



# 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. Which of the following is a major granule content of mast cells?

- a) Histamine
- b) Peroxidases
- c) Hydrolases
- d) Lysophospholipases
- e) Phospholipases

Q2. Which of the following favors stimulation of immune responses?

- a) High levels of co-stimulators
- b) Antigens without adjuvants
- c) Prolonged persistence of antigens
- d) High doses of antigens
- e) Intravenous administration of antigens

Q3. Which of the following is the last stage during homeostasis of the immune system?

- a) Antigen recognition
- b) B cell activation
- c) Proliferation
- d) Expansion
- e) Memory cells

Q4. Which of the following types of antibodies are specific for allogeneic ABO blood group antigens?

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

Q5. Which of the following mediate type III hypersensitivity reactions?

- a) IgE
- b) Immune complexes
- c) Helper T cells
- d) Cytotoxic T cells
- e) None of the above

Q6. The gene responsible for ataxia telangiectasia is located on which of the following chromosomes?

- a) 1
- b) 5
- c) 8
- d) 11
- e) 14

Q7. Immunological tolerance is generated through the recognition of antigens by which of the following cells?

- a) Neuronal cells
- b) Lymphocytes
- c) M cells
- d) NK cells
- e) RBCs

Q8. Activation of tissue APCs in the presence of an infectious microbe resulting in responses that are not specific for the infectious pathogen is called?

- a) Primary activation
- b) Secondary activation
- c) Bystander activation
- d) Principal activation
- e) Receptor editing

Q9. Which of the following is a cytokine secretion assay?

- a) ELISA
- b) RIA
- c) CFSE
- d) ELISPOT
- e) PCR

Q10. Which of the following is the mechanism of defect in reticular dysgenesis?

- a) ADA deficiency
- b) Mutation in JAK3
- c) PNP deficiency
- d) Mutation not identified
- e) Mutation in RAG1 or RAG2

Q11. Which one of the following is the theoretical therapy of choice for congenital disorders of lymphocytes?

- a) To replace defective enzymes
- b) To replace defective antibodies
- c) To replace defective gene in self renewing stem cells
- d) To replace defective T cells
- e) To replace defective B cells

Q12. Which of the following is the most often cause of iatrogenic immunodeficiencies?

- a) Infections
- b) Depletion of CD4+ T cells by HIV infection
- c) Malnutrition
- d) Neoplasms
- e) Drug therapies that kill or inactivate lymphocytes

Q13. Which of the following is involved in protecting trophoblast cells from maternal NK cell mediated lysis?

- a) IFN- $\gamma$
- b) HLA-G
- c) HLA-A
- d) HLA-C
- e) IFN- $\alpha$

Q14. Surgical removal of the spleen renders patients to which of the following susceptible infection?

- a) Streptococcus pneumonia
- b) Mycobacterium avium
- c) Toxoplasma cryptosporidium
- d) Cytomegaloviruses
- e) Herpes simplex viruses

Q15. A combination of protease inhibitors with two different reverse transcriptase inhibitors for HIV chemotherapy is commonly referred to as

- a) JK-1
- b) AZT
- c) BCG
- d) HAART
- e) MTT

Q16. Which of the following represents the percentage of people suffering from allergies?

- a) 10%
- b) 20%
- c) 30%
- d) 40%
- e) 50%

Q17. Which of the following is a mechanism of tissue injury and disease for type III hypersensitivity reactions?

- a) Fc receptor mediated recruitment of white blood cells
- b) Opsonization and phagocytosis
- c) Mast cells and their mediators
- d) Macrophage activation
- e) Direct target cell killing

Q18. Which of the following is a type IV mediated hypersensitivity reaction?

- a) Immediate hypersensitivity
- b) Antibody mediated hypersensitivity
- c) Delayed type hypersensitivity
- d) IgE mediated hypersensitivity
- e) IgM mediated hypersensitivity

Q19. Which of the following is an example of a cell or tissue specific antibody mediated disease?

- a) Pemphigus vulgaris
- b) Serum sickness
- c) Polyarteritis nodosa
- d) Post-streptococcal glomerulonephritis
- e) Rheumatoid arthritis

Q20. Which of the following tumor antigens are the most promising candidates for tumor vaccines?

- a) Tumor specific antigens
- b) Tumor associated antigens
- c) Tumor antigens recognized by T cells
- d) Tumor antigens recognized by B cells
- e) Tumor antigens recognized by NK cells

Q21. Which of the following tumor cells are targets for NK cell killing?

- a) Those with increased MHC class I molecules
- b) Those with increased NKG2D molecules
- c) Those with reduced MHC class I molecules
- d) Those with reduced NKG2D molecules
- e) Those with no TCR molecules

Q22. Which of the following is not a mechanism of macrophage mediated killing of tumor cells?

- a) Production of TNF
- b) Production of IL-1
- c) Release of lysosomal enzymes
- d) Use of reactive oxygen species
- e) Use of nitric oxide

Q23. Which of the following cytokine was first characterized as an agent that can kill tumor cells?

- a) IL-10
- b) IFN- $\alpha$
- c) IL-1
- d) TGF- $\beta$
- e) TNF

Q24. CD8+ T cell responses specific for tumor antigens may require cross-presentation by which of the following cell types?

- a) CD4+ T cells
- b) NK cells
- c) Neutrophils
- d) Dendritic cells
- e) NKT cells

Q25. ADCC of tumor cells may be mediated by which of the following cell types?

- a) Macrophages
- b) CD8+ T cells
- c) CD4+ T cells
- d) Mast cells
- e) M cells

Q26. Imparting selective pressures by the immune system resulting in the survival and outgrowth of variant tumor cells with reduced immunogenicity is called?

- a) Immunosurveillance
- b) Tumor escape
- c) Tumor editing
- d) Epitope spreading
- e) Tumor immunity

Q27. Which of the following antibodies are involved in type I hypersensitivity reactions?

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

Q28. Which of the following cell types mediate type I hypersensitivity reactions?

- a) Mast cells
- b) Dendritic cells
- c) Macrophages
- d) Natural killer cells
- e) Natural killer T cells

Q29. Which of the following is a mechanism of disease in goodpasture's syndrome?

- a) Opsonization and phagocytosis of erythrocytes
- b) Opsonization and phagocytosis of platelets
- c) Antibody mediated activation of proteases
- d) Neutrophils degranulation and inflammation
- e) Complement and Fc receptor mediated inflammation

Q30. Which of the following is not a cause of hypersensitivity diseases?

- a) Reactions against microbes
- b) Autoimmune reactions
- c) Reactions against environmental antigens
- d) Inflammatory reactions
- e) Prophylactic reactions

### Section B

Q31. Discuss five reasons that account for non-rejection of the growing fetus in the womb (20 marks)

Q32.

- a) Explain five types of tumor antigens (10 marks)
- b) Describe five mechanisms of tumor editing and escape (10 marks)