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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.

- 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. Prokaryotic cells can be distinguished from eukaryotic 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. Prokaryotic 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 prokaryotic 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
- Robert Hooke.
 - Robert Koch.
 - Anton van Leeuwenhoek.
 - Louis Pasteur.
 - Edward Jenner.
- Answer a)
14. 'Spontaneous generation' refers to
- the ability of bacteria to reproduce asexually.
 - the theory that living cells could arise from non-living matter.
 - the process of binary fission in bacteria.
 - the growth of microorganisms in the absence of nutrients.
 - the Darwinian theory of the origin of life.
- Answer b)
15. Ignaz Semmelweis demonstrated the importance of
- vaccinating children against childhood diseases.
 - sterilising surgical equipment.
 - handwashing by doctors and nurses in hospitals.
 - disinfecting environmental surfaces with chemicals.
 - antibiotics for treating infectious diseases.
- Answer c)
16. Louis Pasteur contributed to our understanding of microorganisms by
- demonstrating that they are present everywhere in the environment.
 - demonstrating that they can be destroyed by heat.
 - developing the process now known as pasteurisation.
 - disproving the concept of spontaneous generation.
 - all of the above.
- Answer e)
17. In order to disprove the theory of spontaneous generation, Louis Pasteur
- heated nutrient broth in a stoppered flask to show that microorganisms could not grow.
 - heated nutrient broth in an open flask.
 - heated nutrient broth in a swan-necked flask so that microorganisms could not enter.
 - excluded oxygen from the flask.
 - 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
- Dettol.
 - carbolic acid.
 - chlorine.
 - iodine.
 - none of the above.
- Answer b)
19. The microbiologist credited with proposing the germ theory of disease was
- Robert Koch.
 - Ignaz Semmelweis.
 - Joseph Lister.

- 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°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.

- 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)