UNIT 8

World of Microbes

GDXKY7

TEXTBOOK EVALUATION

I. Choose the correct answer.

1. Mycology is the branch of biology that deals with the study of

   (a) algae (b) virus (c) bacteria (d) fungi

   Ans: d.Fungi

2. The major constituent of vinegar is

   (a) citric acid (b) acetic acid

   (c) oxalic acid (d) hydrochloric acid

   Ans: b.acetic acid

3. Bacteria involved in curd formation is

   (a) *Lactobacillus acidophilus*

   (b) *Nitosomonas*

   (c) *Bacillus ramous*

   (d) none of the above

   Ans: a.*Lactobacillus acidophilus*

4. Which of the following is transmitted through air?

   a. Tuberculosis b. Meningitis

   c. Typhoid d. Cholera

   Ans: a.Tuberculosis

5. The most fatal form of Malaria is caused by

   a. *Plasmodium ovale*

   b. *Plasmodium falciparum*

   c. *Plasmodium malariae*

   d. *Plasmodium vivax*

   Ans: b.*Plasmodium falciparum*

6. One of the means of indirect transmission of a disease is

   a. Sneezing b. coughing

   c. vectors d. droplet infection

   Ans: c.vectors

7. Syphilis is caused by

   a. *Treponema pallidum*

   b. Leptospira

   c. Pasteurella

   d. *Vibrio cholerae*

   GEB4NR

   Ans: a.*Treponema pallidum*

8. Mosquito borne viral diseases are

   a. Malaria and yellow fever

   b. dengue and chikungunya

   c. filariasis and typhus

   d. kala azar and diptheria

   Ans: b.dengue and chikungunya

9. Diptheria affects the

   a. Lungs b. Throat

   c. Blood d. Liver

   Ans: b.Throat

10. Which one of the following is a pair of viral disease?

    a. Filariasis, AIDS

    b. Common cold, AIDS

    c. Dysentry, Common cold

    d. Typhoid, Tuberculosis

    Ans: b.Common cold, AIDS

11. Which of the following disease is spread by animal bite?
    a. Pneumonia b. Tuberculosis
    c. Cholera d. Rabies

    Ans: d.Rabies

12. The primary organ infected during tuberculosis is
    a. bone marrow b. intestine
    c. spleen d. lungs

    Ans: d.lungs

13. Microbes that generally enter the body through nose are likely to affect
    a. gut b. lungs
    c. liver d. lymph nodes

    Ans: b.lungs

14. The organ affected by jaundice is
    a. liver b. lungs
    c. kidney d. brain

    Ans: a.liver

15. Severity of disease symptom depends upon
    a. number of microbes
    b. target organ
    c. both a and b
    d. none of these.

    Ans: c.both a and b

16. Poliomyelitis virus which causes infantile paralysis enters the body through
    a. skin b. mouth and nose
    c. ears d. eye

    Ans: b.mouth and nose

II. Fill in the blanks.

1. _____ break down organic matter and animal waste into ammonia.

   Ans: microbes

2. The hyphae with branches form a complex network called _____.

   Ans: mycelium

3. First antibiotic _____ was developed by _____.

   Ans: pencillin,Alexander Fleming

4. Baker's yeast is _____.

   Ans: Saccharomyces cerevisiae

5. The two non symbiotic nitrogen fixi g bacteria are _____ and _____.

   Ans: Nitrosomonas,Nostoc

6. Typhoid fever is caused by _____.

   Ans: Salmonella typhi

7. H1N1 virus causes _____.

   Ans: Swine flu

8. _____ is a vector of viral disease dengue.

   Ans: Acedes aegypti mosquito

9. _____ vaccine gives considerable protection against tuberculosis.

   Ans: BCG(Bacillus Calmette Guerin)

10. Cholera is caused by _____ and malaria is caused by _____.

    Ans: Bacteria - Vibrio cholerae,

    Protozoan parasite -Plasmodium

III. Expand the following.

1. ORS 2. HIV 3. DPT
4. WHO 5. BCG

1.**ORS** - Oral Rehydration Solution

2.**HIV** - Human Immunodeficiency Virus

3.**DPT** - Diptheria Pertussis Tetanus

4.**WHO** - World Health Organisation

5.**BCG** - Bacillus Calmette Guerin

IV. Pick out the odd one from the following.

i) AIDS, Retrovirus, Lymphocytes, BCG,

Ans:BCG

ii) Bacterial disease, Rabies, Cholera, Common cold and Influenza

Ans:Cholera

iii) Sporozoites, Merozoites, Trophozoites, Gametocytes (Infective stages of plasmodium in human)

Ans:Gametocytes

V. State whether True or False. If false write the correct statement.

1. Glycogen and oil globules are stored form of food in fungi.

   Ans:True

2. One of the differences between virus and viroid is the presence of protein coat in viroid and its absence in virus.

   Ans:False,protein coat is absent in viroid.

3. *Rhizobium,* associated with root nodules of leguminous plants fi es atmospheric nitrogen.

   Ans:True

4. Lophotrichous is a cluster of polar flagellae.

   Ans:True

5. Non- infectious diseases remain confi ed to the person who develops the disease and do not spread to others.

   Ans:True

6. The process of vaccination was developed by Jenner in the year 1796.

   Ans:True

7. Hepatitis B is more dangerous than Hepatitis A.

   Ans:True

VI.Match the following.

Swine flu	Human Papilloma virus
Genital warts	Human Immunodeficiency Virus
AIDS	*Mycobacterium*
Tuberculosis	Influeuza virus H1N1

Swine flu	Influeuza virus H1N1
Genital warts	Human Papilloma virus
AIDS	Human Immunodeficiency Virus
Tuberculosis	*Mycobacterium*

VII. Analyze the table and select the option given below that correctly fills the blank.

Disease	Causative organism	Symptoms
Hepatitis	-	Inflammation of the liver
Elephantiasis	Filarial worm	-
Malaria	Protozoan	-
Diarrhoea	-	Nausea, Vomitting, Dehydration

(Swelling of legs, Virus, Rota virus, Fever, Chills and Sweating)

Disease	Causative organism	Symptoms
Hepatitis	**Virus**	Inflammation of the liver
Elephantiasis	Filarial worm	**Swelling of legs**
Malaria	Protozoan	**Fever, Chills and Sweating**
Diarrhoea	**Rota virus**	Nausea, Vomitting, Dehydration

VIII. Answer the following in a word or a sentence.

1. Name the chronic diseases associated with respiratory system.

   Tuberculosis,Diptheria,Influenza, Measles are the chronic diseases associated with respiratory system.

2. Name the scientist who first discovered penicillin antibiotic. Can you name any other known antibiotic?

Alexander fleming,Cephalosporin

3. Name the organism causing diarrhoeal diseases and give one precaution against it.

Causative organism -Rota virus

Precausion -Proper sanitation and Hygine

4. Name two common mosquitoes and the diseases they transmit.

Mosquito name	The diseases they transmit.
Aedes aegypti	Chickunguniya,dengue
Culex mosquito	Filaria

5. Name one disease that is transmitted by houseflies. Mention their causative pathogen.

Disease	Causative pathogen
Typhoid	Salmonella typhi
Amoebic dysentry	Entamoeba histolytica

IX.Define the following.

1. Pathogen
2. Bacteriophages
3. Plasmid
4. Vaccines
5. Prions

1. Pathogen

A pathogen is a biological agent that causes disease to its host. e.g. bacteria,virus etc.

2. Bacteriophages

Virus that infect bacterial cells. e.g. **T4 bacteriophage.**

3. Plasmid

A small extra chromosomal circular DNA called plasmid.It is found in the cytoplasm of bacteria.

4. Vaccines

Vaccines are preparation of living or killed microorganisms or their products used for prevention or treatment of diseases.

5. Prions

Prions are viral particles which contain only proteins. They do not contain nucleic acid. They are infectious and smaller than viruses.

X. Answer the following in brief.

1. Distinguish between Virion and Viroid.

Virion	Viroid
It is a nucleo protein particle	It is an RNA particle
Nucleic acid can be DNA or RNA	Viroid is formed only of RNA
A protein covering of coat is present	A protein coat is abesent
They have a large size	They have a smaller size
Virions infect all types of organisms.	Viroid infect only plants.

2. A baby is suffering from diarrhoea, while other babies in the same locality do not. Mention the possible causes that you think. What would be the possible solutions for this?

possible causes for diarrhoea is drink of contaminated water and unhygienic contaminated food. This result infection of intestine proper sanitation and hygiene would be possible solutions for this.

3. Name the vector of the malarial parasite. Mention the species of malarial parasite which cause malignant and fatal malaria.

Anopheles female mosquito is the vector of malarial parasite.Plasmodium falciparum species is malignant and fatal malaria.

4. What is triple antigen? Mention the disease which can be prevented by using the antigen.

Triple antigen is a vaccine used to protect against three disease (DPT).

Dipetheria ,Pertussis(wooping cough) and Tetanus can be prevented by using triple antigen.

5. Sanjay had an attack of chicken pox and has just recovered. The health officer of his locality says that the disease would not occur again for him. What would be the reason for this?

Sanjay got natural active immunity from Chickenbox virus that is .It is a type of aquired immunity in which the body produces its own antibodies against disease causing agent.

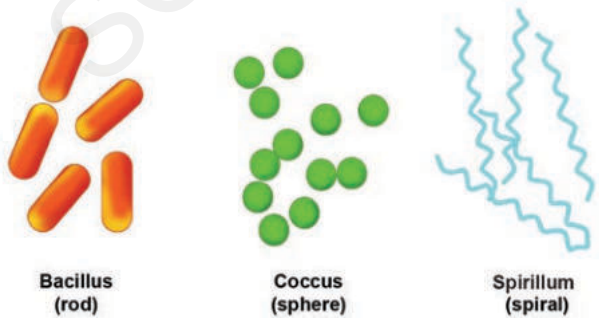
XI. Answer in detail.

1. Give an account of classifi ation of bacteria based on the shape.

Shapes of bacteria

Based on the shapes, bacteria are grouped as:

1. Spherical shaped bacteria called as cocci (or coccus for a single cell).
2. Rod shaped bacteria called as bacilli (or bacillus for a single cell).
3. Spiral shaped bacteria called as spirilla (or spirillum for single cell)



Shapes of bacteria

2. Describe the role of microbes in agriculture and industries.

Microbes in Agriculture

Microbes play an important role in agriculture as biocontrol agents and biofertilizers.

(i) Microbes as biocontrol agents

Microorganisms used for controlling harmful or pathogenic organisms and pests of plants are called as biocontrol agents (Biopesticides). *Bacillus thuringiensis* (Bt) is a species of bacteria that produces a protein called as 'cry' protein. This protein is toxic to the insect larva and kills them. Spores of *B.thuringiensis* are available in sachets, which are dissolved in water and sprayed on plants infected with insect larva.

(ii) Microbes as biofertilizers

Microorganisms which enrich the soil with nutrients are called as biofertilizers. Bacteria, cyanobacteria and fungi are the main sources of biofertilizers. Atmospheric nitrogen has to be converted to available form of nitrogen. This is done by microbes either in free living conditions or by having symbiotic relationship with the plants. e.g. Nitrosomonas, Nostoc (free living), symbiotic microbes like Rhizobium, Frankia, mycorrhizae.

Rhizobium biofertilizer

Microbes in Industries

(a) **Production of fermented beverages**: Beverages like wine are produced by fermentation of malted cereals and fruits by *Saccharomyces cerevisiae*.

(b) **Curing of coffee beans, tea leaves and tobacco leaves**: Beans of coffee and cocoa, leaves of tea and tobacco are fermented by the bacteria *Bacillus megaterium*. This gives the special aroma.

(c) **Production of curd**: *Lactobacillus sp.* converts milk to curd.

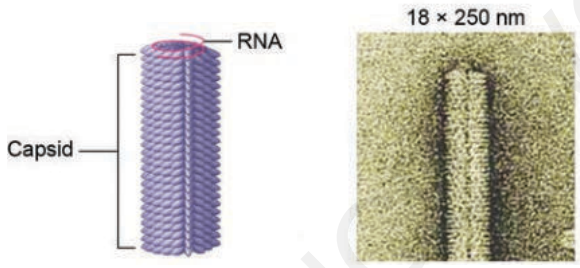
(d) **Production of organic acids, enzymes and vitamins**: Oxalic acid, acetic acid and citric acid are produced by fungus *Aspergillus niger*. Enzymes like lipases, invertase, proteases, and glucose oxidase are derived from microbes. Yeasts are rich source of vitamin-B complex.

3. Explain the various types of viruses with examples.

Types of Viruses

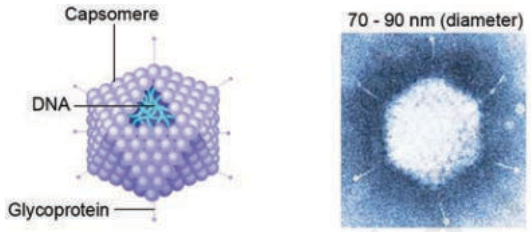
Viruses are categorised as:

i. Plant virus: Virus that infect plants. e.g. Tobacco mosaic virus, Caulifl wer mosaic virus, Potato virus.

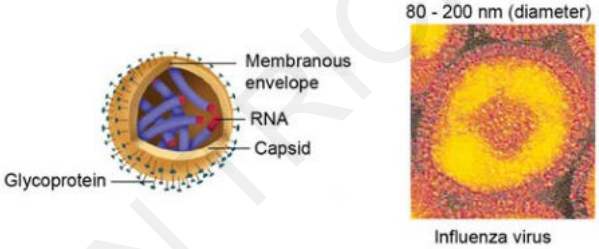


Tobacco mosaic virus

ii. Animal virus: Virus that infect animals. e.g. Adenovirus, Retrovirus(HIV), Influenza virus, Polio virus.



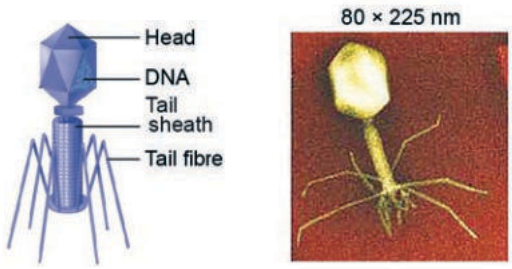
Aenovirus



Influenza virus

Animal virus

iii. Bacteriophages: Virus that infect bacterial cells. e.g. T4 bacteriophage.



T4 bacteriophage

4. Suggest the immunization schedule for a new born baby till 12 months of age. Why it is necessary to follow the schedule?

Age	Vaccine	Dosage
New born	BCG	1st dose
15 days	Oral Polio	1st dose
6th week	DPT and Polio	1st dose
10th week	DPT and Polio	1st dose
14th week	DPT and Polio	1st dose
9 – 12 months	Measles	1st dose

Immunization schedule protects the children from infectious diseases.

5. Name the causative agent of typhoid in human. How does the pathogen gain entry into the human body? Write the diagnostic symptoms and mention the organ that is affected in severe cases.

Causative Organism	Entry of pathogen	Symptoms	Organs affected
Salmonella typhi	Food and water contaminated with faeces of infected person and through houseflie	High fever, weakness, abdominal pain, headache, loss of appetite, rashes on chest and upper abdomen	Small intestine

6. Some human diseases are transmitted only when the blood of a patient comes in close contact with the blood of a healthy person. In one such disease, there is a progressive decrease in WBC of the patient.

a. Name the disease and its causative agent.

AIDS,causative agent Human Immunodeficiency Virus(HIV)

b. Name the type of WBC affected during infection.

T - Lymphocytes

c. How does the blood of a patient come in contact with blood of healthy patient?

The blood of infected person come in contact with blood of healthy patient by the following methods.

1.Transfusion of unscreened blood
2. Surgical equipments
3. Maternal – foetal transmission

d. Suggest three methods that help in preventing such infection.

- Disposable syringes and needles should be used.
- Protected and safe sexual contact.
- Screening of blood before blood transfusion.
- Avoid sharing shaving blades/razors.

XII. Questions based on thinking skills.

1. We are advised to take bland and nutritious food when we are sick. What is the reason?

when we are sick our normal body function digestion and our immunity system get distrubed so nourshing food is required which is easily digestable and contain all nutrients. Therefore bland and nutritious food is advised to take during sickness.

2. Suggest precautionary measures you can take in your school to reduce the incidence of infectious disease.

We can take the following precautions in our school to reduce the incidence of infectious disease.

i) drinking clean and hygienic water.
ii) preventing accumulation of water,anywhere in the school.
iii) keeping the toilet neat and clean.
iv) avoid consumption of uncovered food and other eatables.
v) using handkerchief to cover the mouth while sneezing or coughing.
vi) staying away from an infected student.

3. Tejas suffered from typhoid while, Sachin suffered from tuberculosis. Which disease could have caused more damage and why?

* Tuberculosis may cause more damage than typhoid. because tuberculosis usually affects lungs and spread to other organs around the body like brain and spine.
* TB bacteria can be easily transmitted to others. who have weak immunity system.

4. How will you differentiate Hepatitis A from Hepatitis B?

Hepatitis A	Hepatitis B
Causative agent is Hepatitis A virus **(HAV)**	Causative agent is Hepatitis B virus **(HBV)**
It is transmitted through contaminated water and food though oral route	It is transferred from infected mother to their babies or sexual cantact and also it can transmitted by infected person's saliva, sweat,tears,breast milk and blood.
It causes inflammation of liver	It causes cirrhosis of liver

XIII. Assertion and Reason.

Direction: In each of the following questions a statement of assertion (A) is given and a corresponding statement of reason (R) is given just below it. Mark the correct statement as.

a) If both A and R are true and R is correct explanation of A

b) If both A and R are true but R is not the correct explanation of A

c) If A is true but R is false

d) If both A and R are false.

1. **Assertion :** A patient with cholera is given oral rehydration therapy for rapid replacement of fluid and electrolytes.

   Reason : Cholera can be diagnosed by the microscopic examination of the stool to identify the bacteria.

   Ans: b) If both A and R are true but R is not the correct explanation of A

2. **Assertion:** Chicken pox is a disease indicated by scars and marks in the body.

   Reason: Chicken pox causes rashes on face and further spreads throughout the body.

   Ans: d) If both A and R are false.

3. **Assertion:** Dengue can be treated by intake of antibiotics.

   Reason: Antibiotics blocks the multiplication of viruses.

   Ans: a) If both A and R are true and R is correct explanation of A

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