. Which of the following statements describes hypersensitivity reactions?

- a) Uncontrolled growth and proliferation of clones of transformed cells
- b) Inadequately controlled or inappropriately targeted responses to host cells
- c) Immune responses caused by B cells
- d) Immune responses caused by T cells

Q39. Which of the following is associated with antibody mediated hypersensitivity reactions?

- a) IgE antibodies on mast cells
- b) IgM antibodies on extracellular matrix antigens
- c) IgG antibodies on circulating antigens
- d) IgM antibodies on circulating antigens

Q40. Immediate hypersensitivity reactions are manifested in the following ways except?

- a) Hashimoto's thyroiditis
- b) Skin allergies
- c) Asthma
- d) Systemic anaphylaxis

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## Section B

Q41.

- a) Explain four mechanisms by which viruses evade immune responses (10 marks)
- b) Explain the innate immune responses to viruses (10 marks)

Q42. Discuss ABO blood typing and show where it should be done (20 marks)

Q43. Illustrate and explain step by step how affinity chromatography works (20 marks)