Instructor's Test Bank

Chapter 1: The invisible world

Multiple-choice questions

1. Microbiology is the study of
   a) microorganisms too small to be seen with the naked eye.
   b) only those organisms that cause disease.
   c) cells which can only be seen under a microscope.
   d) processes by which microorganisms produce food.
   e) only bacteria and viruses.
   Answer a)

2. Which of the following statements is TRUE?
   a) All microorganisms cause disease.
   b) Only bacteria and viruses can cause disease in humans.
   c) Only some microorganisms cause infections in humans.
   d) Bacteria that live on the human body never cause disease.
   e) All fungi are harmless.
   Answer c)

3. A microorganism that has a cell wall, a cell membrane and a singular circular chromosome is a
   a) bacterium.
   b) fungus.
   c) protozoan.
   d) yeast.
   e) virus.
   Answer a)

4. Which of the following functions, essential for life on earth, is performed by bacteria?
   a) The direct provision of food for yeasts.
   b) The control of insect plagues.
   c) The decomposition of organic material to recycle nutrients.
   d) The production of hormones and growth factors.
   e) All of the above.
   Answer c)

5. Which of the following statements is TRUE?
   a) All bacteria are beneficial to humans.
   b) All bacteria cause disease in some animal.
   c) Bacteria in the human body always cause disease.
   d) Bacteria in the human body may sometimes cause disease.
   e) All of the above.
   Answer d)

6. The smallest free-living microorganisms are
   a) viruses.
   b) bacteria.
   c) protozoa.

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d) fungi.
e) yeasts.
Answer b)

7. Microorganisms are classified in the following order
a) Phylum, class, species
b) Genus, species, strain
c) Class, strain, species
d) Genus, class, species
e) Species, strain, phylum
Answer b)

8. In the name of the bacterium *Escherichia coli* O157, the 'O157' refers to its
a) family.
b) strain.
c) species.
d) genus.
e) morphology.
Answer b)

9. Procaryotic cells can be distinguished from eucaryotic cells because only the former
a) have a cell wall.
b) lack subcellular organelles.
c) are free-living.
d) reproduce by mitosis.
e) contain mitochondria.
Answer b)

10. Procaryotic cells reproduce by
a) gamete production.
b) meiosis.
c) mitosis.
d) binary fission.
e) spore formation.
Answer d)

11. Which of the following best describes procaryotic cells? They consist of
a) a cell wall, a nucleus containing chromosomes, and cytoplasm.
b) membrane-bound organelles surrounded by a cell wall.
c) a cell membrane surrounding cytoplasm and DNA.
d) a cell wall and a selectively permeable cell membrane.
e) watery cytoplasm containing membranes and ribosomes.
Answer d)

12. The reason why diseases such as plague do not kill as many people today as in the 19th century is
a) there are now antibiotics which can kill the bacteria responsible for the disease.
b) the method of transmission is now known so the spread of the disease can be better controlled.
c) today's standard of hygiene is better.
d) there are now more vaccines available.
e) all of the above.
Answer e)

13. The first person to see cells under a microscope was
    a) Robert Hooke.
    b) Robert Koch.
    c) Anton van Leeuwenhoek.
    d) Louis Pasteur.
    e) Edward Jenner.
    Answer a)

14. 'Spontaneous generation' refers to
    a) the ability of bacteria to reproduce asexually.
    b) the theory that living cells could arise from non-living matter.
    c) the process of binary fission in bacteria.
    d) the growth of microorganisms in the absence of nutrients.
    e) the Darwinian theory of the origin of life.
    Answer b)

15. Ignaz Semmelweis demonstrated the importance of
    a) vaccinating children against childhood diseases.
    b) sterilising surgical equipment.
    c) handwashing by doctors and nurses in hospitals.
    d) disinfecting environmental surfaces with chemicals.
    e) antibiotics for treating infectious diseases.
    Answer c)

16. Louis Pasteur contributed to our understanding of microorganisms by
    a) demonstrating that they are present everywhere in the environment.
    b) demonstrating that they can be destroyed by heat.
    c) developing the process now known as pasteurisation.
    d) disproving the concept of spontaneous generation.
    e) all of the above.
    Answer e)

17. In order to disprove the theory of spontaneous generation, Louis Pasteur
    a) heated nutrient broth in a stoppered flask to show that microorganisms could not grow.
    b) heated nutrient broth in an open flask.
    c) heated nutrient broth in a swan-necked flask so that microorganisms could not enter.
    d) excluded oxygen from the flask.
    e) filtered the nutrient broth in the flask before heating.
    Answer c)

18. The first chemical to be widely used as a disinfectant in surgery was
    a) Dettol.
    b) carbolic acid.
    c) chlorine.
    d) iodine.
    e) none of the above.
    Answer b)

19. The microbiologist credited with proposing the germ theory of disease was
    a) Robert Koch.
    b) Ignaz Semmelweis.
    c) Joseph Lister.

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d) Frank Macfarlane Burnet.
e) Louis Pasteur.
Answer a)

20. The 'germ theory of disease'
a) states that only germs cause disease.
b) states that each infectious disease is caused by a particular microorganism.
c) applies to viral diseases but not to bacterial infections.
d) is used to confirm the cause of an infectious disease.
e) all of the above.
Answer b)

21. In the laboratory, bacteria are often grown on a nutrient medium solidified with agar. The scientist who developed this method was
a) Louis Pasteur.
b) Alexander Fleming.
c) Edward Jenner.
d) Robert Koch.
e) Howard Florey.
Answer d)

22. The first viral disease to be shown to be transmitted by an insect was
a) encephalitis.
b) malaria.
c) yellow fever.
d) plague.
e) dengue fever.
Answer c)

23. The first chemotherapeutic agent used to treat infections was
a) salvarsan to treat syphilis.
b) penicillin to treat bacterial infections.
c) sulfa drugs.
d) smallpox vaccine.
e) aspirin.
Answer a)

24. Edward Jenner was the first person to develop a method to protect against
a) tuberculosis.
b) anthrax.
c) cholera.
d) smallpox.
e) typhoid fever.
Answer d)

25. A method used to destroy harmful organisms in food by heating to $56^{O}C$ is called
a) sterilisation.
b) sanitisation.
c) purification.
d) pasteurisation.
e) preservation.
Answer d)

26. The Australian scientist who played an important role in the development of penicillin as a therapeutic drug was
    a) Howard Florey.
    b) Alexander Fleming.
    c) Frank Macfarlane Burnet.
    d) Ernst Chain.
    e) Peter Doherty.
    Answer a)

27. It is estimated that the 1917–18 influenza pandemic was responsible for the deaths of
    a) almost 1 million people.
    b) 6 million people.
    c) 10 million people.
    d) at least 25 million people.
    e) none of the above.
    Answer d)

28. The infectious disease which is considered to be the greatest single cause of death in the world today is
    a) malaria.
    b) AIDS.
    c) tuberculosis.
    d) cholera.
    e) plague.
    Answer c)

29. Malaria continues to be a major problem throughout the world because
    a) mosquito control programs are not always successful.
    b) the parasite that causes malaria is developing resistance to antibiotics.
    c) there is no effective vaccine for this disease.
    d) poorer countries often have inadequate public health measures.
    e) all of the above.
    Answer e)

30. Vaccination has resulted in the eradication of which disease from the world?
    a) Polio.
    b) Mumps.
    c) Whooping cough.
    d) Measles.
    e) Smallpox.
    Answer e)

31. The emergence of new infectious agents can result from
    a) their development in an animal host.
    b) new combinations of genes from different microbes.
    c) encroachment of humans into native forests.
    d) over-use and misuse of antibiotics.
    e) all of the above.
    Answer e)

32. The outbreak of SARS in 2003 is an example of
    a) the recurrence of an old disease.

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b) an atypical pneumonia caused by a previously unidentified bacterium.
c) a new disease caused by a previously unidentified virus.
d) a new viral disease that is spread by insects.
e) the need to restrict international travel.
Answer c)

33. The rapid spread of the SARS virus around the world in 2003 was mostly due to
a) resistance of the virus to antibiotics.
b) continued mutation of the virus during the pandemic.
c) human international travel.
d) transmission of the virus by multiple mosquito species.
e) all of the above played a part.
Answer c)

34. The human immunodeficiency virus
a) has been present in the world for over a century.
b) has been largely controlled throughout the world.
c) only transmitted amongst men who have sex with men.
d) is a viral disease that is now mainly spread by insects.
e) destroys cells that are an integral part of the body's immune system.
Answer e)

35. Australia is free from some infectious diseases found in other parts of the world because
a) Australia has strict quarantine regulations.
b) the intermediate hosts for some diseases are not present in Australia.
c) vaccinations are readily available in Australia.
d) it is geographically isolated.
e) all of the above.
Answer e)

36. The introduction of vaccination programs has led to
a) worldwide control of tuberculosis.
b) the worldwide eradication of polio and smallpox.
c) the eradication of deaths due to 'childhood diseases'.
d) a reduction in the incidence of birth defects due to rubella.
e) all of the above.
Answer d)

37. The infectious agent responsible for mad cow disease is a
a) virus.
b) prion.
c) bacterium.
d) fungus.
e) protozoan.
Answer b)

38. Which of the following would NOT be considered a significant reason for the emergence of new infectious diseases?
a) Environmental changes.
b) Viral mutation.
c) Lack of new antimicrobial drugs.

d) Changes in agricultural practices and expanding land use.
e) Increased contact of humans with animals.
Answer c)

39. Global warming is not likely to affect the incidence of
a) malaria.
b) dengue fever.
c) Ross River fever.
d) tuberculosis.
e) yellow fever.
Answer d)

40. Antibiotic resistance
a) has increased with over-use of antibiotics.
b) only occurs where antibiotics are sold without prescription.
c) is only a minor problem when vaccines are available.
d) leads to new species of bacteria arising.
e) all of the above.
Answer a)