



KENYATTA UNIVERSITY
UNIVERSITY EXAMINATIONS 2011/2012

**SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
PHARMACY**

HMM 220: MICROBIOLOGY I

DATE: Monday 26th March, 2012

TIME: 8.00 a.m. – 10.00 a.m.

INSTRUCTIONS

Attempt all questions.

Answer all questions in the answer booklet.

1. Which of the following diseases is caused by coagulase negative staphylococci?
 - a. Folliculitis
 - b. Toxic shock syndrome
 - c. Endocarditis
 - d. Osteomyelitis

2. Which of the following molecules is associated with the ability of *Staphylococcus aureus* to evade phagocytosis?
 - a. Protein A
 - b. Enterotoxin
 - c. Beta lactamase
 - d. Hyaluronidase

3. Lancefield groups are associated with
 - a. *Streptococcus* spp
 - b. *Staphylococcus* spp
 - c. *Clostridium* spp
 - d. *Corynebacteria* spp

4. All the following are pneumococcal diseases EXCEPT
 - a. glomerulonephritis
 - b. endocarditis
 - c. meningitis
 - d. otitis media

5. A diffuse rash associated with *Streptococcus pyogenes* infections is a symptom of
 - a. pharyngitis
 - b. necrotizing fascitis
 - c. scarlet fever
 - d. toxic shock syndrome
6. Group B Streptococcus is a special problem for which of the following groups?
 - a. newborns
 - b. young adults
 - c. teenagers
 - d. the elderly
7. The bacterial envelope includes all of the following structures EXCEPT
 - a. capsule
 - b. cell wall
 - c. cell membrane
 - d. endospore
8. When flagella are located around the entire bacterial cell, the arrangement is called
 - a. polar
 - b. random
 - c. bipolar
 - d. peritrichous
9. In what phase of the growth curve is a culture most sensitive to antibiotics?
 - a. exponential phase
 - b. lag phase
 - c. stationary phase
 - d. death phase
10. An antiseptic is used when one needs to remove microbes from
 - a. foods prior to canning
 - b. laboratory benches
 - c. skin prior to injection
 - d. toilet surfaces
11. The initial component that is bound by complement-fixing antibodies is:
 - a. C1q
 - b. C1s
 - c. C3b
 - d. C5a
12. A graft between members of the same species is termed as
 - a. autograft
 - b. isograft
 - c. xenograft
 - d. allograft

13. Which of the following is NOT characteristic of an innate immune response?
- a. inflammation
 - b. increase in blood levels of specific antibodies
 - c. increase in phagocytic cells at the site of infection
 - d. activation of complement
14. Of the following cell types, which one functions in both innate and acquired immune responses and as “professional” antigen presenting cells?
- a. dendritic cells
 - b. CTLs
 - c. T lymphocytes
 - d. B cells
15. IgA
- a. crosses the placenta
 - b. is involved in hay fever
 - c. activates complement via the classical pathway
 - d. is present in milk and saliva
16. IgE
- a. is bound together by J chain
 - b. binds to mast cells through its Fc region
 - c. is present in high concentration in serum
 - d. is only found as a pentamer
17. Both mast cells and basophils
- a. are phagocytic
 - b. circulate in the blood stream
 - c. are found primarily in lymph nodes
 - d. release histamine
18. Cytotoxic T cells generally recognize antigen in association with
- a. class II MHC determinants
 - b. class I MHC determinants
 - c. class III MHC determinants
 - d. HLA-DR determinants
19. The B-cell is the precursor of the
- a. macrophage
 - b. plasma cell
 - c. T lymphocyte
 - d. Neutrophil

20. Which one of the following is NOT an antigen presenting cell?
- B cells
 - Dendritic cells
 - Activated macrophages
 - T cells
21. Humans can be both the intermediate and the definitive host for
- Taenia solium*
 - Echinococcus granulosus*
 - Diphyllobothrium latum*
 - Taenia saginata*
22. The filarial parasite not responsible for lymphatic filariasis is
- Wuchereria bancrofti*
 - Brugia malayi*
 - Brugia timori*
 - Onchocerca volvulus*
23. Which of the following is NOT a cestode?
- Diphyllobothrium latum*
 - Echinococcus granulosus*
 - Taenia saginata*
 - Ancylostoma duodenale*
24. The intermediate host of *Dracunculus medinensis* is
- a crustacean
 - a mosquito
 - a blackfly
 - a water flea
25. Hookworm
- is usually spread by the faeco-oral route
 - is usually diagnosed by microscopy of adhesive tape prints taken from perianal area
 - may block the pancreatic duct causing pancreatitis
 - can cause severe anaemia
26. Subcutaneous nodules are a typical finding in:
- hydatid disease
 - strongyloidiasis
 - onchocerciasis
 - trichinosis
27. Mosquitoes are the vector in which of the following disorders?
- Onchocerciasis
 - Loiasis
 - Ascariasis
 - Bancroftian filariasis

28. Vitamin B₁₂ deficiency anemia may due to infestation with
- hookworm
 - beef tapeworm
 - fish tapeworm
 - dog tapeworm
29. The drug of choice for treating loiasis is
- ivermectin
 - mebendazole
 - levamisole
 - metronidazole
30. Loeffler's syndrome is associated with
- common roundworm
 - threadworm
 - guinea worm
 - hookworm
31. Briefly describe the life cycle of *Ascaris lumbricoides*. (5 marks)
32. State five diagnostic tests for *Strongyloides stercoralis*. (5 marks)
33. Explain five modes of transmission of parasites and give an example in each (5 marks)
34. Describe the "positive selection" process in the development of T lymphocytes (5 marks)
35. Name five cells of innate immune system and state one role for each (5 marks)
36. Explain five roles of plasmids in bacteria. (5 marks)
37. Explain how rheumatic fever is caused by Group A hemolytic streptococcus (5 marks)
38. Explain one biochemical test to differentiate the following organisms in a laboratory: (5 marks)
- Streptococcus pyogenes* and *Staphylococcus aureus*
 - Streptococcus pneumoniae* and *Streptococcus faecalis*
 - Staphylococcus epidermidis* and *Streptococcus agalactiae*
 - Staphylococcus aureus* and *Staphylococcus saprophyticus*
 - Streptococcus pyogenes* and *Streptococcus pneumoniae*
39. Explain the virulence factors produced by *Streptococcus pyogenes*. (10 marks)
40. Describe the clinical manifestation of *Wuchereria bancrofti* infestation (10 marks)
41. Describe Type I Hypersensitivity state. (10 marks)
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