



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

**UNIVERSITY EXAMINATION FOR:**

BMLS 15M PT/BMLS 14S PT

AML 4304: IMMUNOPATHOLOGY

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.**

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Exam 1

Section A

Q1. The following are examples of T cell mediated diseases except

- a) Type I diabetes
- b) Autoimmune myocarditis
- c) Multiple sclerosis
- d) Pernicious anemia
- e) Peripheral arthritis

Q2. Which of the following must take place for mast cells to be activated after sensitization?

- a) Expression of co-receptors
- b) Expression of co-stimulatory molecules
- c) Cross-linking of antibodies
- d) Cross-linking of co-receptors
- e) Degranulation

Q3. The following are examples of allergens except?

- a) Pollen protein molecules
- b) House dust mites
- c) Animal dander
- d) Fish protein molecules
- e) DNA molecules

Q4. Which of the following is a major development factor for Eosinophils?

- a) IL-1
- b) IL-2
- c) IL-3
- d) IL-4
- e) IL-5

Q5. Which of the following is a normal response when a lymphocyte is exposed to microbes?

- a) Anergy
- b) Proliferation
- c) Apoptosis
- d) Receptor down modulation
- e) Receptor editing

Q6. Which one of the following is necessary for maintaining unresponsiveness to thymus-independent self antigens?

- a) Central tolerance
- b) B cell tolerance
- c) T cell tolerance
- d) Peripheral tolerance
- e) None of the above

Q7. Which of the following determines whether a patient has antibodies that react with donor leukocytes?

- a) Tissue typing
- b) Polymerase chain reaction
- c) Cross matching
- d) Western blotting
- e) ABO blood typing

Q8. Which of the following arise from uncontrolled proliferation and spread of clones of transformed cells?

- a) Hypersensitivity reactions
- b) Cancers
- c) Immunological Tolerance
- d) Autoimmunity
- e) Infections

Q9. Which of the following antibodies cause hyperacute rejection in transplantation between non-compatible blood group individuals?

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

Q10. Which one of the following is true of the polymorphic genes that determine rejection of transplanted organs?

- a) They are initially expressed during puberty
- b) They are expressed on all cell types
- c) They are expressed in male children
- d) They are co-dominantly expressed
- e) They are randomly expressed

Q11. Which of the following is the single most important goal in preventing transplantation rejection?

- a) To suppress the immune system of the host.
- b) To augment the immune responses of the recipient
- c) To induce donor specific tolerance
- d) To augment the immune system of the host
- e) To suppress the immune system of the recipient

Q12. Ataxia telangiectasia is characterized by the following except?

- a) Abnormal gait
- b) Neurologic deficits
- c) Increased incidence of tumors
- d) Cardio malformations
- e) Immunodeficiency

Q13. Which of the following is a central feature of the normal immune system?

- a) Specificity
- b) Diversity
- c) Memory
- d) Self tolerance
- e) Antigen recognition

Q14. Which of the following explain why once an autoimmune disease has developed, it tends to be chronic and often progressive?

- a) Receptor editing
- b) Antigenic variation
- c) Epitope spreading
- d) Antigen masking
- e) Affinity maturation

- Q15. Neutralizing antibodies against HIV's gp120 develop how long after primary infection?
- a) 20 days
  - b) 2 to 3 months
  - c) 6 months
  - d) 12 months
  - e) 2 years
- Q16. Which of the following is the most common drug for allergic rhinitis?
- a) Anti-histamines
  - b) Concanavalin A
  - c) Corticosteroids
  - d) Azathioprine
  - e) Rapamycin
- Q17. Which of the following is a factor that determines the growth of tumors?
- a) Ability to engulf other cells
  - b) Ability to secrete cytokines
  - c) Ability to evade the host defense mechanisms
  - d) Ability to secrete chemotactic factors
  - e) Ability to destroy other cells
- Q18. The following are used by macrophages to destroy tumor cells except?
- a) Reactive nitrogen species
  - b) Lysosomal enzymes
  - c) Hydrochloric acid
  - d) Reactive oxygen species
  - e) Nitric oxide
- Q19. Which of the following is the principal adaptive immune defense mechanism against tumors?
- a) Killing of tumor cells by CD8<sup>+</sup> T cells
  - b) Killing of tumor cells by CD4<sup>+</sup> T cells
  - c) Killing of tumor cells by macrophages
  - d) Killing of tumor cells by NKT cells
  - e) Killing of tumor cells by NK cells
- Q20. The following are effector mechanisms of antibody mediated diseases except?
- a) Opsonization and phagocytosis
  - b) Complement mediated inflammation
  - c) Receptor mediated inflammation
  - d) Antibody dependent cellular cytotoxicity
  - e) Antibody stimulation of receptors without ligands

Q21. Which of the following is the clinicopathologic manifestation of poststreptococcal glomerulonephritis?

- a) Vasculitis
- b) Nephritis
- c) Arthritis
- d) Conjunctivitis
- e) Kidney vesicles

Q22. Which of the following molecules determine rejection?

- a) MICB molecules
- b) CD1 molecules
- c) CD8 molecules
- d) MICA molecules
- e) MHC molecules

Q23. Which of the following determines whether the patient has antibodies that react specifically with the donor red blood cells?

- a) Tissue typing
- b) Polymerase chain reaction
- c) Cross matching
- d) Western blotting
- e) ABO blood typing

Q24. Which of the following complement by-products activates neutrophils to mediate inflammation?

- a) C3b
- b) C4a
- c) C4c
- d) C5a
- e) C6b

Q25. Which of the following is an immunotherapy strategy for atopic diseases?

- a) Systemic administration of anti-IgE antibodies
- b) Systemic administration of anti-IgM antibodies
- c) Systemic administration of anti-IgD antibodies
- d) Systemic administration of anti-IgG antibodies
- e) Systemic administration of anti-IgA antibodies

Q26. The following determines the growth of malignant tumors except

- a) The proliferative capacity of the tumor cells
- b) The ability of the tumor cells to invade the immune system
- c) The ability of the tumor cells to metastasize to distant sites
- d) The ability of the tumor cells to overcome the host defense mechanisms
- e) The ability of the tumor cells to produce many clones of themselves

Q27. The concept of immune surveillance was proposed by which of the following?

- a) Francis Crick
- b) Louise Pasteur
- c) Macfarlane Burnet
- d) Ellie Metchinkov
- e) Edward Jenner

Q28. Which of the following is a hallmark of allergic diseases?

- a) Activation of CD4+ Th2 cells
- b) Activation of CD8+ CTL cells
- c) Activation of mast cells
- d) Activation of macrophages
- e) Activation of M cells

Q29. Which of the following is the dissociation constant of the interaction between FcεRI and IgE molecules?

- a)  $1 \times 10^{-1}$  M
- b)  $1 \times 10^{-4}$  M
- c)  $1 \times 10^{-6}$  M
- d)  $1 \times 10^{-8}$  M
- e)  $1 \times 10^{-10}$  M

Q30. The following are produced by mast cells on activation except?

- a) IL-3
- b) IL-4
- c) TNF
- d) IL-10
- e) IL-13

## Section B

Q31.

- a) Explain four general features of immunodeficiency diseases (10 marks)
- b) Describe four therapeutic approaches for congenital immunodeficiency disorders (10 marks)

Q32. Discuss factors that determine the following

- a) Immunogenicity to self antigens (10 marks)
- b) Tolerogenicity to self antigens (10 marks)