CHECK GARADE 12 MICROORGANISMS

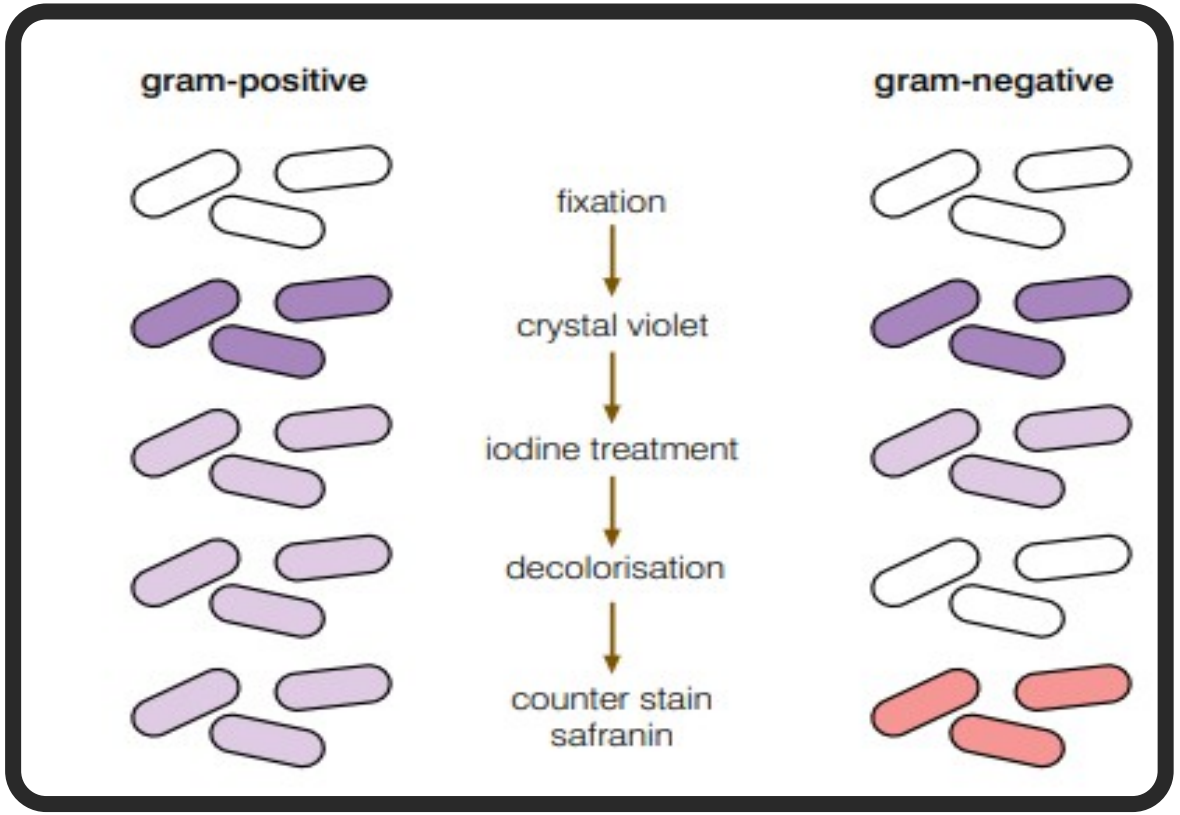
1. **In Gram staining, if some bacteria retain the crystal violet after counter staining, then the bacteria is**

A. Gram intermediate.
B. Gram variable.
C. **Gram positive.**
D. Gram negative.

Explanation

- The technique developed by Hans Christian in 1884
- The technique used to identify gram positive & negative bacteria by their color after stain
- The test gives two categories
- Gram-positive bacteria are stained purple (violet) by Gram's stain.
- Gram-negative bacteria are stained pink by Gram's

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2) The following steps are involved when HIV infects its host cell in the human body.

1. Conversion of viral RNA into DNA and its incorporation into cells DNA
2. Viral DNA's transcription into viral RNA & Production of protein
3. Assemblage of new viral particles from RNA , protein & reverse transcriptase
4. The building of gp 120 of HIV to CD4 of a T-Lymphocytes
5. Fusion of HIV with the plasma membrane of the host cell
6. Release of its RNA & reverse transcriptase into the cell.

A. 4, 2, 5, 6, 1, 3.

B. 4, 5, 6, 1, 2, 3.

C. 4, 1, 2, 5, 6, 3

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Explanation

- The process of HIV infection involves the following steps in order:

1. **Binding*Attachment***: The virus binds to the host cell. (Step 4)
2. **Fusion**: The virus fuses with the host cell membrane. (Step 5)
3. **Reverse Transcription**: Release of RNA and RNA is converted into DNA.
4. **Integration**: Viral DNA enters the cell nucleus.
5. **Transcription*Replication***: Viral DNA is converted to RNA and proteins. (Step 2)
6. **Viral Assembly**: Assemblage of new viral particles. (Step 3)

- From the given steps, the correct order is 4, 5, 6, 1, 2 and 3.

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4. In Gram staining, if some bacteria retain the crystal violet after counter staining, then the bacteria is

A. Gram intermediate.

B. Gram variable

C. Gram positive

D. Gram negative

Explanation:

- Violet is a color similar to purple
- Gram positive bacteria stained purple (violet) by gram stain
- Gram negative bacteria stained pink by gram stain

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Examples of Gram-positive bacteria include:

1. Staphylococcus aurous
2. Streptococcus pneumonia
3. Clostridium botulinum
4. Listeria monocytogenes
5. Bacillus anthracis

Examples of Gram-negative bacteria include:

1. Escherichia coli
2. Pseudomonas aeruginosa
3. Salmonella enterica
4. Neisseria gonorrhoeae
5. Helicobacter pylori

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5. Unlike free living cells, viruses are completely

A. Pathogenic to a living cell.

B. Mutual to a living cell.

C. Parasitic to a living cell.

D. Harmful to a living cell.

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6. Which stage of the nitrogen cycle needs the role of Rhizobium?

A. Decomposition

B. Denitrification

C. Nitrogen fixation

D. Nitrification

Explanation

- Nitrogen-fixing bacteria (Rhizobium): convert nitrogen gas into ammonium ions.

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7. Which of the following diseases is caused by a DNA virus?

A. Cold sore

B. AIDS

C. Swine flu

D. Corona

Explanation

- Herpes Simplex (Cold sore) is a DNA virus.
- H1N1 (Swine flu) and Corona are RNA Viruses.

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8. Which one of the following is correct concerning the reproductive cycle of viruses?

A. Both lytic & lysogenic life cycles release new viruses without the genetic alteration of the host cell.

B. In lysogenic life cycle the DNA of the virus integrates with the host cell's DNA.

C. Both lytic lysogenic life cycles undergo the same life cycle but ending with different results.

D. In lytic life cycle, viruses are released without killing the host cell.

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Explanation

- In the Lytic cycle, the virus injects its DNA into the host cell.
- But its DNA doesn't integrate with the cell's DNA.
- After infection, the virus lysis (burst out) of the cell.
- In the Lysogenic cycle, the virus incorporates its viral DNA into a host cell to manufacture more viruses.
- The virus's genetic material is passed to the daughter cell when the cell divides.
- Finally, the virus leaves out through lysis (burst out) of the cell or chronic (ongoing) exocytosis.

The lytic and lysogenic cycles are two different modes of viral replication in bacteria.

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1) Lytic cycle:

In the lytic cycle:

- ✓ The virus infects a host cell,
- ✓ Replicates within the cell, and
- ✓ Then causes the cell to burst open (lyse),
- ✓ Releasing new viruses to infect other cells.

This process results in the rapid destruction of the host cell.

The lytic cycle is typically associated with virulent or lytic viruses.

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2) Lysogenic cycle:

- The virus infects a host cell and inserts its genetic material into the host cell's DNA.
- The viral DNA, known as a prophage, is replicated along with the host cell's DNA as the cell divides.
- The prophage remains dormant within the host cell until environmental factors trigger its activation and the start of the lytic cycle.
- The lysogenic cycle allows the virus to integrate its genetic material into the host cell's genome and replicate along with the host cell without immediately causing cell death.
- The lysogenic cycle is typically associated with temperate or lysogenic viruses.

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9. Which one of the following diseases is caused by food poisoning bacteria?

A. Candidiasis

B. Salmonellosis

C. Tuberculosis

D. Pneumonia

Explanation

- Salmonellosis is a bacterial disease that is caused by contaminated food or water.

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10. Which one of the following is a correct comparison of lytic and lysogenic cycles of virus multiplication?

A. Lytic cycle involves incorporation of viral DNA into the host DNA.

B. Lysogenic cycle releases new viruses using only chronic cycle.

C. Both cycles damage the host cell DNA following infection.

D. Lytic cycle releases new viruses only by splitting the host cell.

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Explanation

- In Lytic cycle, after infection the virus's lysis (burst out) of the cell.
- In Lysogenic cycle, the virus incorporates its viral DNA into a host cell to manufacture more viruses.

- When the cell divides, the virus genetic material is passed to the daughter cell.
- Finally, the virus leaves out through lysis (burst out) of the cell or chronic(ongoing) exocytosis.

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11. In an HIV/AIDS community screening, students were asked to take part in voluntary testing. The following discussion presents the views of four grade 12 students named A, B, C and D towards HIV testing.

- **Student** A. I should not take the testing; it is simply boring.
- **Student** B: we should take the testing, since we are educated; we should be exemplary.
- **Student** C: if we get tested and got positive, what should we do? So, let us not get tested.
- **Student** D: you know, this HIV/AIDS testing is simply a business. We should not be cheated.

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Which student do you think is correct?

A. Student A
B. Student B
C. Student C
D. Student D

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Explanation

- HIV testing is essential for slowing the spread of HIV.
- If a person tested negative, they will continue their preventative measures.
- If a person tested positive, the person could start treatment right away and take precautions to help prevent spreading the virus to others.

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12. What is the major difference that viruses have with free living cells? Viruses

- Lack genetic material of their own.
- Reproduce only asexually.
- Lack locomotory structure.
- Do not function outside of a living cell.

Explanation

- Since viruses lack major organelles found in living cells, they need a host (living cell) to survive.

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13. Bacteria are used in the production of vinegar to

A. Supply oxygen for the fermenter

B. Oxidize alcohol to ethanoic acid

C. Dilute ethanoic acid into vinegar

D. Produce alcohol in beer

Explanation

- Acetobacter (acetic acid bacteria) have a role in the production of vinegar by oxidizing alcohol to ethanoic acid.

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14. What is the economic impact of AIDS?

- Seriously affects the taxable population
- Encourage savings for medical treatment
- Enhance the life expectancy and GDP
- Increase the resources for public expenditure.

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Explanation

- The economic impact of AIDS
- It seriously affects the young working (taxable population) of a country
- there will be cost due to medical treatment
- working time will be affected due to illness

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15. Which one of the following products does NOT need the role of bacteria?

A. Ethanol

B. Vaccine

C. Enzymes

D. Insulin

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Explanation

- List of some products that need the role of bacteria in the role of production:
  - Vaccine
  - Washing enzyme
  - Insulin
  - Human growth hormone
  - Antibiotics

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16. Which of the following does not contain non parasitic members?

A. Bacteria

B. Fungi

C. Protozoa

D. Viruses

Explanation:

- All viruses are parasitic: others are free living member

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17. CD4 is:

A. A gp on HIV surface

B. A protein on T cell surface

C. A gp on T cell surface

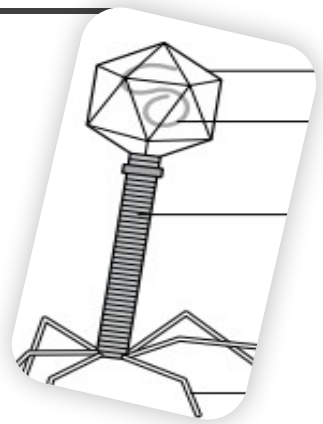
D. A protein on HIV surface

Explanation:

- CD4 is a protein on surface of some human cells such as T-lymphocytes

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18. Consider the following diagram of bacteriophage, In this diagram the viral capsid is represented by number_____



A. 4

B. 1

C. 2

D. 3

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Explanation:

- Is a protein capsid
- Is nucleic acid
- Is a viral tail
- Is a tail fiber

A. 4

B. 1

C. 2

D. 3

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19. Which of the following is RNA virus/

A. **HINI**

B. HIV

C. Herpes simplex

D. Bacteriophage

Explanation:

1) HINI is an RNA virus

2) HIV is retro virus

3) Herpes simplex is DNA virus

4) Bacteriophage is bacteria infecting virus

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20. Which of the following human cell types is attacked by HIV?

A. Red blood cells

B. White blood cells

C. T-lymphocytes

✓ Leukocytes

Explanation

HIV targets cells that form part of the immune system called CD4 T-lymphocyte.

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21. Which of the following groups of viruses copy their RNA to DNA?

A. Bacteriophages
B. DNA viruses
C. RNA viruses
D. Retroviruses

❖ **Explanation**

Retrovirus convert its RNA into DNA using reverse transcriptase

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22. In which organ of the human body are more bacteria found?

A. Lungs
B. Large intestine
C. Small intestine
D. Stomach

Explanation

Most bacteria live in the large intestine

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23. What is a capsid?

A. The protein shell of a virus

B. The DNA of a virus

C. The RNA of a virus

D. The genetic material of a virus

Explanation:

- The Capsid is the protein shell of a virus particle surrounding its nucleic acid.

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24. Transfer of a gene or genes through a virus is called:

A. Transduction
B. Transformation
C. Genetic engineering
D. Conjugation

Explanation

• In transformation, a bacterium takes up a piece of DNA floating in its environment.
• In transduction, DNA is moved from one bacterium to another by a virus.
• In conjugation, DNA is transferred between bacteria through a tube between cells.

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25. When is reverse transcriptase a useful enzyme?

When:

A. Nutrients are scarce.
B. An RNA virus converts its RNA to DNA.
C. Spikes are forming in the new virus.
D. There are no host cells present

Explanation

- Reverse transcriptase catalyses the transcription of RNA into DNA

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26. In what way do retro viruses differ from the other RNA viruses?

A. Their genetic material is RNA.
B. They are parasitic
C. They are smaller in size
D. They RNA to DNA,

Explanation

- A retrovirus is an RNA virus, they differ from RNA virus by producing DNA from its RNA.

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27. In what way do retro viruses differ from the other RNA viruses?

A. Their genetic material is RNA.
B. They are parasitic
C. They are smaller in size
D. They RNA to DNA,

Explanation

✓ A retrovirus is an RNA virus, they differ from RNA virus by producing DNA from its RNA.

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28. What is the theory that states disease is caused by microorganisms?

A. Biogenesis theory
B. Spontaneous generation
C. Germ theory
D. Endosymbiotic theory

Explanation

- Biogenesis theory states that life forms only can come from other life forms.
- Spontaneous generation is a hypothetical process in which living things could arise from non-living things.
- Germ theory states that certain microorganisms are the causes of diseases.
- Endosymbiotic theory is an evolutionary theory of the origin of eukaryotic cells from prokaryotic organisms

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EUEE UNIT TWO MICROORGANISMS PART …..2

BY : Ebisa Geleta

Wednesday, April 2, 2025

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29. In. which of the following groups of living organisms do the cells lack organized nuclei?

A...Fungi

B...Protozoa

C... Bacteria

D.... Algae