

MID-TERM EXAMINATION

Select the best answer for the multiple choice questions. There are 60 questions and 9 pages on the examination. Each question will count one point. Notify the instructor if your examination does not have 9 pages. Clearly indicate on the scan form the one best answer to each question among the answers provided. Be sure that you have selected your choice correctly on the scan form. Be sure that you have entered your name and identification number on the scan form and filled out the columns for the letters of your name **AND NUMBERS OF YOUR IDENTIFICATION NUMBER** correctly (see front and back). Use a #2 pencil and fill all circles completely.

1. The incidence of HIV is highest in which of the following areas?
 - a. North America
 - b. South America
 - c. **Sub-Saharan Africa**
 - d. Southeast Asia
 - e. Australia

2. The “reporting fraction” refers to:
 - a. The proportion of person infected with HIV
 - b. **The proportion of HIV-infected persons who are reported**
 - c. The proportion of HIV-infected persons who are reported to have clinical AIDS
 - d. The proportion of AIDS patients who have been reported have died
 - e. None of the above

3. The highest proportion of individuals globally who are HIV-infected are:
 - a. <15 years old
 - b. **15-24 years old**
 - c. 25-29 years old
 - d. 30-34 years old
 - e. 35-39 years old

4. The estimated number of individuals infected with HIV each year globally from 2000-2007 has:
 - a. Increased sharply
 - b. Increased gradually
 - c. Declined sharply
 - d. **Declined gradually**
 - e. Remained the same

5. Over the last ten years, the proportion of HIV-infected persons who are women has:
 - a. **Increased**
 - b. Decreased
 - c. Remained about the same

6. Which of the following regions has the highest proportion of HIV-infected individuals who are women?
 - a. North America
 - b. South America
 - c. **Sub-Saharan Africa**
 - d. Southeast Asia
 - e. Australia

7. What proportion of new HIV infections are occurring in low- and middle-income countries?
 - a. 10%
 - b. 25%
 - c. 50%
 - d. 75%
 - e. **>90%**

8. Which countries experienced the highest proportional increase in HIV infections between 1994 and 1997?
 - a. **China, India, Indonesia and Russia**
 - b. United States, Brazil and Thailand
 - c. Thailand, Cambodia and Malayasia
 - d. Kenya, South Africa, Botswana and Zimbabwe

9. Globally, which group accounts for the highest proportion of HIV-infected individuals?
 - a. Sex workers
 - b. **Heterosexuals**
 - c. Men-who-have-sex-with-men
 - d. Injection drug users
 - e. Plasma/blood donors

10. In the United States, which group accounts for the highest proportion of HIV-infected individuals?
 - a. Sex workers
 - b. Heterosexuals
 - c. **Men-who-have-sex-with-men**
 - d. Injection drug users
 - e. Plasma/blood donors

11. In the United States, which of the following groups has the highest prevalence of HIV/AIDS?
 - a. European-Americans
 - b. **African-Americans**
 - c. Hispanic-Americans
 - d. Asian-Americans
 - e. Native Americans

12. The steepest decline in new AIDS diagnoses occurred from:
- 1985-89
 - 1990-94
 - 1995-99**
 - 2000-04
 - 2004-8
13. The region of the United States with the highest prevalence of HIV-infected individuals was:
- The west
 - The southeast**
 - The southwest
 - The northeast
 - The northwest
14. The highest number of HIV/AIDS cases in California are in:
- The San Francisco Bay area
 - The Central Valley
 - The Salinas Valley
 - Northern California
 - Southern California**
15. HIV is one of the most infectious agents currently prevalent globally:
- True
 - False**
16. The single most important determinant of transmission from an HIV-infected individual to a susceptible individual is;
- CD-4 level in the infected individual
 - CD-8 level in the susceptible individual
 - Viral load in the infected individual**
 - Circumcision status of the infected individual
 - Circumcision status of the susceptible individual
17. Which of the following activities is associated with the highest risk of HIV infection?
- Being the receptive partner in anal intercourse**
 - Being the insertive partner in anal intercourse
 - Being the female partner in vaginal intercourse
 - Being the male partner in vaginal intercourse
 - Being the receptive partner in oral genital intercourse
18. The single most important determinant of a successful nationwide response to the HIV epidemic is:
- Proportion citizens 15-24 years
 - Political commitment of national leaders**
 - Stigma
 - Role of women
 - Prevalence of sexually transmitted infections

19. In the Centers for Disease Control, classification of HIV disease and AIDS diagnoses fall into which group?
- Group I
 - Group II
 - Group III
 - Group IV**
20. Which of the following proteins/glycoproteins is used most frequently as a measure of the viral load when PCR is not available?
- p24**
 - gp 120
 - gp41
 - p51
 - The fusion domain
21. Which of the following proteins/glycoproteins is responsible for the initial attachment of HIV to the target cell?
- p24
 - gp 120**
 - gp41
 - p51
 - The fusion domain
22. The viral envelope and the CD4 cell wall are composed of the same material:
- True**
 - False
23. Reverse transcriptase refers to:
- A single enzyme
 - Two enzymes**
 - Three enzymes
 - Four enzymes
 - A structural protein of HIV
24. DNA polymerase needs to make how many DNA copies of the viral RNA?
- One
 - Two**
 - Three
 - Four
 - Five
25. What is the function of messenger RNA?
- To make structural proteins for the new HIV virions**
 - To make genomic material for the new HIV virions
 - To block the action of viral proteases
 - To block the action of cellular proteases
 - To abort further replication of HIV

26. The rapid increase in HIV replication is promoted by:
- IgA antibodies
 - IgM antibodies
 - IgG antibodies
 - Cytotoxic CD8 cells**
 - B cells
27. Which cell type(s) can display a CD4 receptor?
- CD3 cells
 - CD4 cells
 - CD8 cells
 - CD4, CD8 and CD3 cells**
 - B cells
28. The “set point” refers to:
- The level of CD4 cells at the diagnosis of AIDS
 - The viral level established after the initial immune response
 - The viral level that predicts the rate of progression of HIV disease
 - The level of CD8 cells after the initial immune response
 - b. and c. above**
29. The human immune response is immediately destroyed at the time of HIV infection:
- True
 - False**
30. The most effective component of the immune system in combating HIV is:
- CD8 cytotoxic cells**
 - CD4 helper cells
 - B cells
 - Lymphocytes
 - Macrophages
31. Translocation across the gut of normal gut pathogens caused by HIV results in:
- Destruction of the CD8 cells by the gut pathogens
 - Destruction of the CD4 cells by the gut pathogens
 - Persistent activation of the CD4 cells**
 - Destruction of the B cells by the gut pathogens
 - Enhancement of the immune response
32. Pooling of ten specimens for testing is cost-effective when the prevalence of an infection is:
- 1%**
 - 11%
 - 21%
 - 31%
 - Regardless of the prevalence

33. The main objective of pre-test counseling should be to:
- a. **Encourage testing and learning one's test result**
 - b. Discouraging persons who are reluctant
 - c. Tell the prospective testee all the possible negative outcomes of testing
 - d. To make the prospective testee comfortable
34. The appearance of a few AIDS cases in a population is an early indicator of an impending epidemic:
- a. True
 - b. **False**
35. Until the majority of HIV-infected persons are tested, it is unlikely that the HIV epidemic will be controlled:
- a. **True**
 - b. False
36. Which component of the human immune system responds first to a foreign protein?
- a. Acquired immunity
 - b. **Innate immunity**
 - c. B cells
 - d. CD8 cells
 - e. CD3 cells
37. Which of the following is not a cellular component of the innate immune response?
- a. NK cells
 - b. **Cytotoxic CD8 cells**
 - c. Dendritic cells
 - d. Macrophages
 - e. Granulocytes
38. Which antigen receptors are not cell-bound and circulate throughout the blood system?
- a. **Antibodies**
 - b. p24
 - c. gp120
 - d. CD4 receptors
 - e. CD8 receptors
39. Cells communicate with each other through secretion of:
- a. Antibodies
 - b. **Cytokines and chemokines**
 - c. Granulocytes
 - d. Macrophages and antigen presenting cells
 - e. All of the above
40. The receptors expressed on each cell of the cellular immune system are specific for a specific antigen:
- a. **True**
 - b. False

41. Alleles of the HLA of MHC allow for immune responses to a diverse and broad range of antigens:
a. True
b. False
42. Cytotoxic T cells (CTL) fail to eliminate HIV-1 because of:
a. B cell failure
b. Rapid viral mutations
c. Sub-optimal CTL responses
d. CTL exhaustion
e. b., c., and d. above
43. The epitope-specific CTL response is usually very effective:
a. True
b. False
44. Which of the following is responsible for fusion of the viral envelope to the CD4 cell wall?
a. gp41
b. gp 120
c. p24
d. p53
e. POL
45. A T cell requires how many stimulants to be activated to proliferate?
a. One
b. Two
c. Three
d. Four
e. Five
46. To activate a T cell requires:
a. Antibodies
b. Antigen-presenting cells
c. A foreign antigen
d. All of the above
e. b. and c. above
47. Which viral genes are required for replication of HIV-1?
a. *tat*
b. *rev*
c. *vpu*
d. All of the above
e. a. and b. above

48. CD4 receptors are found on:
- CD4 cells
 - Macrophages
 - CD8 cells
 - All of the above**
 - a. and b. above
49. The majority of viral replication occurs in:
- Peripheral blood
 - Lymphoid tissue**
 - Thymus
 - Central nervous system
 - Mucosal tissue
50. Mutation of the HIV viron causes:
- Development of resistance to antiretroviral drugs
 - Escape from the immune response
 - Altered tropism of CCR5 to CXCR4
 - All of the above**
 - a. and c. above
51. Which types of vaccine are NOT recommended for HIV-infected patients?
- Killed vaccines
 - Live vaccines**
 - Hepatitis vaccines
 - Influenza vaccine
 - Pneumococcal vaccine
52. Kaposi's sarcoma is a common complication of HIV infection in which of the following areas?
- North America
 - Africa**
 - Asia
 - Europe
 - South America
53. Immune reconstitution disease (IRIS) occurs:
- With long-term HAART therapy
 - Within several weeks of stopping HAART
 - Within weeks of instituting HAART**
 - In the absence of HAART and is an indication of the need for HAART
54. Acute retroviral syndrome occurs:
- With long-term HAART therapy
 - Within several weeks of being infected with HIV**
 - Within weeks of instituting HAART
 - In the absence of HAART and is an indication of the need for HAART
 - When CD4 cells begin to drop sharply

55. In treating co-infection with HIV and tuberculosis, it is usually best to initiate treatment for:
- Both diseases concurrently
 - HIV first
 - Tuberculosis first**
56. Fortunately, IRIS affects less than 5% of patients on HAART:
- True
 - False**
57. The leading cause of death from HIV disease is currently:
- AIDS**
 - Non-AIDS malignancies
 - Cardiovascular disease
 - Hepatitis C
 - Iatrogenic causes
58. At what level of CD4 cells is it currently indicated to initiate HAART?
- 100/mm³
 - 225/mm³
 - 350/mm³**
 - 500/mm³
59. The greatest advance in HIV/AIDS therapy has been:
- The development of entry inhibitors
 - The development of integrase inhibitors
 - The development of attachment inhibitors
 - The development of a one pill/once-a-day regimen**
60. Which of the following are complications of HAART?
- Lipodystrophy
 - Lipoatrophy
 - Hepatotoxicity
 - All of the above**
 - a. and c. above