There are 4 portions of this review – a list of objectives, a table of diseases, sample multiple choice questions, and general questions. Your notes are the most important resource.

Unit 4 Disease and the Immune System

1. What is the “germ theory of disease”?
2. What is the history of disease pre and post 1600?
3. What are some of the methods people used to treat disease that did not work?
4. What do antibiotics do?
5. What do the following terms mean? pathogen, microbe, infectious agent, epidemic, plague?
6. Provide examples diseases transmitted by inhalation, ingestion, body fluids, and vectors
7. Why is diarrhea sometimes a deadly condition? Why do so many people in the world have diarrhea?
8. Why are prions and viruses not considered to be alive?
9. What are differences and similarities between mad cow disease, CJD and Kuru? What is the causative pathogen? What are the symptoms?
10. How does the normal brain prion, prp, compare to the abnormally folded prion? How does a spongiform brain develop?
11. What is a rhinovirus?
12. Why is a new flu vaccine needed each year?
13. How are Herpes viruses transmitted?
14. What are differences between oral and genital herpes, chicken pox and shingles?
15. What is meant by a dormant virus?
16. Why does the United States no longer vaccinate for smallpox even though smallpox can be deadly?
17. What is polio? How is the virus transmitted? What are the symptoms of polio?
18. Why has the WHO (World Health Organization) not been able to eradicate polio?
19. What are differences between a virus and a bacterium?
20. How is Lyme disease related to an insect vector? What type of pathogen causes the disease?
21. What are the symptoms of Lyme disease and how is it treated?
22. How can food borne diseases such as E. coli 0157 and salmonella be prevented? How are they caused?
23. What can you do to use antibiotics appropriately?
24. Where is bacteria normally found in the human body? How do the numbers of bacteria compare to the numbers of human cells
25. Are most bacteria pathogenic?
26. In what way is malaria an insect vector-borne disease? What type of pathogen causes the disease?
27. What are the symptoms of malaria disease? About how many people have malaria?
28. What is a parasite?
29. What are the symptoms of intestinal parasitic diseases?
30. About how many people worldwide are infected with parasitic worms worldwide?
31. What are the organs of the lymphatic system and where are these organs located?
32. What is the difference between specific and nonspecific body defense systems and between self antigens, foreign antigens (non-self), and antibodies?
33. What are some of the non-specific defenses that the body uses to prevent infection?
34. What role do B cells play in the immune system?
35. What are vaccines made from?
36. How does the production of antibodies by B cells to foreign antigens relate to vaccine preparation and B-cell memory?
37. What are some of the diseases that US children are routinely vaccinated for?
38. Why are people not routinely given smallpox or anthrax vaccines?
39. What diseases are being researched for vaccine development?

CONTINUE TO NEXT PAGE
Complete this table for all diseases in Unit 4

<table>
<thead>
<tr>
<th>Disease</th>
<th>Type of pathogen</th>
<th>Transmission</th>
<th>Symptoms</th>
<th>Other notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spongiform encephalopathy</td>
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<td>Smallpox</td>
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<td>Chickenpox</td>
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<td>Oral herpes</td>
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<td>Genital herpes</td>
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<td>Polio</td>
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<tr>
<td>Rhinovirus</td>
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<tr>
<td>Influenza</td>
<td>Virus</td>
<td>Respiratory inhalation</td>
<td>Fever, respiratory illness</td>
<td>Vaccine every year because virus mutates. 40 million deaths in 1920 pandemic.</td>
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<tr>
<td>Lyme disease</td>
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<tr>
<td>Salmonella</td>
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<tr>
<td>Malaria</td>
<td>Protozoa</td>
<td>Mosquito vector</td>
<td>Fatigue, fever, sweat</td>
<td>Protozoa infects red blood cells. 300 million infected. No vaccine. Use insecticide and netting.</td>
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<tr>
<td>Athletes foot</td>
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<tr>
<td>Intestinal worms</td>
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</tbody>
</table>

Sample questions (your notes provide the most comprehensive information for the exam)

1. Although the germ theory of disease was developed a hundred years ago, many doctors still
   a. Used bacteria as a therapy to treat disease
   b. Did not prescribe antibiotics
   c. Failed to wear gloves and masks
   d. Did not know about the microscope

2. Which of the following groups does not contain any human pathogens
   a. Plants
   b. Fungi
   c. Bacteria
   d. Protozoa

3. Which of the following can be transmitted by ingestion?
   a. Anthrax
   b. Salmonella
   c. Lyme disease
   d. Oral herpes
4. Which of the following could be considered a plague today?
   a. The common cold
   b. HIV
   c. Polio
   d. Shingles

5. Which of the following is not related to diarrhea?
   a. Intestinal parasites
   b. Salmonella
   c. Contaminated water
   d. Polio

6. Which one of the following is NOT caused by a virus?
   a. Influenza
   b. Genital herpes
   c. Shingles
   d. Lyme disease

7. Which of the following still infects small number of people in the world?
   a. Polio
   b. Malaria
   c. Smallpox
   d. Rhinovirus

8. The practice of Kuru is associated with cases of:
   a. Mad cow disease
   b. Allergic reaction
   c. Spongiform encephalopathy
   d. Vaccination

9. Which of the following best describes a virus?
   a. Tiny cell
   b. Protein and DNA components
   c. Protein shape changer
   d. Releases eggs in cells

10. Iron lungs were necessary to help children with:
    a. Protozoan diseases
    b. Tetanus, Diphtheria, and Pertussis (DPT)
    c. Advanced chicken pox
    d. Poliomyelitis

11. Which of the following is a prokaryotic cell?
    a. Bacterium that causes Lyme disease
    b. Cell that causes yeast infections
    c. Malarial protozoan
    d. Cell of tapeworm

12. Heating to 160 degrees F could be useful to destroy
    a. Vaccines
    b. Flu virus
    c. E. coli contamination
    d. Prions

13. How many more bacterial cells are on and in our bodies than we have our own human cells?
    a. 2 times as many
    b. 5 times as many
    c. 10 times as many
    d. 100 times as many
14. Malaena was gardening and has bacteria on her hands. It is likely that these bacteria
   a. Will infect the small intestine and cause illness
   b. Will be killed by Malaena’s skin cells
   c. Will cause no harm to Malaena
   d. Will mutate into antibiotic resistant bacteria

15. The pathogen that infects red blood cells is:
   a. The genital herpes virus
   b. The prion
   c. E. coli that comes from contaminated vegetables
   d. The malarial protozoan

16. Which of the following would not contain a large amount of white blood cells?
   a. Skin
   b. Tonsil
   c. Lymph node
   d. Bone marrow

17. Which of the following does not relate to specific immunity?
   a. B cell
   b. Antibody
   c. Skin, tears, sweat, stomach acid
   d. Vaccines

18. Vaccines are not composed of:
   a. A piece of a pathogen
   b. A live pathogen
   c. A dead pathogen
   d. A weakened virus

19. Memory is exhibited by
   a. T cells
   b. Antibodies
   c. The spleen
   d. B cells

20. One way to become immune to polio is to:
   a. Be exposed to people with the disease from an early age
   b. Use leech therapy and/or laxatives
   c. Recover from a case of polio
   d. Become immune to smallpox

21. 60 years of vaccine research has shown that vaccines:
   a. Dramatically reduced the number of people in the world who die from infectious disease
   b. Had no real effect on the numbers of people who suffer from infectious diseases

22. Identify as virus, bacteria, protozoa, or parasite
   • The flu
   • Polio
   • Malaria
   • Lyme disease
   • Pinworm
   • Smallpox
   • Rhinovirus
   • Salmonella
   • HIV
   • Tapeworm
23. Identify a disease for each
   Causes pustules on the skin, could be fatal
   Changes its genetic structure every year
   Infantile paralysis
   Food poisoning
   Spongiform encephalopathy
   Tick vector
   Mosquito vector
   Transmitted by sneezing
   3 herpes viral diseases
   Virus shed in feces
   Virus transmitted by respiratory secretions
   Virus results in pustules
   Associated with mad cow disease
   Virus causes cold sores
   Protozoa infects red blood cells
   Undercooked chicken
   Pandemic in 1920 killed millions
   Iron lung
   Killed by heat (pick 1)

24. What is"
   Penicillin
   Vector
   Germ theory of disease
   Prokaryotic cell
   Eukaryotic cell
   Protozoa
   Infectious
   Prp protein
   Shingles

25. Place in order of increasing complexity
   prion
   parasite
   bacteria
   virus
   protozoa
   H. sapiens