Name: Date: Class: Gold 1

**SCORE: /20**

Syllabus Objectives for Infectious Diseases:

1. Define the term *disease* and explain the difference between an *infectious disease* and non-infectious diseases (limited to sickle cell anemia and lung cancer)
2. Explain how cholera, malaria, TB & HIV/AIDS are transmitted
3. State names and types of causative organism of each of the following diseases: cholera, malaria, TB, HIV/AIDS, smallpox and measles
4. Discuss the factors that need to be considered in the prevention and control of cholera, measles, malaria, TB and HIV/AIDS
5. Discuss the factors that influence the global patterns of distribution of malaria, TB and HIV/AIDS and assess the importance of these diseases worldwide;
6. outline the role of antibiotics in the treatment of bacterial infectious diseases (knowledge of specific antibiotics and their mode of action is not required);
7. **Defining Disease and Causative Organisms**
8. Define the term **disease**:
9. Disease can **infectious** or **non-infectious**. Explain the difference between these two types of disease.
10. Use the table to make a list of **4** infectious diseases and **4** non-infectious diseases.

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| **Infectious Diseases** | **Non-infectious Diseases** |
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1. **Sickle cell anemia** and **lung cancer** are two diseases which are non-infectious. What are the symptoms of these two diseases and how are they caused?
   1. **Sickle cell anemia:**
   2. **Lung cancer:**
2. An infectious disease is caused by a **pathogen**. List the **4** different types of pathogen and give at least **one** example of a disease caused by each one.

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| **Type of pathogen** | **Description** | **Example of disease caused by pathogen** |
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1. **Transmission**
2. What is meant by the term **transmission**? Why is it better to use this term when describing how diseases are spread rather than saying “passed from person to person”?
3. These are the infectious diseases that the syllabus says *you need to know*. Fill in the column for **Causative organism** with the terms **(Virus “V”, Bacterium “B” Protozoan “P”).**

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| **Name of disease** | **Causative organism type** | **Name of pathogen** |
| Smallpox |  | *Variola major* and *Variolia minor* |
| Acquired immune deficiency syndrome (AIDS) |  | *Human immunodeficiency virus* (HIV) |
| Tuberculosis |  | *Mycobacterium tuberculosis* |
| Malaria |  | *Plasmodium falciparum and other Plasmodium sp.* |
| Cholera |  | *Vibrio cholerae* |
| Measles |  | *Morbillivirus* |

1. How are the following diseases transmitted?
2. **HIV/AIDS**
3. **Tuberculosis**
4. **Measles**
5. **Cholera**
6. **Malaria**
7. **Global Distributions**
8. Read this article to find where malaria, tuberculosis and HIV/AIDs are prevalent and highlight these on your World Map on the next page (please use a different color for each). Complete the key.

<http://generalhealthonline.com/2011/11/06/global-distribution-diseases-tb-hivaids-cholera-malaria/>

1. Describe the global distribution of each disease and **explain why** each of these diseases is distributed this way?

* **Malaria**
* **HIV/AIDS**
* **Tuberculosis**

1. Use the WHO Database to find statistics on current numbers of cases of malaria, tuberculosis and HIV/AIDS. How many people died from each of these diseases in 2011?

<http://apps.who.int/ghodata/>

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| **Disease** | **Deaths 2011** |
| HIV/AIDS |  |
| Malaria |  |
| Tuberculosis |  |

1. Finally, for each of the three diseases - malaria, tuberculosis and HIV/AIDS – find out what treatments are available and how it can be prevented.

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| **Disease** | **Treatment** | **Prevention** |
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The following come from the Coursebook Ch. 12.

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| **TUBERCULOSIS** | Pathogen: *Mycobacterium tuberculosis and M. bovis* |
| Methods of transmission | Airborne droplets; via undercooked meats and unpasteurized milk |
| Global distribution | worldwide |
| Incubation\* period | Few weeks or months |
| Site of action of pathogen | Primary infection in lungs; secondary infection in lymph nodes, bones and gut |
| Clinical features | Racking cough, coughing blood, chest pain, shortness of breath, fever, sweating, weight loss |
| Method of diagnosis | Microscopic examination of sputum for bacteria, chest-X ray |
| Annual incidence worldwide (2009): 9.4 million Annual mortality worldwide (2009): 1.7 million | |

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| **MALARIA** | Pathogen: *Plasmodium falciparum, P. vivax, P. ovale, P. malariae* |
| Methods of transmission | Insect vector: female Anopheles mosquito |
| Global distribution | Throughout the tropics and subtropics |
| Incubation\* period | From a week and to a year |
| Site of action of pathogen | Liver, red blood cells, brain |
| Clinical features | Fever, anemia, nausea, headaches, muscle pain, shivering, sweating, enlarge spleen |
| Method of diagnosis | Microscopic examination of blood; dipstick test for malaria antigens |
| Annual (2010) worldwide- 1) incidence: 216 million (81% in Africa), 2) Mortality: 655,000 (90% are in Africa) | |

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| **CHOLERA** | Pathogen: *Vibrio cholerae* |
| Methods of transmission | Food-borne, water-borne |
| Global distribution | Asia, Africa, Latin America |
| Incubation\* period | 1 – 5 days |
| Site of action of pathogen | Wall of small intestine |
| Clinical features | Severe diarrhea, loss of water and salts, dehydration, weakness |
| Method of diagnosis | Microscopic analysis of feces |
| Annual incidence worldwide: 3-5 million Annual mortality worldwide: 100,000-120,000 | |

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| **AIDS** | Pathogen: *Human Immunodeficiency Virus (HIV)* |
| Methods of transmission | In semen& vaginal fluids during intercourse, infected blood or blood products, contaminated hypodermic syringes, mother to fetus across placenta, mother to infant in breast milk |
| Global distribution | Worldwide, especially in Sub-Saharan Africa and South-East Asia |
| Incubation\* period | Initial incubation a few weeks; but 10 years or more before symptoms of AIDS may develop |
| Site of action of pathogen | T helper lymphocytes, macrophages, brain cells |
| Clinical features | HIV infection – flu-like symptoms and then symptomless AIDS – opportunistic infections including pneumonia, TB, and cancer; weight loss, diarrhea, fever, sweating, dementia |
| Method of diagnosis | Blood test from antibodies to HIV |
| Estimated (2010) worldwide number of: 1) people infected with HIV: 34 million, 2) new cases of HIV infection: 2.7 million, 3) deaths from AIDS-related diseases: 30 million(UNAIDS estimate) | |

**\*Incubation:** the phase in the development of an infectious disease between initial infection and the appearance of the first symptoms.

**Incidence:** the # of people who are diagnosed over a certain period of time, usually a year

**Prevalence:** the # of people who have that disease at any one time,  **Mortality:** the death rate from a disease