FUNGAL DISEASES

	Disease	Pathogen
1.	Aspergillosis	Aspergillus fumigatus
2.	Candidiasis	Candida albicans
3.	Ringworm	Trichophyton
4.	BiastomycosiS	Blastomyces dermatitidis
5.	Sporotrichosis	Sporothrix Schenckii

DISEASES CAUSED BY BACTERIA

	Disease	Affected organ	Name of Bacteria	Symptoms
1.	Tetanus	Nervous system	Clostridium Tetani	High fever, spasm in body, Closing of jaws etc.
2.	Cholera	Intestine	Vibrio cholerae	Continuous stool and vomiting
3.	Typhoid	Intestine	Salmonella typhi	High fever, headache
4.	Tuberculosis	Lungs	Mycobacterium tuberculosis	Repeated coughing
5.	Diphtheria	Respiratory tube	Corynebacterium diphtheriae	Difficulty in respiration and suffocation
6.	Plague	Lungs, area between the two legs	Pasteurella pestis	Very high fever, eruptions on the body
7.	Whooping cough	Respiratory system	Bordetella pertussis	Continuous coughing
8.	Pneumonia	Lungs	Diplococcus pneumoniae	High fever, swelling in lungs
9.	Leprosy	Nervous System, Skin	Mycobacterium leprae	Spots on body, nerves affected

DISEASES CAUSED BY VIRUSES

	Disease	Affected organ	Name of Virus	Symptoms
1.	AIDS	Defensive system (WBC)	HIV	Immune system of body become weak
2.	Dengue fever	Whole body particularly head, eyes and joints	Dengue virus	Pain in eyes, muscles, head and joints
3.	Polio	Throat, backbone nerve	Piliovirus are destroyed	Fever, body pain, backbone and intestine cells

4.	Influenza (flu)	Whole body	Influenza virus	Suffocation, sneezing, restlessness
5.	Chicken pox	Whole body	Varicella Zoster	Fever, reddish eruption on body
6.	Small pox	Whole body	Variola virus	High fever, eruption of rash on body
7.	Measles	Whole body	Rubeola virus	Reddish eruptions on body
8.	Rabies	Nervous system	Rabies virus	The patient becomes mad with sever
9.	Herpes	Skin	Herpes	Swelling of skin
10.	Avian flu	Whole body	H5N1 Virus	Pain in muscle, fever, running nose
11.	Swine flu	Respiratory system	H1N1	Cough, fatigue, headache
12.	German measles	Whole body	Rubella Virus	Red rash, fever, headache

MERS : Middle East Respiratory Syndrome.

MERS is new viral disease related to respiratory system.

Symptoms are fever, cough and shortness of breath.

Affected countries in Middle East include Egypt, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia and UAE.

SARS : Severe Acute Respiratory Syndrome (SARS) is caused by coronavirus called, SARS-CoV.

First time this disease was reported in November 2002 in Guangdong Province, China.

It begins with high fever, headache and overall feeling of discomfort, and bodyaches.

Ebola: Ebola hemorrhagic fever (Ebola HF) is a severe & fatal disease in humans, monkeys, gorillas, and chimpanzees.

It is caused by Ebola virus, named after the Ebola River found in Congo. Ebola spreads through direct contact (through broken skin or unprotected mucous membranes in, for example, the eyes, nose, or mouth).

Symptoms are fever, headache, joint and muscle aches, sore throat, and weakness, followed by diarrhoea, vomiting, and stomach pain.

Zika : Zika virus is a mosquito-borne virus transmitted by ***Aedes aegypti*** mosquitoes.

Transmission : Zika virus is transmitted by Aedes aegypti mosquitoes.

Most common symptoms : Headache, muscle and joint pain, mild fever, rash, pinkeye and inflammation of the underside of the eyelid.

Linkages: It causes neurological disorders and foetal deformation known as **Microcephaly** in which infants are born with abnormally smaller heads that can cause brain damage.

AIDS :

Acquired Immune Deficiency Syndrome (AIDS) is caused by Human Deficiency Virus (HIV) which destroys the CD4 cells that are essential for the body immune symptoms.

HIV is transmitted (spread) through the blood, semen, genital fluids, or breast milk of a person infected with HIV.

Unprotected sex and sharing of drug injection equipment with the person infected with HIV are the most common ways of HIV transmission.

It takes many years to develop the HIV symptoms but the HIV infected person can spread the virus at any stage of HIV infection.

1st December is also remembered as World AIDS day globally people unite together to fight against HIV showing support to the people infected with HIV.

Rabies

Rabies is a viral disease which is endemic in most African and Asian countries and it affects the central nervous system of warm blooded animals, including human.

This fatal zoonotic viral disease **transmitted** to human through contact (mainly bites and scratches) with infected animals both domestic and wild.
Clinical signs of rabies in animals vary depending on the effect of the virus on the brain.
Typical signs include sudden behavioural changes and progressive paralysis leading to death.

Dengue

Dengue fever occurs through 1 to 4 types of dengue virus.
It is spread by the bite of an infected dengue mosquito (*Aedes aegypti*).
It is characterized by high fever lasting 3-7 days, frontal headache, pain behind the eyes and muscle joint pain and rash on skin.
There is no specific treatment for Dengue fever till now.

Chikungunya

Chikungunya fever is a viral illness caused by an arbovirus transmitted by the Aedes mosquitoes.
Chikungunya disease does not often result in death, but the symptoms can be severe and disabling. Symptoms appear after 3-7 days after being infected by the virus.
Most common symptom is fever, joint pain and headache.

Common Heart Diseases

Coronary artery disease or arthrosclerosis: In this disorder the deposition of calcium, fat, cholesterol and fibrous tissue occur in coronary arteries which makes the lumen of arteries narrower and thereby affect the blood supply.
Angina (angina pectoris): Angina is an acute chest pain due to oxygen deficiency to heart muscles. It also occurs due to oxygen deficiency in heart mus-

cles. It occurs due to improper blood flow. It is common among middle-aged and elderly person.

Heart Failure (congestive heart failure): It is the condition in which heart is not pumping blood enough to meet the needs of the body. Congestion of the lung is the main symptom.

Arteriosclerosis: It is the state of hardening of arteries and arterioles due to thickening of the fibrous tissue and consequent loss of elasticity. It leads to hypertension.

Common Lung Diseases

Asthma: It is a disease caused due to an allergic reaction to foreign substances that affect the respiratory tract.

In people with asthma, the walls of these airways become inflamed (swwollen) and oversensitive.

The airways overreact to things like smoke, air pollution, mold, and many chemical sprays.

Bronchioles can constrict (narrow) because of muscle spasms.

Bronchitis (Inflammation of the Bronchi): A condition where the bronchi and bronchioles get inflamed and their cavities become narrow so that air cannot pass in and out of lungs easily.

The bronchial pathway gets blocked with the accumulation of mucus on the wall of bronchi due to which inflammation of the wall occur.

Bronchitis occurs due to smoking and exposure to air pollutant like carbon monoxide.

Common Brain Diseases

Epilepsy: Epilepsy is a condition where a person has recurrent seizures, abnormal discharge of electrical activity in the brain cells which may give rise to abnormal behaviour such as involuntary muscle movements, unusual perceptions and disturbed level of consciousness.

Epilepsy can occur due to brain injury, brain tumor, chemical abnormalities and alcohol or drug effects.

Loss of Consciousness: Faintness includes the sensation of dizziness lightheadedness and weakness.

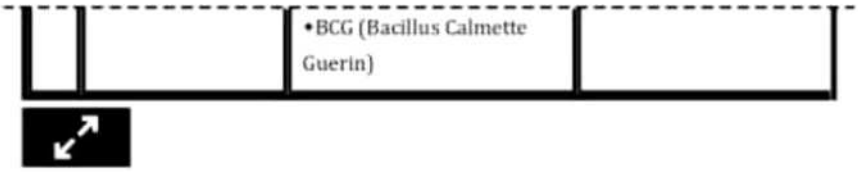
The majority of attack is due to altered reflex affecting cardiac rate, vascular tone and some time due to severe cardiac disturbances.

Cancer : Cancer is a complex genetic disease which occurs due to the environmental factors.

Cancer causing agent (carcinogen) may be present in food and water, in air, sunlight and in chemicals.

VACCINES AND THEIR DOSES

	Age	Vaccination	Dose
1.	16 years	Tetanus, TAB	Booster dose
2.	10 years	Tetanus, TAB (typhoid)	• Booster dose
3.	5-6 years	• DT (Bivalent Vaccine against diphtheria and tetanus) • TAB (vaccine against Salmonella typhi, S. paratyphi A and S paratyphi B) or Typhoid Paratyphoid vaccine	• Booster dose • Tow doses at intervals of 1-2 months • Booster dose • Booster dose One
4.	8-24 months	• DPT • Polio (oral) • Cholera vaccine (can be repeated every year before suwmmer)	
5.	9-15 months	•Measles vaccine (MMR or Measles, Mumps and Rubella)	• One dose • Three doses (commonly oral) at intervals of 4-6 weeks.
6.	Birth to 12 months	•DPT (triple vaccine, against diptheira, whooping cough /pertussis and tetanus) •Polio (Sabin's oral, previously Salk's injectible)	• Three doses at intervals of 4-6 weeks. Intradermal and one vaccine



NUTRIENTS

Carbohydrate

50-75% energy is obtained by oxidation of carbohydrate.

Types of carbohydrate :

(1) Monosaccharide : E.g, triose, tetrose

(2) Oligosaccharide : E.g, Maltose, sucrose

(3) Polysaccharide: E.g, starch, glycogen

Protein

15% of human body is made up of protein

Nitrogen is essential for protein synthesis.

20 types of amino acid are necessary for human body, out of which 12 are synthesized by body itself.

Fats

Adult person should get 20-30% of energy from fat.

Types of fats: (1) Saturated – E.g, coconut oil.

(2) Unsaturated – E.g., Fish oil, vegetable oil.

9.3 kilo caloric energy is liberated from 1 gram of fat.

Exercise

DIRECTIONS : This section contains multiple choice questions. Each question has 4 choices (a), (b), (c) and (d) out of which only one is correct.

1. Food is a necessity for _____ and _____ functions.
   (a) heart, mind
   (b) cell, tissue
   (c) kidney, lungs
   (d) health, disease
2. Health is a state of being well enough to function well
   (a) physically
   (b) mentally
   (c) socially
   (d) all three - physically, mentally and socially
3. Physical environment is decided by
   (a) the individual
   (b) our social environment
   (c) the authorities
   (d) the plants
4. Vaccines are prepared from
   (a) vitamins
   (b) blood
   (c) serum
   (d) plasma
5. Which one of the following pairs of disease can spread through blood transfusion ?
   (a) Cholera and hepatitis
   (b) Hepatitis and AIDS
   (c) Diabetes mellitus and malaria
   (d) Hay fever and AIDS
6. Antibodies are produced by
   (a) erythrocytes
   (b) thrombocytes
   (c) monocytes
   (d) lymphocytes
7. DPT vaccine is given for
   (a) tetanus, polio and plague.
   (b) diptheria, whooping cough and leprosy.
   (c) diptheria, pneumonia and tetanus.
   (d) diptheria, whooping cough and tetanus.

8. Conditions necessary for good individual health are
   (a) public cleanliness
   (b) good economic condition
   (c) social equality and harmony
   (d) All of the above
9. An individual free from diseases
   (a) is always healthy
   (b) is a sick person
   (c) need not be a healthy person
   (d) is able to perform well
10. If the functioning or appearance of one or more systems of the body changes for worse, then
   (a) the individual is suffering from a disease
   (b) the changes give rise to symptoms of disease
   (c) Both (a) and (b)
   (d) None of these
11. Which is an autoimmune disease ?
   (a) Cancer
   (b) Asthma
   (c) Erythroblastosis foetalis
   (d) Tuberaculosis
12. Kala azar is transmitted by
   (a) *Phlebatomus*
   (b) *Anopheles*
   (c) *Trypanosoma*
   (d) *Glossina palpalis*
13. Tobacco smoke contains carbon monoxide which
   (a) reduces the oxygen-carrying capacity of blood.
   (b) causes gastric ulcers.
   (c) raises blood pressure.
   (d) is carcinogenic.
14. In persons addicted to alcohol, the liver gets damaged because it
   (a) has to detoxify the alcohol.
   (b) stores excess of glycogen.
   (c) is over stimulated to secrete more bile.
   (d) accumulates excess of fats.
15. Are the symptoms enough to diagnose the kind of disease?
   (a) Yes

(b) Not surely, may require some laboratory tests
(c) Sometimes
(d) Never

16. Chronic diseases are the disease that may
(a) require long time for their cure
(b) may not be cured throughout the life
(c) have very drastic long term effects on people's health
(d) All of these

17. General Health is severely affected by
(a) acute diseases
(b) chronic diseases
(c) Both acute and chronic diseases
(d) Neither acute nor chronic diseases

18. Mosquito is not a vector for which disease from following?
(a) Malaria
(b) Typhoid
(c) Dengu
(d) Elephantatis

19. Which of the following disease is transmitted through contaminated food and water?
(a) Tetanus
(b) Cancer
(c) Nyctalopia
(d) Typhoid

20. Community health aims at
(a) better health and family planning
(b) better hygiene and clean environment
(c) removing communicable diseases
(d) All of the above

21. Immune deficiency syndrome in human could develop as a consequence of
(a) AIDS virus infection
(b) defective liver
(c) defective thymus
(d) weak immune system

22. All diseases have
(a) been caused by infection only
(b) one or more than one immediate causes and contributory causes
(c) been caused by environment only
(d) All of these

23. Different levels of causes of disease are
    (a) Primary, secondary and tertiary
    (b) Infection, household, public services
    (c) Infection (Primary level), household (secondary level), Lack of public services (level three)
    (d) None of the above
24. Diseases where microbes or micro organisms are the immediate causes are called
    (a) infectious diseases
    (b) genetic abnormalities
    (c) community diseases
    (d) chronic diseases
25. Full form of AIDS is
    (a) Anti immune deficiency syndrome
    (b) Auto immune deficiency syndrome
    (c) Acquired immune deficiency syndrome
    (d) Acquired immune disease syndrome
26. The biological agents of disease include
    (a) minerals, vitamins, proteins and carbohydrates
    (b) viruses, bacteria, fungi, helminths and other organisms
    (c) heat, cold, humidity pressure, radiations
    (d) All the above
27. The group of diseases spread by houseflies is
    (a) malaria, cholera, rables
    (b) rabies, rickets, diarrhoea
    (c) typhoid, dysentery, tuberculosis
    (d) ringworm, scurvy, vomiting
28. Which of the following can be used for biological control of mosquitoes ?
    (a) Oil
    (b) Ointments
    (c) DDT
    (d) *Gambusia*
29. Choose the incorrect statement
    (a) Any disease that causes poor functioning of some parts of the body will affect general health because all functions of the body are necessary for good health.

(b) Chronic disease will cause major effects on general health because they last for longer durations.

(c) Acute diseases will not have time to cause major effects on general health.

(d) Acute diseases have very drastic long term effects on people's health.

30. Infectious diseases

(a) have mostly microbes or micro organisms as immediate causes

(b) spread in community as the microbes can spread in the community

(c) Neither (a) nor (b)

(d) Both (a) and (b)

31. Non-infectious diseases do not spread in community because

(a) they are not caused by external agents or infectious agents

(b) they are caused by internal reasons

(c) they are caused due to genetic abnormalities

(d) All of these

32. In addition to the immune system, we are protected from disease by

(a) the skin

(b) mucous membranes

(c) natural secretions such as acids, protein-digesting enzymes, and antibiotics

(d) All of the above

33. Fevers

(a) decrease interferon production.

(b) decrease the concentration of iron in the blood.

(c) decrease the activity of phagocytes.

(d) increase the reproduction rate of invading bacteria.

34. Which one of the following disease is caused by increase in blood sugar?

(a) hepatitis

(b) AIDS

(c) Diabetes mellitus
(d) Hay fever

35. Which of the following statement is true?
(a) AIDS spreads by the bite of a mosquito.
(b) Diabetes is a communicable diseases.
(c) *Ascariasis* is caused by protozoans.
(d) Ulcers in the intestine is an infectious disease.

36. Wide range of categories of classification of organisms causing infectious diseases include
(a) single celled organisms like protozoan
(b) very small microbes likes virus
(c) multi cellular organisms such as worms
(d) All of these

37. Categories of infectious agents are factors that help in deciding
(a) what kind of work one should do
(b) what kind of treatment to use
(c) biological common characteristics
(d) mode of transmission of disease

38. Which of the following statement is false?
(a) A person suffering from disease is in a state of discomfort.
(b) Non-infectious disease are called communicable diseases.
(c) Communicable diseases can spread through air, water, food, sexual contact or vectors.
(d) Cholera spread through water.

39. Which of the statement is true?
(a) Vaccines prevent many infectious diseases like tetanus, polio, measles.
(b) Penicillin interferes with viral cell wall production, thus killing the bacteria.
(c) Physical and social environment does not play an important role in maintaining good health
(d) Sexual contact causes the spread of diseases like Anthrax.

40. Making anti-viral drugs is more difficult than making anti-bacterial medicines because
(a) viruses make use of host machinery.

(b) viruses are on the border line of living and non-living.
(c) viruses have very few biochemical mechanisms of their own.
(d) viruses have a protein coat.

41. If you live in a overcrowded and poorly ventilated house, it is possible that you may suffer from which of the following diseases
(a) Cancer
(b) AIDS
(c) Air borne diseases
(d) Cholera

42. Antibiotics help in treatment of diseases caused by
(a) virus by rendering them ineffective.
(b) protozoan as they are able to survive in presence of antibiotics.
(c) bacteria as the biochemical pathways important for them are blocked.
(d) worms.

43. Choose the odd one out
(a) All viruses live inside host cells, whereas bacteria very rarely do.
(b) All bacteria are closely related to each other.
(c) Many important life processes are similar in the bacteria group but not shared by virus group.
(d) Same drug will work against a microbe belonging to a different group.

44. Spreading of disease-causing microbes through air occurs through
(a) dust particles of the atmosphere.
(b) the little droplets thrown out by an infected person are inhaled by a healthy person.
(c) water drops present in the air.
(d) All of these

45. Microbial diseases like Syphilis and AIDS are transmitted through
(a) casual physical contact
(b) blood to blood contact
(c) sexual contact
(d) Both (b) and (c)

46. Dilation of blood vessels, increase in fat synthesis, low blood sugar and inflammation of stomach are due to the consumption of
    (a) tobacco
    (b) drug addition
    (c) alcohol
    (d) tobacco and drug addiction
47. Which of the following is a mismatch ?
    (a) AIDS - Bacterial infection
    (b) Polio - Viral infection
    (c) Malaria - Protozoan infection
    (d) Elephantiasis - Helminth infection
48. We should not allow mosquitoes to breed in our surroundings because they
    (a) multiply very fast and cause pollution.
    (b) are vectors for many diseases.
    (c) bite and cause skin diseases.
    (d) are not important insects.
49. Clean drinking water is related to
    (a) personal hygiene
    (b) public hygiene
    (c) economic status
    (d) social status
50. Inflammation is the process of
    (a) effecting swelling and pain.
    (b) recruiting many cells to the affected tissue to kill off the disease causing microbes.
    (c) activating the immune system.
    (d) making the specific tissues ineffective.
51. A disease is treated in two ways.
    (a) one is to isolate the person and the second is to take rest.
    (b) one is tissue specific and the second is environment specific.
    (c) one is to reduce the effects of the disease and the other to kill the cause of the disease.
    (d) one is to take the patient to a quack and the second is to rush to hospital.
52. Immunisation works on the principle

(a) The immune system sees an infectious microbe, responds against it and then remembers it.
(b) The immune system responds with even greater vigour when it sees that particular microbe or its close relatives.
(c) The immune system develops a memory for a particular infection by something (Vaccine) that mimics the particular microbe.
(d) All of these

53. Prevention of a disease is more desirable than its cure because
(a) some of the body functions may be damaged during the effect of the disease.
(b) the person suffering from the disease will be bad ridden for quite some time.
(c) the disease may be communicated to others during the course of treatment.
(d) All of these

54. Which one is an acute disease ?
(a) Tuberculosis
(b) Hypertension
(c) Typhoid
(d) Diabetes

55. Harelip is a
(a) acquired disease
(b) infectious disease
(c) metabolic disease
(d) congenital disease

56. Non-communicable disease is the one which is
(a) non-infectious
(b) remains restricted to affected person
(c) Both (1) and (b)
(d) caused by a pathogen

57. BCG stands for –
(a) Bacillus Carol Gram
(b) Bacillus Chalmette Guerin
(c) Bacteria Chalmette Guierin
(d) None of the above

58. Which one of the following has a long term effect on the health of an individual?

(a) Common cold
(b) Chicken pox
(c) Chewing tobacco
(d) Stress

59. A communicable disease is caused by
(a) metabolic disorder
(b) allergy
(c) pathogen
(d) hormonal balance

60. *Helicobacter pylori* causes
(a) tuberculosis
(b) peptic ulcers
(c) pneumonia
(d) cholera

61. Which one is a bacterial disease ?
(a) Tuberculosis
(b) Mumps
(c) Measles
(d) Malaria

62. Ringworm is caused by
(a) protozoan
(b) helminth
(c) virus
(d) fungus

63. Louis Pasteur is responsible for which of the following reforms?
(a) The present-day classification system of using binomial nomenclature names to identify organisms.
(b) All surgical equipment must be boiled to kill germs before surgery.
(c) The vaccination of people to prevent disease.
(d) The specific scientific steps taken to prove a specific germ causes a specific disease.

64. Which scientist is credited with the development of medical vaccinations?
(a) Robert Koch
(b) Charles Darwin
(c) Edward Jenner
(d) William Harvey

65. A disease transmitted through sexual contact is

(a) HIV
(b) gonorrhoea
(c) Syphilis
(d) All the above

66. Ascariasis spreads through
(a) vectors
(b) contaminated food and water
(c) fomites
(d) droplets

67. Kala-azar (black fever) is caused by
(a) protozoan
(b) fungus
(c) helminth
(d) bacterium

68. SARS and Swine flu are caused by
(a) virus
(b) virus and bacterium
(c) virus and protozoan
(d) virus and helminth

Hints & SOLUTIONS

1. **(b)** Food is a necessity for cell and tissue functions.
2. **(d)** Health is a state of being well enough to function well - physically, mentally and socially.
3. **(b)** Physical environment is decided by our social environment.
4. **(c)**
5. **(b)**
6. **(d)**
7. **(d)**
8. **(d)** Conditions necessary for good individual health are public cleanliness, good economic condition, and social equality and harmony.
9. **(c)** An individual free from diseases need not be a healthy person.
10. **(c)** If the functioning or appearance of one or more systems of the body changes for worse, then the individual is suffering from a disease and the changes give rise to symptoms of disease.
11. **(c)**
12. **(a)**
13. **(a)**
14. **(c)**
15. **(b)** Different diseases may have similar symptoms. So some laboratory tests are necessary to diagnose the disease correctly.
16. **(d)** Chronic diseases are the disease that may require long time or even life time for their cure. They have very drastic long term effects on people's health.
17. **(c)** General health is severely affected by any disease that causes poor functioning of some parts of the body.
18. **(d)**
19. **(d)**
20. **(d)**
21. **(a)**
22. **(b)** All diseases have one or more than one immediate causes and contributory causes.

23. **(c)** Different levels of causes of disease are: Infection (Primary level), household (secondary level), lack of public services (level three).
24. **(a)** Diseases where microbes or micro organisms are the immediate causes are called the infectious diseases.
25. **(c)**
26. **(b)**
27. **(c)**
28. **(d)**
29. **(d)** Acute diseases have drastic effects on people's health, but for a limited period.
30. **(d)** Infectious diseases have mostly microbes or micro organisms as immediate causes and spread in community as the microbes can spread in the community.
31. **(d)** Non-infectious diseases do not spread in community because they are not caused by external agents or infectious agents. They are caused by internal reasons mainly due to genetic abnormalities.
32. **(d)**
33. **(b)**
34. **(c)**
35. **(c)**
36. **(d)** Wide range of categories of classification of organisms causing infectious diseases include single celled organisms like protozoan, very small microbes like virus, multi-cellular organisms such as worms.
37. **(b)** Categories of infectious agents are factors that help in deciding what kind of treatment to use.
38. **(b)**
39. **(a)**
40. **(c)**
41. **(c)**
42. **(b)** Antibiotics help in treatment of diseases caused by bacteria as the biochemical pathways important for them are blocked.
43. **(d)** Particular drug will work against a specific microbe.
44. **(b)** Spreading of disease-causing microbes through air occurs through the little droplets thrown out by an

infected person during coughing or sneezing. These are inhaled by a healthy person in close vicinity. The microbes get a new host body.

45. **(d)** Microbial diseases like syphilis and AIDS are transmitted through blood to blood contact (breast feeding by an infected person or during blood transfusion or by using infected surgical instruments) or sexual contact.
46. **(c)**
47. **(a)**
48. **(b)**
49. **(b)**
50. **(b)** Inflammation is the process of recruiting many cells to the affected tissue to kill off the disease causing microbes.
51. **(c)** A disease is treated in two ways : one is to reduce the effects of the disease and the other to kill the cause of the disease.
52. **(d)** Principle of immunisation is that the immune system sees an infectious microbe; responds against it and then remembers it. It responds with even greater vigour when it sees that particular microbe or its close relatives. It also develops a memory for a particular infection by something (Vaccine) that mimics the particular microbe.
53. **(d)** Prevention of a disease is more desirable than its cure because some of the body functions may be damaged during the effect of the disease. The person suffering from the disease will be bad ridden for quite some time. The disease may be communicated to others during the course of treatment.
54 **(c)**
55. **(d)**
56. **(c)**
57. **(b)** BCG is vaccine for Tuberculosis and was given by Chalmette Guerin.
58. **(c)**
59. **(c)**
60. **(b)**
61. **(a)**
62. **(d)**

63. **(b)** Louis Pasteur is responsible for the practice of boiling surgical equipment before surgery to kill possible germs present on these utensils.

64. **(c)** Edward Jenner was the first person to vaccinate people against disease. Robert Koch formulated ideas concerning the study of disease. Charles Darwin is famous for his ideas on evolution.William Harvey is noted for his work on blood circulation.

65. **(d)** AIDS gonorrhoea and syphilis are sexually transmitted disease (STDs). AIDS is caused by infection with human Immune deficiency virus (HIV).

66 **(b)** **67.** **(a)** **68** **(a)**

1. **(a)** **2.** **(c)**

3. **(c)**

4. **(a)**

5. **(4)**

6. **(d)**

7. **(c)**

8. **(d)** Syphilis is a sexually transmitted bacterial disease. Typhoid primarily affects digestive system.

9. **(a)**

10. **(c)**

11. **(a)** BCG vaccine is used for Tuberculosis.

12. **(d)** The lack of iodine causes goitre and anaemia caused by deficiency of iron in blood. Egg is an important source of protein.

13. **(a)** Tse - tse fly caused by Trypanosome protozoan and cause sleeping sickness.

14. **(d)** Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis*. Vaccination is the injection of a killed microbe in order to stimulate the immune system against the microbe, there by preventing disease.

15. **(d)**

16. **(a)** Poliomyelitis is a viral disease that can affect nerves and can lead to partial or full paralysis.

17. **(a)**

18. **(a)**

19. **(a)**

20. **(a)**

21. **(a)**

22. **(a)**

23. **(a)**

24. **(a)**

25. **(c)** AIDS can be transmitted through sexual contact, pregnancy, child birth and breast feeding.

26. **(b)** Polio is misnomerly called infantile paralysis. Pulse- polio programme was started in December 1995 in India. It was eradicate this crippling disease by the end of 20th century.

27. **(c)** Haemophilia is an inherited disease. It is caused by mutations in the F8 or F9 genes.

28. **(a)** ORS is oral dehydration solution used for correcting dehydration caused by diarrhoea in all age groups. Citrate and ORS given to the patients who is suffering from cholera.

29. **(c)** Rabies is a disease caused by a *Rabies* virus. Its other name is hydrophobia. The patient fear from water, then he paralysed and death.

30. **(c)**

31. **(a)**

32. **(d)**

33. **(c)**

34. **(a)**

35. **(d)**

36. **(c)**

37. **(a)**

38. **(c)**

Chapter 7

Natural Resources And Their Management

INTRODUCTION

- Life is dependent on many factors like resources available on earth, energy from the sun etc. The different resources available on the earth are land, water and air which are required for the existence of life forms.
- The outermost crust of the earth is **lithosphere**.
- 75% of the Earth's surface is covered with water. This water along with underground water comprises the **hydrosphere**.
  - The air covering of earth is called atmosphere.
  - The life-supporting zone of the earth where the atmosphere, hydrosphere and the lithosphere interact and make life possible is known as the biosphere.
  - The living things constitute the biotic components of the biosphere.
  - The non-living things air, water and soil form the abiotic components of the biosphere.

AIR

- Air is a mixture of many gases like nitrogen, oxygen, carbon dioxide and water vapour. On Venus and Mars there is no life because carbon dioxide constitutes 95-97% of the atmosphere.

CO_2

- **Carbon dioxide is produced in the atmosphere by following activities :**

(i) Breakdown of glucose in presence of oxygen by organisms.

(ii) Combustion of fuels.

- **Carbon dioxide is fixed in two ways :**

(i) Green plants convert carbon dioxide into glucose by photosynthesis.

(ii) Marine animals use carbonates dissolved in sea-water to make their shells.

The Role of Atmosphere in Climate Control

Atmosphere keeps the average temperature of the earth steady during the day and whole year. Atmosphere prevents sudden increase in temperature during daytime and fall of temperature during night. Moon has no atmosphere, its temperature ranges from – 190°C to 110°C.

The Movement of Air-winds

Due to heating of air and formation of water vapour in our atmosphere the phenomenon of movement of air in the form of gentle breeze, wind, storm or rain occurs. On heating, convection currents setup in the air. When air is heated by radiation from land and water, it rises up. During day, the direction of wind is from sea to land in coastal areas. The diversity in atmosphere is due to uneven heating of the atmosphere in different regions of the earth.

Rain

Due to heating of water bodies during day time, large amount of water evaporates and goes into the air. The hot air rises up carrying the water vapour. Cooling of air as it rises, causes the water vapour in the air to condense in the form of tiny droplets. After their formation the water droplets grow bigger and heavy and they fall down on the earth in the form of rain. In low temperature the

water droplets precipitate to form snow, sleet or hail.

- **Air pollution :** The increase in the content of oxides of nitrogen and sulphur, suspended particles, hydrocarbons in air is called air pollution.

  Causes : The burning of fossil fuels produces oxides of nitrogen, sulphur and increases the amount of suspended particles in air.

  Effects : Allergies, cancer, heart disease, respiratory diseases etc.

  Lichens are very good indicators of air pollution.

WATER

Water occupies a very large area of the Earth's surface. Fresh water is found frozen in the ice-caps at the two poles and on snow covered mountains. Water is required by all living organisms because all cellular processes takes place in water medium. Substances are also transported from one part of the body to the other in dissolved form. Heavy rainfall areas are rich in biodiversity.

Water Pollution

The addition of undesirable substances to water is called water pollution.

The main causes of water pollution are as follows:

(i) **Addition of harmful substances to water** —The pesticides and fertilizers used in farming dissolves in water and makes the water impure. Sewage from towns and cities and wastes from factories are also dumped into the rivers and lakes. Water also gets polluted due to man's activities-like bathing, washing etc.

(ii) **Removal of desirable substances from water—** Oxygen dissolved in water is used by animals and plants living in water. Any

change that reduces the amount of dissolved oxygen would adversely affect aquatic organisms.

(iii) **Change in water temperature—** Any change in the water temperature would be dangerous for the aquatic organisms. The industries use water for cooling purpose and later return hot water to rivers. The eggs and larvae of aquatic animals are very sensitive to temperature changes.

SOIL

Soil is the most important natural resource which supplies nutrients to the life forms. **Following factors are responsible for making soil from rocks.**

(i) **Sun :** Due to heating by sun, the rocks expand. This repeated expansion and contraction results in breaking of rocks into small pieces.

(ii) **Water :** Water helps in formation of soil by two ways

(1) Water enters into the cracks of rocks and on freezing it causes cracks to widen.

(2) Flowing of water through the same rock over long periods of time.

(iii) **Wind :** Soil is also formed by erosion of rocks by wind. Strong winds breakdown rocks into small particles which are carried away by it.

(iv) Some organisms like **lichen** and **mosses** grow on the surface of rocks and they release certain substances that cause weathering of rocks and a thin layer of soil is formed.

Humus

The decayed living organisms present in soil is called humus. The quality of soil is decided by the amount of humus and micro-organisms present in it.

Soil Pollution

Removal of useful components from the soil and addition of other substances, which adversely

affect the fertility of the soil and kill micro-organisms living in it is called soil pollution. Fertilizers and pesticides destroy the soil structure.

Soil Erosion

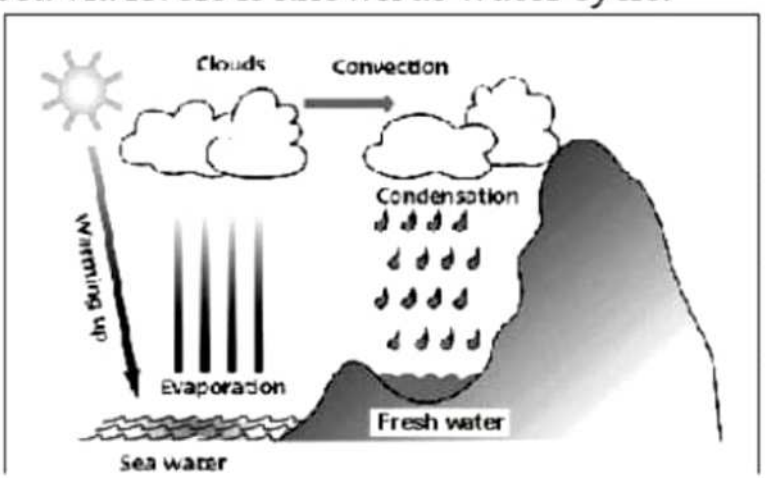
Removal of topmost layer of soil by wind, water or other activities is called soil erosion. Roots of plants prevent soil erosion by firmly holding the soil particles.

BIOGEOCHEMICAL CYCLES

Various biogeochemical cycles exist in the nature which represent interaction between biotic and abiotic components of the biosphere to make a stable system.

(i) Water Cycle

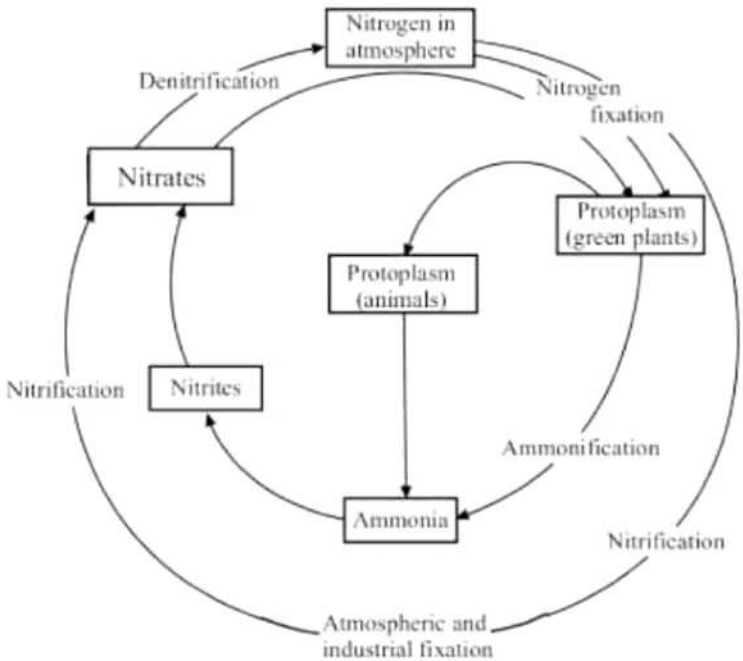
The whole process in which water evaporates and falls on the land as rain and later flows back into the sea via rivers is known as water cycle.



Water cycle in nature

(ii) Nitrogen Cycle

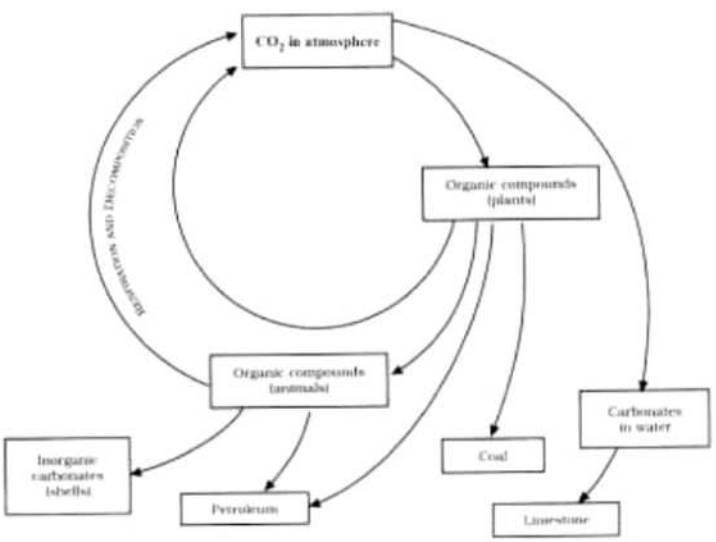
About 78% of nitrogen is present in our atmosphere. It is also present in proteins, nucleic acids and vitamins, alkaloids, urea etc. The free nitrogen is fixed by nitrogen fixing bacteria into nitrates and nitrites. After death and decay of plants and animals the nitrogen is returned back to the atmosphere.



Nitrogen cycle in nature

(iii) Carbon Cycle

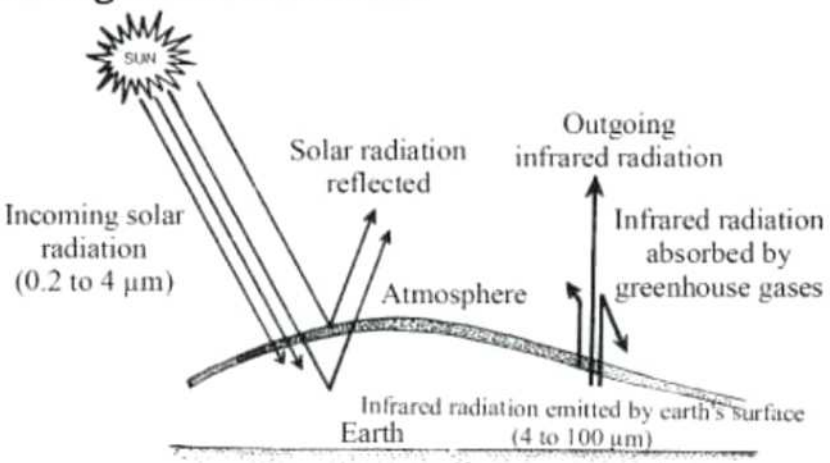
Carbon is present in elemental form as diamond and graphite and in combined form as carbon dioxide, carbonate and hydrogen-carbonate salts. Carbon containing molecules are proteins, carbohydrates, fats, nucleic acids and vitamins. In nature, carbon is cycled repeatedly through different forms by various physical and biological activities.



Carbon Cycle in Nature

Green House Effect

Greenhouse gases such as carbon dioxide, methane, nitrogen oxide and Chlorofluorocarbons present in atmosphere prevents the escape of heat falling on earth's surface rather than absorbing it. This keeps the earth warm and the phenomenon is known greenhouse effect.



Greenhouse effect in keeping the earth warm.

Green house effect will give rise to global warming due to which the average temperature will increase by 1° or 2°C worldwide. Due to increased temperature the ice-caps would melt, there is rise in the sea-level and it is feared that coastal areas would be destroyed by floods.

Oxygen-Cycle

In our atmosphere 21% of oxygen is present. It is found as combined form in carbon dioxide. O_2 is an essential component of biological molecules like carbohydrates, proteins, nucleic acids and fats. Oxygen is returned back to the atmosphere by photosynthesis.