



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

(MEDICAL LABORATORY SCIENCE)

HML 306: CLINICAL IMMUNOLOGY

DATE: WEDNESDAY, 28TH MARCH 2012

TIME: 11.00 A.M. – 1.00 P.M.

SECTION A: ANSWER ALL QUESTIONS (5 MARKS EACH)

1. a). The uterus is an immunologically privileged site, Explain. (2 marks)
- b). Describe the various types of grafts (3 marks)
2. What is Type IV hypersensitivity? (5 marks)
- 3 Describe the various problems of transplantation (5 marks)

SECTION B: ANSWER ANY ONE QUESTION (20 MARKS EACH)

- 4 a) Outline the evidence of immune responses to tumours (10 marks)
- b) Describe how ELISA technique can be used to quantify any serum protein of choice (10 marks)
- 5 Classify the various immunodeficiency states (20 marks)

SECTION C: ANSWER ALL QUESTIONS BY CIRCLING THE CORRECT ONE (½ MARK EACH)

1. A positive tuberculin test, with a firm 15 mm diameter dark red firm area of induration on the forearm appears 60 hrs following injection of the PPD. This finding is most likely to be a consequence of which of the following types of hypersensitivity reaction?
 - a. type 1 hypersensitivity
 - b. type 2 hypersensitivity
 - c. type 3 hypersensitivity
 - d. type 4 hypersensitivity
 - e. type 5 hypersensitivity
2. The human immunodeficiency virus interacts with one of the following cell-surface molecules to gain entry into cells of the immune system:
 - ☐ A CD4
 - ☐ B CD19
 - ☐ C CD40 ligand
 - ☐ D CD8
 - ☐ E CD25

3. Primary immunodeficiencies are commoner than secondary causes of immunodeficiency.
- ☐ A This statement is only true for adults.
 - ☐ B This statement is true at all ages.
 - ☐ C This statement is totally untrue for all ages.
 - ☐ D This statement is only true for infants
 - ☐ E This statement is only true for teenagers
4. The most frequently diagnosed form of specific primary immunodeficiency is:
- ☐ A Severe combined immunodeficiency
 - ☐ B X-linked agammaglobulinaemia
 - ☐ C Chronic granulomatous disease
 - ☐ D Selective IgA deficiency
 - ☐ E DiGeorge anomaly
5. Which of the following is most pertinent to healthy individuals with selective IgA deficiency?
- ☐ A All individuals can be considered to be normal without risk of infections.
 - ☐ B They are more likely to develop heart disease than those with normal IgA levels.
 - ☐ C Will always have a high risk of HIV infection
 - ☐ D They have a high risk of a recurrent serious bacterial infection.
 - ☐ E They have a higher risk of developing an organ specific autoimmune disease than the general population.
6. Which one of the following is a cellular co-receptors for HIV:
- ☐ A CD8 antigen
 - ☐ B CD21 antigen
 - ☐ C CD 69 antigen
 - ☐ D CXCR 4 antigen
 - ☐ E FAS ligand
7. Which one of the following findings is the most common indicator in an infant with Severe Combined Immune Deficiency?

- ☐ A Lymphopenia
- ☐ B Severe asthma
- ☐ C Dry skin
- ☐ D Pneumonia
- ☐ E Staphylococcal abscess

8. Systemic anaphylaxis CANNOT be caused by which one of the following:

- ☐ A Wasp venom
- ☐ B ACE inhibitors
- ☐ C Penicillin
- ☐ D Nut ingestion
- ☐ E Latex

9. Which one of the following commonly causes perennial allergic rhinitis?

- ☐ A Tree pollen.
- ☐ B Chlamydia
- ☐ C Grass pollen.
- ☐ D Fungal spores.
- ☐ E Cat fur.

10. Which one of the following statements about autoimmune diseases is not true?

- ☐ A Can cluster within families.
- ☐ B Are often associated with particular HLA alleles.
- ☐ C Are usually mediated by type I hypersensitivity.
- ☐ D May occur in humans or animals with inherited defects in apoptosis.
- ☐ E Are either systemic or organ-specific

11. Which one of the following agents is NOT immunosuppressive?

- ☐ A Levamisole
- ☐ B Corticosteroids

- ☐ C Azathioprine
- ☐ D Cyclosporin
- ☐ E Total lymphoid irradiation

12. Which one of the following sets of antigens is NOT important in relation to successful renal grafting?

- ☐ A MHC class II antigens
- ☐ B Lewis red cell antigens
- ☐ C Sex antigens (products of X and Y chromosomes)
- ☐ D ABO red cell antigens
- ☐ E All are important

13. Which one of the following statements regarding graft-versus-host disease (GVHD) is NOT true?

- ☐ A Occurs in only a minority of patients receiving allogeneic bone marrow transplants.
- ☐ B May occur mildly following bone marrow transplantation between HLA-identical siblings.
- ☐ C May occur following unirradiated blood transfusion in babies with severe combined immune deficiency.
- ☐ D Is preventable by depleting T cells from donor bone marrow.
- ☐ E Clinically involves the skin, liver and intestine.

14. Which one of the following conditions does NOT typically lead to rapidly progressive glomerulonephritis (RPGN)?

- ☐ A Goodpasture's syndrome.
- ☐ B Membranous glomerulonephritis.
- ☐ C Nephritis of Wegener's granulomatosis
- ☐ D SLE
- ☐ E None of the above

15. Which of the following statements regarding specimens to be sent for immunological investigation of a possible myeloma is NOT true?

- ☐ A Heparinized blood
- ☐ B Clotted blood
- ☐ C Sputum
- ☐ D Urine

16. Which one of the following is the quickest method for measuring serum immunoglobulin levels accurately?

- ☐ A Immunoelectrophoresis
- ☐ B Nephelometry
- ☐ C Radioimmunoassay
- ☐ D Serum protein electrophoresis
- ☐ E Radial immunodiffusion

17. Which one of the following is NOT a functional test of neutrophils?

- ☐ A The NBT test
- ☐ B Cell transformation
- ☐ C Bacterial killing
- ☐ D Chemotaxis
- ☐ E Dihydrorhodaminereductionassay

18. Allograft is :

- a. Transplantation between identical twins
- b. Transplantation of monkey heart to a human recipient
- c. Kidney transplant to between husband and wife
- d. A form of transplant in the same individual
- e. None of the above

19. A patient had seafood, and then experienced urticaria, nausea, abdominal pain, chest tightness and dyspnea. His BP was 86/60. what is the possible cause of this problem.

- a. Activation of alternative complement
- b. Ig-A intestinal inflammation
- c. IgE histamine release
- d. glomerulonephritis

- e. thyrotoxicosis

20. Graft versus Host Disease (GVHD)

- a. Particularly a problem in kidney transplant
- b. arises in bone marrow transplantation
- c. is controlled by depletion of donor marrow of mature T cells
- d. Can be overcome by suppressing the host immune system progressively
- e. arises in homologous transplantation

21. Example of Systemic autoimmune disease?

- a. Hashimoto thyroiditis
- b. Grave's disease
- c. SLE
- d. Rheumatoid arthritis
- e. Vitiligo

22. Which protein serum can lyse the gram negative bacteria that has antibodies on their surface.

- a. INF- γ
- b. Complements
- c. Lysozymes
- d. Lactoperoxidase
- e. IL-2

23. IgE molecules

- a. Bind to host cells expressing FcR proteins
- b. Active classical pathway
- c. Confer protection of the fetus
- d. Opsonize bacterial for uptake by phagocyte
- e. Provide mucosal immunity

24. Which one of the following statements about immunoglobulin in fetal and neonatal infants is NOT true?

- ☐ A Maternal IgG is placentally transferred from 32 to 40 weeks of gestation.
- ☐ B IgM is the first Ig to be made in the fetus.
- ☐ C Transfer of maternal IgG across the placenta is an active process.
- ☐ D All maternal IgG has been catabolized in a normal infant by 12- 24 weeks of life.
- ☐ E Breast milk IgA is absorbed by the infant's small intestine for up to 6 months of life

24. The protective effects of breast milk are NOT associated with which one of the following?

- ☐ A IgA antibodies
- ☐ B Lysozyme
- ☐ C Mast cells
- ☐ D CD 4 T cells
- ☐ E Macrophages

25. For antigen presentation to CD4+ T lymphocytes:

- a. antigen is processed via the endogenous pathway
- b. specialised antigen presenting cells are required for the induction of the T cell immune response
- c. Short antigen-derived peptides associate with MHC class II molecules in the endoplasmic reticulum
- d. exogenously added synthetic peptide corresponding to the antigenic epitope can substitute for processed antigen for T cell recognition.
- e. the antigen must be synthesised within the antigen presenting cell in order to be processed and presented by MHC

26. Which of the following is correct regarding hypersensitivity reactions?

- ☐ a) Type I hypersensitivity reactions are also known as delayed-type hypersensitivity.
- ☐ b) Hypersensitivity pneumonitis is due to a combination of type II and type IV hypersensitivity reactions.
- ☐ c) The dominant mode of injury in systemic lupus erythematosus is a type III hypersensitivity reaction.
- ☐ d) Anaphylaxis is a severe form of type IV hypersensitivity.
- ☐ e) There is no Type V hypersensitivity

27. Defective T cell function is characteristic of all Except:

- (a) X-linked agammaglobulinaemia
- (b) di George syndrome
- (c) severe combined immunodeficiency
- (d) infection with HIV
- (e) Lymphocytic leukaemia

28. Which one type of cells is known to be involved in the initial presentation of antigen to T lymphocytes?

- ☐ A Dendritic cells
- ☐ B Plasma cells
- ☐ C Neutrophil polymorphonuclear leucocytes
- ☐ D Erythrocytes
- ☐ E Platelets

29. Which ONE of the following types of cell produce IgE?

- ☐ A Mast cells
- ☐ B Eosinophils
- ☐ C Basophils
- ☐ D T lymphocytes
- ☐ E Plasma cells

30. A helper T lymphocyte is known to recognize which one of the following on a presenting cell?

- ☐ A HLA class I antigen
- ☐ B HLA class III antigen
- ☐ C Processed antigen
- ☐ D CD8 antigen
- ☐ E Surface immunoglobulin
