Student name:\_\_\_\_\_\_\_\_\_\_

**TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.  
1)** Spontaneous generation refers to the idea that organisms came from other organisms.

⊚ true  
 ⊚ false

**2)** The human body only contains bacteria during illness.

⊚ true  
 ⊚ false

**3)** Bacteria and eukarya both contain membrane-bound organelles.

⊚ true  
 ⊚ false

**4)** The scientific name of an organism indicates its domain.

⊚ true  
 ⊚ false

**5)** Viroids are naked (lacking a protein shell) pieces of RNA that infect plants.

⊚ true  
 ⊚ false

**6)** Viruses simultaneously contain DNA, RNA, and protein.

⊚ true  
 ⊚ false

**7)** Viruses, viroids, and prions are obligate intracellular agents.

⊚ true  
 ⊚ false

**8)** Viruses and bacteria are both unicellular.

⊚ true  
 ⊚ false

**9)** An organism is categorized in a domain according to its cell size.

⊚ true  
 ⊚ false

**10)** Archaea are very similar to bacteria and have rigid cell walls made of peptidoglycan.

⊚ true  
 ⊚ false

**11)** *Thiomargarita* *namibiensis* cannot be a eukaryote because it is only 1 mm in width.

⊚ true  
 ⊚ false

**MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.  
12)** The scientist usually credited with seeing the first microorganisms, which he called "animalcules", was \_\_\_\_\_\_.

A) Redi   
 B) van Leeuwenhoek  
 C) Pasteur  
 D) Tyndall  
 E) Lister

**13)** The word "animalcule" was first used by \_\_\_\_\_\_.

A) Pasteur   
 B) Redi  
 C) van Leeuwenhoek  
 D) Tyndall  
 E) Hooke

**14)** The idea of spontaneous generation postulated that

A) organisms could evolve into the next generation of organisms.   
 B) organisms could spontaneously turn into other types of organisms.  
 C) living organisms could spontaneously arise from non-living material.  
 D) living organisms could spontaneously arise from other living organisms.  
 E) living organisms must contain at least ten cells.

**15)** Which of these scientists were involved in investigating the idea of spontaneous generation?

A) Redi and van Leeuwenhoek   
 B) Redi and Pasteur  
 C) van Leeuwenhoek and Pasteur  
 D) Pasteur and Escherich  
 E) Escherich and Redi

**16)** The work of Tyndall and Cohn

A) supported the idea of spontaneous generation rather than the idea of biogenesis.   
 B) explained why some spontaneous generation investigators got different results from those of Pasteur.  
 C) showed that all microbes caused spontaneous disease if they enter the human body.  
 D) allowed scientists to see microorganisms (called "animalcules") using a simple microscope.  
 E) showed that boiling fails to kill vegetative bacteria, leading to biogenesis.

**17)** The structures present in the hay infusions used in experiments on spontaneous generation that made them difficult to sterilize are \_\_\_\_\_.

A) chloroplasts   
 B) endospores  
 C) organelles  
 D) toxins  
 E) nuclei

**18)** The contradictory results obtained by different scientists apparently doing the same experiments in investigating spontaneous generation

A) show that doing experiments once should be enough to prove something.   
 B) show the importance of exactly duplicating experimental conditions.  
 C) led to further experiments that ultimately proved spontaneous generation.  
 D) could not be explained by anyone involved in the work.  
 E) led to the development and production of swan-necked flasks.

**19)** If Pasteur had done his experiments investigating spontaneous generation in a horse stable,

A) the results would probably have supported the idea of spontaneous generation.   
 B) the results would probably not have supported the idea of spontaneous generation.  
 C) the results would probably been the same as those obtained in a laboratory.  
 D) the results would probablyhave supported the idea of spontaneous biogenesis.  
 E) it would probably have taken several years to obtain any results.

**20)** Cellulose is a major component of plants and is only directly digested by

A) carnivores.   
 B) termites.  
 C) herbivores.  
 D) microorganisms.  
 E) birds.

**21)** Plants are dependent on microorganisms for

A) providing oxygen in a usable form.   
 B) providing water and carbon dioxide.  
 C) changing atmospheric nitrogen to a usable form.  
 D) providing simplecarbohydrates in a usable form.  
 E) providing simple and complex proteins.

**22)** Microorganisms are useful for all of the following EXCEPT

A) causing disease.   
 B) curing/treating disease.  
 C) preparing food.  
 D) cleaning up pollutants.  
 E) scientific research.

**23)** Bacteria have been used to help produce or modify all of the following food products EXCEPT

A) cheeses.   
 B) beer and wine.  
 C) pickled products.  
 D) bread.  
 E) peanuts.

**24)** Microorganisms areinvolved in all of the following EXCEPT

A) production of medicinal products.   
 B) food production.  
 C) pollution cleanup.  
 D) converting nitrogen to a form useful to plants.  
 E) There are no exceptions here. There are microorganisms that participate in each of these activities.

**25)** Bioremediation refers to

A) rehabilitating wayward pathogenic bacteria.   
 B) using bacteria to clean up environmental pollutants.  
 C) development of new vaccines.  
 D) monitoring newly discovered disease organisms.  
 E) destroying organisms causing infectious diseases.

**26)** Which of the following about the Golden Age of Medical Microbiology is FALSE?

A) It started with the development of the first microscopes.   
 B) It occurred during the late 1800s to the early 1900s.  
 C) It is a time when the knowledge of bacteria and work with them expanded.  
 D) It was the time when people realized that diseases could be caused by invisible agents.  
 E) It was a time when several major advances were made in microbiology.

**27)** Which of the following statements about newly emerging or reemerging diseases is FALSE?

A) They may be caused by changing lifestyles.   
 B) Examples include hepatitis C, Ebola disease and COVID-19.  
 C) They may result from a breakdown in sanitation and social order.  
 D) They are all caused by drug-resistant pathogens.  
 E) They may result when microbes evolve and develop new characteristics.

**28)** Lyme disease is an example of a disease that is due to

A) increased interaction between humans and tick-carrying animals.   
 B) failure to effectively vaccinate children.  
 C) a mutation in the human genome.  
 D) climate change leading to a significantly greater mosquito population.  
 E) an increase in the number of people travelling to Asia and Africa.

**29)** The outbreak of measles within the last few years is due to

A) mutation of the measles virus.   
 B) change in the environment and climate.  
 C) a decline in vaccination of children in the previous years.  
 D) increase in sensitivity of detection techniques.  
 E) emergence of novel measles viruses.

**30)** Which of the statements regarding smallpox is TRUE?

A) Smallpox has been eliminated as a naturally occurring infection in human beings through vaccination.   
 B) Smallpox still occasionally occurs in developing countries though failure to vaccinate everyone.  
 C) Smallpox outbreaks sometimes occur in chimpanzee populations but seldom kills the animals.  
 D) Smallpox outbreaks sometimes occur in chimpanzee populations and kills all the animals affected.  
 E) Smallpox continues to be a common, naturally occurring infection in human beings.

**31)** Smallpox

A) has occurred in a few countries since 1977.   
 B) has little potential as a weapon of bioterrorism.  
 C) has not occurredanywhere in the word since 1977.  
 D) very seldom kills people, but does scar them.  
 E) is an emerging infectious disease.

**32)** Ulcers, previously thought to be caused by stress, are in fact often caused by

A) a bacterial infection.   
 B) an insufficient diet.  
 C) a genetic mutation.  
 D) a fungal pathogen.  
 E) a viral infection.

**33)** Bacteria are useful to study because

A) they produce protein in a simpler manner than more complex organisms.   
 B) they have the same fundamental metabolic and genetic properties as higher organisms.   
 C) they produce energy in a simpler manner than more complex organisms.  
 D) they both synthesize and are resistant to all known antibiotics.  
 E) they produce peptidoglycan in a simpler manner than more complex organisms.

**34)** Which of the following regarding normal microbiota is TRUE?

A) Normal microbiota are only found in the lungs or digestive tract.   
 B) Normal microbiota protect us from disease by competing with pathogenicbacteria.  
 C) Normal microbiota are only found on small select parts of the human body.  
 D) Normal microbiota typically cause disease when growing in or on our bodies.  
 E) Normal microbiota play little or no role in the general health of humans.

**35)** Bacteria are present on the body

A) only during disease-causing infections.   
 B) at all times.  
 C) only in certain areas.  
 D) only after intense exercise.  
 E) only after using public transport.

**36)** Bacteria are good research models because they

A) vary in size from microscopic to macroscopic.   
 B) share manyproperties with more complex organisms.  
 C) can be assembled into complex multicellular organisms.  
 D) have similarly complicated growth requirements.  
 E) develop the same diseases as humans and animals.

**37)** Select the FALSE statement regarding bacteria.

A) They are usually rod, sphere, or spiral in shape.   
 B) They reproduce by binary fission.  
 C) They contain a peptidoglycan cell wall.  
 D) They are found as single cells.  
 E) They are never photosynthetic.

**38)** Which is usually NOT true of archaea?

A) They move using flagella.   
 B) They reproduce by mitosis.  
 C) They contain rigid cell walls.  
 D) They are found as single cells.  
 E) They are prokaryotes.

**39)** All of the statements regarding archaea are true EXCEPT

A) they contain peptidoglycan in their cell walls.   
 B) they reproduce by binary fission.  
 C) they contain a rigid cell wall.  
 D) they are found as single cells.  
 E) they often grow in extreme environments.

**40)** An extreme environment in which archaea have been found is

A) lakes and oceans.   
 B) boiling hot springs.  
 C) marshes and swamps.  
 D) refrigerators.  
 E) animal digestive tracts.

**41)** The cell types that lack a membrane-bound nucleus and have rigid cell walls of peptidoglycan are

A) eukaryotes.   
 B) fungi.  
 C) bacteria.  
 D) archaea.  
 E) protozoa.

**42)** The prokaryotic domain includes

A) bacteria AND fungi.   
 B) archaea AND viruses.  
 C) fungi AND bacteria.  
 D) bacteria, archaea, AND fungi.  
 E) bacteria AND archaea.

**43)** Select the TRUE statement(s) regardingeukaryotes.

A) Eukaryotes are all multicellular organisms AND have a membrane around the DNA.   
 B) Eukaryotes have a more complex internal structure than archaea or bacteria.  
 C) Eukaryotes have a simpler internal structure than archaea or bacteria AND have a membrane around the DNA.  
 D) Eukaryotes have a membrane around the DNA.  
 E) Eukaryotes have a more complex internal structure than archaea or bacteria AND have a membrane around the DNA.

**44)** Which group(s) below contain single-celled and multicellular organisms?

A) Algae AND bacteria   
 B) Fungi AND archaea  
 C) Protozoa AND bacteria  
 D) Algae AND fungi  
 E) Fungi AND protozoa

**45)** All living organisms

A) may be classified in four domains.   
 B) may be classified in three domains.  
 C) probably do not have a common ancestor.  
 D) have never shared genes between domains.  
 E) are capable of causing disease.

**46)** The system by which organisms are named is referred to as

A) systematics.   
 B) naming.  
 C) nomenclature.  
 D) binomialism.  
 E) bioinformatics.

**47)** The scientific name of an organism includes its

A) family and genus.   
 B) first name and last name.  
 C) genus and species.  
 D) domain and genus.  
 E) domain and species.

**48)** Which are the correctly written scientific name?

A) *Staphylococcus aureus*   
 B) *Staphylococcus a.*  
 C) *St. aureus*  
 D) *Staph*

**49)** Which of these applies to the term strain?

A) *E*. *coli* 0157:H7   
 B) *E*. *coli*  
 C) Minor variation of a species  
 D) Major variation of a species  
 E) *E*. *coli* 0157:H7 AND minor variation of a species

**50)** Select the statement that is TRUE regarding viroids.

A) They are naked (lacking a protein shell) pieces of RNA.   
 B) They are naked (lacking a protein shell) pieces of DNA.  
 C) They are known to cause neurodegenerative diseases in animals.  
 D) They are composed of protein encasing a DNA genome.  
 E) They are composed of both RNA and DNA within a lipid coat.

**51)** Outside of a host cell, viruses are

A) carrying out a few biochemical reactions.   
 B) synthesizing proteins necessary for entry into the host.  
 C) inert, and not capable of replication.  
 D) constructing a membrane known as an envelope.  
 E) capable of a few replication cycles.

**52)** Viruses may only be grown

A) in sterile growth media.   
 B) in living cells.  
 C) at body temperature.  
 D) in darkness.  
 E) in liquid broths.

**53)** Viruses are in the domain(s)

A) viridae.   
 B) eukarya.  
 C) archaeaAND bacteria.  
 D) bacteria AND viridae.  
 E) None of the answer choices is correct.

**54)** Which if the following is TRUE regarding viruses?

A) They are obligate intracellular parasites.   
 B) They are single-celled organisms.  
 C) They are composed of only proteins.  
 D) They belong tothe domain *Archaea*.  
 E) They containonly of DNA or RNA.

**55)** What do viruses, viroids, and prions all have in common?

A) They contain only RNA and protein.   
 B) They are acellular agents of disease.  
 C) They contain only DNA or protein.  
 D) They infect only animals.  
 E) They cause neurodegenerative diseases.

**56)** Viruses and viroids are

A) capable of independent reproduction.   
 B) obligate intracellular parasites.  
 C) members of the domain *Bacteria*.  
 D) larger than most bacteria in size.  
 E) agents that cause disease in animals.

**57)** Which is TRUE about prions?

A) They are only composed of RNA.   
 B) They are only composed of DNA.  
 C) They are only composed of protein.  
 D) They cause diseases in plants.  
 E) They are only composed of RNA and DNA.

**58)** A new organism was found that was unicellular and 1 cm long. The "large" size of this organism alone would

A) mean that it couldnot be a bacterium.   
 B) mean that it must be a protozoan.  
 C) not be useful for identifying it.  
 D) mean that it belongs in the domain *Eukarya*.  
 E) suggest that it is a virus.

**59)** Although it is said that the twentieth century was the Age of Physics, it is predicted that the twenty-first century will be the age of

A) chemistry.   
 B) computers.  
 C) microbial biodiversity.  
 D) mathematics.  
 E) psychology.

**60)** HIV/AIDS can be categorized as a new or emerging infectious disease. By putting it into this category, we areindicating that

A) this infection hasn't been observed in the human population prior to recent (within the last 50 years) outbreaks.   
 B) this disease hasbeen in susceptible populations for centuries, but has only recently achievedinfection levels that became detectable.  
 C) the infectiousagent is still evolving and changing, unlike with older, moreestablisheddiseases such as plague or polio.  
 D) the disease hasalways been in susceptible populations and causing disease, but we lacked thetechnology to detect it.  
 E) this infection hasn't been observed in the human population prior to recent (within the last 5 years) outbreaks.

**61)** An illness outbreak occurs in New York City birds in the late 1990s. After an investigation, the Centers for Disease Control (CDC) determine that the agent causing theis the West Nile virus. Outbreaks of this illness have been observed in several other countries in Asia and the Middle East across the last 50 years, but not in the United States. With this information, what would be the best categorization of this infectious agent/disease?

A) This isa reemerging infection. It is been around for a long time, and it is reappearing in a susceptible population again.   
 B) This isa nosocomial (hospital-acquired)infection. It is transmitted from animals to human beings in urban environments.  
 C) This is an emerging infection. It hasn't been around that long, and it has made a jump across continents into a new susceptible population.  
 D) This is an unimportant infection thatnot a concern to human beings because it occurs in birds, so there is no need to classify it.  
 E) This is a chronic infection. It has been around for many years, and it has made a jump across continents into a new susceptible population.

**62)** Why are we concerned at all with monitoring emerging/reemerging diseases?

A) These representgrowing threats to human health that will require new scientific research andresources to effectively combat.   
 B) Because globalization leads to more chances for spread of illnesses into new areas and populations. Monitoring these illnesses will help us to protect people.  
 C) Because the speed of travel has increased, so it is far more likely that a serious pathogen can spread rapidly across the globe. Monitoring these illnesses will help us protect populations.  
 D) All of the answer choices are correct.  
 E) None of the answer choices is correct.

**63)** A microbiologist obtained two pure isolated biological samples: one is a virus, and one is a viroid. The labels came off the samples during a move from one lab to the next, however. The scientist felt she could distinguish between the two samples by analyzing for the presence of a single type of molecule. Whatwould she be looking for to differentiate between the two?

A) DNA   
 B) Protein  
 C) Lipid  
 D) RNA  
 E) Carbohydrate

**64)** A scientist has two samples—the first is a prion, while the second is a viroid. However, the samples are in unlabeled tubes.The scientistwants to run a simple analysis to determine which tube contains the prionand which one contains the viroid. What type of molecule would she look for to do this?

A) Lipids   
 B) DNA  
 C) Protein  
 D) Polysaccharides  
 E) Peptidoglycan

**65)** A scientist discovers a new species near coral reefs in Australia. He finds that this single-celled species is photosynthetic (using sunlight for energy), has a rigid cell wall structure with no peptidoglycan, uses a flagellum for motion, and contains a variety of internal structures that are membrane-bound. Given this information, this new species is most likely a(n) \_\_\_\_\_\_ cell in the \_\_\_\_\_\_ domain.

A) bacterial; *Eukarya*   
 B) fungal; *Prokarya*  
 C) viral; *Archaea*  
 D) algal; *Eukarya*  
 E) protozoan; *Bacteria*

**66)** Scientists recently cloned Louis Pasteur and put him to work in a modern lab. He immediately developed a topical gel (used externally) that breaks down proteins. Since he hasn't been around for some time, he's unsure what the best application for his invention might be. Help him out. What pathogenic agent would this gel be most effective and safe at eliminating?

A) Viroids on the surface of agricultural plant tissues.   
 B) Prions inside the central nervous system of cows.  
 C) Viruses on the surface of the skin.  
 D) Bacteria in the intestines of human beings.  
 E) The fungus that causes infections under people's toenails.

**67)** Select the TRUE statement regarding viruses.

A) Most viruses are smaller than bacteria but bigger than mitochondria.   
 B) Viruses may be unicellular or multicellular.  
 C) Viruses contain both DNA and RNA.  
 D) Viruses always cause death of the host cells they infect.  
 E) Virus are considered living because they contain nucleic acid.

**68)** You are examining a pea plant that is showing signs of disease—brown leaves and no pea pods. You isolate an agent from the plant that only contains RNA and protein. This is a(n) \_\_\_\_\_\_.

A) viroid   
 B) virus  
 C) bacterium  
 D) fungus  
 E) protozoan

**69)** Which terms refer to bacterial morphology?

A) BacillusAND polyhedral   
 B) Coccus AND polyhedral  
 C) Coccus AND Bacillus  
 D) Polyhedral, coccus, AND Bacillus  
 E) Coccus AND squarish

**70)** What was the significance of the shape of the flasks used by Pasteur in his experiments proving biogenesis?

A) The flask shape allowed Pasteur to use less broth, so the experiments were cheaper and could be repeated more often.   
 B) The swan neck of the flasks allowed “vital force” to enter them but prevented bacteria from falling into the broth.  
 C) Swan-necked flasks have an opening too small for entry of microbes, while conical flasks have a wide neck that allows microbial entry.  
 D) Pasteur could place gel in the bend of the swan-necked flask, trapping any entering microbes.  
 E) There is no significance; Pasteur simply used any flasks available in his laboratory, in this case swan-necked.

**71)** A patient’s throat swab yields organisms that appear as long chains of round cells under light microscope. Given this information, it is possible that the organism is:

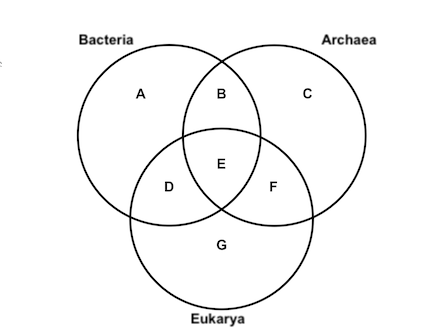
A) *Streptococcus pyogenes*   
 B) *Staphylococcus aureus*  
 C) *Bacillus* species  
 D) A virus  
 E) *Streptococcus pyogenes* OR  *Staphylococcus aureus*

**72)** Which statement about normal microbiota is TRUE?

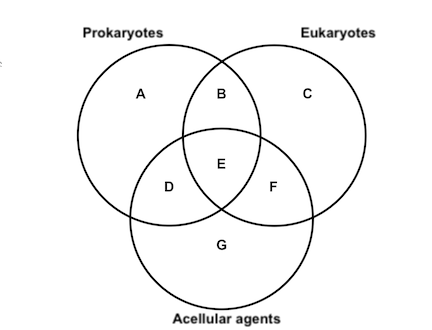
A) The body carries 10 times as many microbial cells as human cells.   
 B) Normal microbiota is restricted to the gut and only plays a role in digestion and vitamin synthesis.  
 C) The microbiome includes members of a microbial community and the genetic makeup of that community.  
 D) The majority of microbes in a microbiome can be identified by culturing them in a laboratory.  
 E) Bacterial species associated with gum disease also always cause Alzheimer’s disease.

**73)** Which of the following bacterial pairs is LEAST related?

A) *Escherichia coli* K AND *Escherichia coli* B12   
 B) *Bacillus subtilis* AND *Bacillus cereus*  
 C) *Vibrio cholerae* O1 AND *Vibrio cholerae* O139  
 D) *Escherichia coli* O157:H7 AND *E. coli* O157:H4  
 E) *Streptococcus pneumoniae* AND *Mycoplasma pneumoniae*

**74)** Consider the Venn diagram pertaining to the three domains, and select the CORRECT characterization. Remember that characteristics shared by two or more items are found in the circle overlaps.  


A) Prokaryote AND peptidoglycan - B   
 B) Eukaryote AND multicellular - G  
 C) Prokaryote AND multicellular - D  
 D) Prokaryote AND nucleus - E  
 E) Prokaryote - F

**75)** Consider the Venn diagram pertaining to prokaryotes, eukaryotes and acellular agents, and select the INCORRECT classification. Remember that in a Venn diagram, common characterisitcs are found in the circle overlaps.  


A) Peptidoglycan, 70S ribosomes and nucleoid - A   
 B) Cytoplasm, ribosomes and DNA - B  
 C) DNA *or* RNA, lipid and protein - G  
 D) Ribosomes, cytoplasm and nucleic acid - E  
 E) Mitochondria, Golgi and chloroplasts - C

**SECTION BREAK. Answer all the part questions.  
76)** A scientist isolates a microbe from a contaminated water source. She thinks that the organism might be a new bacteria that is capable of surviving in the presence of lead, which is a heavy metal. She makes tubes of nutrient medium (supports microbial growth) containing either no lead, 0.1 mg lead, 0.25 mg lead, 0.5 mg of lead, or 1 mg of lead. She inoculates each tube with the 10 x 103 cells of the new organism and then incubates the tubes at 37oC. After 48 hours, she examines the tubes and finds that there is no growth in any of them. However, she finds that the organism grew well in medium that did not contain any lead. She decides to repeat the experiment using lower concentrations of lead than those she used initially.

**76.1)** Select which of the following is the hypothesisbeing tested by the scientist.

A) The newly isolated microbe can grow in the presence of lead.   
 B) The newly isolated microbe is a bacteria.  
 C) Lead can be placed into tubes of growth medium.  
 D) Bacteria must be incubated for 72 hours before they grow.  
 E) Lead is a good nutrient for all bacterial growth.

**76.2)** Identify the control step in the scenario described.

A) Inoculating the test microbe into nutrient medium containing a different heavy metal.   
 B) Isolating the microbe from a contaminated water source.  
 C) Inoculating the test microbe into nutrient medium lacking lead.  
 D) Inoculating the test microbe into medium containing lower levels of lead than used initally.  
 E) Inoculating the test microbe into contaminated water containing high levels of lead.

**76.3)** What conclusion can the scientist in this scenario make from her results?

A) The test bacteria take more than 48 hours to grow in the laboratory when incubated at 37 oC.   
 B) All contaminated water contains high levels of lead and other heavy metals.  
 C) The test organism was killed by the levels of lead tested.  
 D) All experiments should be repeated three times or more.  
 E) Lead-contaminated water never contains any living organisms.

**77)** Janus is a keen baseball player at the high school where you are employed as a nurse. He comes to your office and shows you an injury to his knee which he got by sliding into home base, scoring a game-winning run. His knee has araw patch where the skin has been scraped off, and the area around the wound is swollen.Janus tells you that he washed his knee with soap and water to remove any germs, and then put a bandage onit, but it is very painful and red.

**77.1)** You explain to Janus that he may have an infection in his wound, possibly caused by the organism *Staphylococcus epidermidis*. You tell him that the genus name of the organism indicates that

A) the cells are found in the digestive tract.   
 B) the cells are round and grow in clusters.  
 C) the organism is a pathogen.  
 D) the organism is normal microbiota.  
 E) the cells have a golden color.

**77.2)** Janus tells you he knows that yeast cells are also round. He asks how scientists can tell the difference between yeasts and bacteria. Select the choice that best answers his question.

A) Bacteria are microscopic.   
 B) Bacteria are photosynthetic.  
 C) Bacteria are unicellular.  
 D) Bacteria contain peptidoglycan.  
 E) Bacteria can be pathogenic.

**77.3)** Janus asks you if there is something he can use to kill any bacteria in his wound without affecting any of his own body cells. You tell him that some antibiotics kill bacteria by targeting \_\_\_\_\_ , a compound unique to bacteria.

A) protein   
 B) nuclear membrane  
 C) flagella  
 D) peptidoglycan  
 E) chitin

**77.4)** Janus' knee infection should be considered an emerging infectious disease, and you should report it to the Centers of disease Control (CDC).

⊚ true  
 ⊚ false

**78)** Sandy has been taking an antibiotic for a urinary tract infection (UTI). Although the signs and symptoms of Sandy's UTIresolved after a few days of taking the medication, she complains to you that she has been having watery diarrheafor the last two days, and she wonders whether the antibiotic is affecting her digestive tract. You take the opportunity to give her information about her normal microbiota.

**78.1)** You explain to Sandy that her body carries an enormous population of microorganisms, collectively called the normal microbiota. You tell her that this population has a vital role in maintaining her health. Select the FALSE statement regarding the role of the normal microbiota. <!--Markup Copied from Habitat-->

A) Normal microbiotaprevent disease by competing with pathogenic microbes. <!--Markup Copied from Habitat-->   
 B) Normal microbiotahelp to degrade foods that the body otherwise could not digest. <!--Markup Copied from Habitat-->  
 C) Normal microbiotasynthesize vitamins that the body cannot produce. <!--Markup Copied from Habitat-->  
 D) Normal microbiotaproduce insulin for controlling blood sugar levels.  
 E) Normal microbiotalikely affects the tendency to lose or gain weight. <!--Markup Copied from Habitat-->

**78.2)** You are concerned that Sandy may have a *Clostridioides difficile* infection (CDI). When normal microbiota is disturbed, organisms such as *C. difficile* may thrive. What caused the disturbance in Sandy's normal microbiota in this case?

A) The bacteria causing Sandy's urinary tract infection.   
 B) The antibiotics Sandy was taking to treat her UTI.  
 C) Sandy's presence in the hospital.  
 D) Sandy's watery diarrhea.  
 E) Dehydration caused by Sandy's watery diarrhea.

**78.3)** Digestive tract microbiome plays no role in maintaining a person's health.

⊚ true  
 ⊚ false

**79)** Five patients were admitted into the hospital, each one suffering of a different illness. Tests were carried out on each patient to identify the pathogens causing their illnesses. The chemical composition of the pathogens was established and is shown in Table 1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 1. Chemical composition of isolated pathogens.** | | | | |
|  | **Protein** | **Lipid** | **DNA** | **RNA** |
| Patient #1 | + | - | + | - |
| Patient #2 | + | + | + | + |
| Patient #3 | + | - | - | + |
| Patient #4 | + | - | - | - |
| Patient #5 | + | + | + | + |
| Note: (+) indicates presence; (-) indicates absence | | | | |

**79.1)** What type of pathogen could be causing the disease in patient #1?

A) A virus   
 B) A bacterium  
 C) A fungus  
 D) A prion  
 E) A yeast

**79.2)** Which patient(s) is/are being infected by an acellular infectious agent?

A) Patients 1, 3, and 4   
 B) Patients 1, 2, 3 and 4  
 C) Patients 2 and 3  
 D) Patients 1, 2, 3 and 5  
 E) Patients 2, 3, 4 and 5

**79.3)** What treatment(s) would likely be the most appropriate to treat patient #2?

A) Antiviral drug   
 B) Antibiotic, antifungal or antiprotozoan drug  
 C) Antifungal drug  
 D) Antibiotic AND antiviral drug  
 E) Antiprotozoan drug

**79.4)** Which patient(s) is/are affected by a pathogen that specifically affects the brain?

A) Patient #1 ANDPatient #4   
 B) Patient #2 ANDPatient #3  
 C) Patient #3  
 D) Patient #1 AND Patient #3  
 E) Patient #4

**79.5)** Which patient(s) is/are infected by a pathogen that divides by binary fission?

A) Patient #2   
 B) Patient #2 AND Patient #5  
 C) Patient #2 AND Patient #4  
 D) Patient #4  
 E) Patient #5

**Answer Key**Test name: Nester 1

1) FALSE

2) FALSE

3) FALSE

4) FALSE

5) TRUE

6) FALSE

7) TRUE

8) FALSE

9) FALSE

10) FALSE

11) FALSE

12) B

13) C

14) C

15) B

16) B

17) B

18) B

19) A

20) D

21) C

22) A

23) E

24) E

25) B

26) A

27) D

28) A

29) C

30) A

31) C

32) A

33) B

34) B

35) B

36) B

37) E

38) B

39) A

40) B

41) C

42) E

43) E

44) D

45) B

46) C

47) C

48) A

49) E

50) A

51) C

52) B

53) E

54) A

55) B

56) B

57) C

58) C

59) C

60) A

61) C

62) D

63) B

64) C

65) D

66) C

67) A

68) B

69) C

70) B

71) A

72) C

73) E

74) B

75) D

76) Section Break

76.1) A

76.2) C

76.3) C

77) Section Break

77.1) B

77.2) D

77.3) D

77.4) FALSE

78) Section Break

78.1) D

78.2) B

78.3) FALSE

79) Section Break

79.1) A

79.2) A

79.3) B

79.4) E

79.5) B