13 WHY DO WE FALL ILL

CONCEPTS

1. A **disease** is the malfunctioning of body organs due to one reason or the other.
2. The term disease literally means "without ease" (uneasiness).
3. Diseases are broadly grouped into two types— **communicable** or **infectious diseases** and **non-communicable** or **non-infectious diseases.**
4. Communicable diseases are passed on from one person to another through air, water, food, physical contact and insects.
5. Communicable diseases are caused by micro-organisms (bacteria, viruses, fungi, protozoa, etc.).
6. Examples of communicable diseases are tuberculosis, typhoid, jaundice, malaria, amoebiasis, etc.
7. Non-communicable diseases are those which cannot spread from person to person, i.e., these diseases remain confined to the diseased person.
8. These diseases are not due to any external infection.
9. Examples of non-communicable diseases are diabetes, arthritis, cancer, marasmus, haemophilia, etc.
10. Diseases caused by viruses are mumps, AIDS, influenza, measles, chickenpox, rabies, etc.
11. Diseases caused by bacteria are cholera, leprosy, tetanus, tuberculosis, syphilis, etc.
12. Diseases caused by fungal infection are ringworm athlete's foot.
13. Malaria and amoebiasis are protozoan diseases.
14. Biological agents causing diseases are called **pathogens.**
15. The study of the causes of diseases is called **etiology.**
16. Diseases can be transmitted to the healthy person in two ways – **direct transmission** and **indirect transmission.**
17. Direct transmission occurs through contact with infected person, droplet infection, contact with soil, animal bites and through placenta.
18. Indirect transmission occurs through intermediate agents like carriers or vectors, through agents like ice, water, air, through uncleaned hands and fingers.
19. **Carriers** are organisms which harbour disease-causing germs without showing any signs of the disease themselves, but have the ability to infect other individuals.
20. Carriers of specific germs are called **vectors**, such as *Anopheles* is the vector of malarial germ *Plasmodium.*
21. **Cholera** is an acute infectious disease of gastrointestinal tract caused by the bacterium *Vibrio cholerae.*
22. **Typhoid** is an acute and most common communicable disease in India caused by a bacterium *Salmonella typhi.*
23. **Tuberculosis**, commonly called TB is caused by the bacterium *Mycobacterium tuberculosis.*

24. **BCG** (Bacillus Calmette Guerin) vaccine is made from a weakened tuberculosis bacillus bacterium.

25. **AIDS** (Acquired Immuno Deficiency Syndrome) is a fatal disease in which body's immune system breaks down.

26. **Hepatitis** is also a serious communicable disease having types A, B, C, D, E and G.

27. **Deficiency diseases** are of three types – Protein Energy Malnutrition (PEM), mineral deficiency diseases and vitamin deficiency diseases.

28. Two common forms of PEM are **Kwashiorkor** and **Marasmus.**

29. Mineral deficiency diseases are **anaemia** (iron deficiency), **goitre** (iodine deficiency), etc.

30. Vitamin deficiency diseases are **xerophthalmia, rickets, beri-beri, pellagra, scurvy,** etc.

I. SUMMATIVE ASSESSMENT

NCERT QUESTIONS WITH THEIR ANSWERS

SECTION A : IN-TEXT QUESTIONS

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Q.1. State any two conditions essential for good health.

Ans. Simply, not being diseased, does not mean good health. "Good health generally means "perfect functioning" of all the organs and systems of the body; and a state of balance and harmony between the individual and surrounding world.

Q.2. State any two conditions essential for being free of disease.

Ans. Two conditions essential for being free of disease are taking balanced diet and maintaining hygiene.

Q.3. Are the answers to the above questions necessarily the same or different why?

Ans. The answers are not always same. It varies from man to man, as for example, "good health" for a dancer may mean being able to stretch his/her body into difficult but graceful positions. On the other hand, good health for a musician may mean having enough breathing capacity in his/her lungs.

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Q.1. List any three reasons why you would think that you are sick and ought to see a doctor. If only one of these symptoms were present, would you still go to the doctor? Why or why not?

Ans. If there are any symptoms like headache, cough or loose motions, there may be a disease, though it is not sure what disease it is.

If only one symptom persists, then also one should go to a doctor. The doctor will diagnose on the basis of the symptom. Doctor will also get laboratory tests done to pinpoint the disease further.

Q.2. In which of the following cases do you think the long-term effects on your health are likely to be most unpleasant?

- if you get jaundice,
- if you get lice,
- if you get acne. Why?

Ans. Lice is an ectoparasite, it can easily be removed from the body. Acne is also curable. Both of these, generally have no long term effects. On the other hand, jaundice has long term effect on the liver. Jaundice is often accompanied with vomiting and in acute cases, it affects the liver severely. So, it may be concluded that long term effect of jaundice is most serious.

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Q.1. Why are we normally advised to take bland and nourishing food when we are sick?

Ans. When we are sick, our normal body functioning is disturbed. During that period, if we take bland and nourishing food, it helps digestion and absorption by the body.

Q.2. What are the different means by which infectious diseases are spread?

Ans. The diseases are spread to a healthy person in two ways

1. Direct transmission, and **2. Indirect transmission.**

Direct Transmission (transmission from an infected person to a healthy person without intermediate agents)

(a) Contact with infected person	—	chicken pox, small pox.
(b) Droplet infection	—	common cold, diphtheria, (through sneezing, influenza, tuberculosis coughing and spitting)
(c) Contact with soil	—	tetanus.
(d) Animal bites	—	rabies.
(e) Through placenta (from mother to foetus)	—	German measles.
(f) Sexual contact	—	AIDS, syphilis.

Indirect Transmission (transmission through intermediate agents)

(a) By carriers or vectors	—	Malaria spread by female *Anopheles*; house fly is the carrier for cholera, dysentery and typhoid.
(b) Through agents like ice, water, food and blood (vehicle-borne)	—	AIDS and hepatitis B are transmitted through blood.
(c) Air-borne	—	Epidemic typhus, tuberculosis.
(d) Unclean hands and fingers	—	Ascariasis.
(e) Through contaminated articles, crockery, surgical instruments, books, toys, door handles, syringes, etc.	—	Several diseases like diphtheria, hepatitis A, eye and skin infections, AIDS, etc.

Q.3. What precautions can you take in your school to reduce the incidence of infectious diseases?

Ans. To reduce the incidence of infectious diseases at our school, we can take the following precautions:

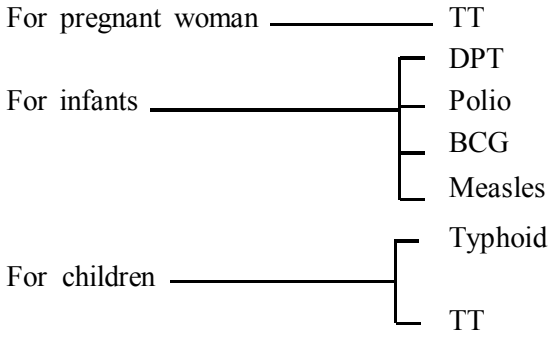
- clean, treated and potable drinking water must be consumed.
- school must have clean environment, so that mosquito breeding cannot take place.
- vaccination programme for particular diseases can also be started at the school level.

Q.4. What is immunisation?

Ans. Immunisation is a specific method for preventing diseases. Immunisations protect the body by either helping it to create new antibodies by presenting part or whole of the disease – causing agent to the person's immune system, a long term approach or by providing it with active antibodies, a temporary solution.

Q.5. What are the immunisation programmes available at the nearest health centre in your locality? Which of these diseases are the major health problems in your area?

Ans. The immunisation programmes available at the nearest health centre in my locality is —



SECTION B : QUESTIONS AT THE END OF CHAPTER

Q.1. How many times did you fall ill in the last one year? What were the illnesses?

(a) Think of one change you could make in your habits in order to avoid any of/most of the above illnesses.

(b) Think of one change you would wish for in your surroundings in order to avoid any of/most of the above illnesses.

Ans. I fell ill twice in the last one year. Once I suffered from jaundice and the second time from malaria.

(a) After suffering from these diseases, I decided

- not to take food from outside or open market.
- not to take cut fruits.
- to take purified drinking water.
- to clean my hands always before eating.

(b) As for the change in the surroundings, I wish the stagnant water be removed in my neighbourhood, so that there must not be any breeding place of mosquitoes.

Q.2. A doctor/nurse/health-worker is exposed to more sick people than others in the community. Find out how she/he avoids getting sick herself/himself.

Ans. They take the following steps to keep themselves free from infections. He/she

(i) always wears gloves while treating patients.
(ii) wears masks at the time of treating air-borne diseases.
(iii) always cleans hands and fingers (as well as instruments used by them) with the help of disinfectants.
(iv) is immunised by vaccinations.
(v) takes balanced diet, thus having his/her own powerful immune system.
(vi) has positive mental attitude.

Q.3. Conduct a survey in your neighbourhood to find out what the three most common diseases are. Suggest three steps that could be taken by your local authorities to bring down the incidence of these diseases.

Ans. After conducting a survey in my neighbourhood, the information I have gathered is shown in the following table:

Place : Badarpur

Name of diseases	Steps can be taken by local authority
• Bronchitis in children	• Check pollution from vehicles as well as local factories.
• Typhoid	• Can supply purified potable water.
• Malaria	• Proper drainage system should be made, so that there will be no stagnant water.

Q.4. A baby is not able to tell her/his caretakers that she/he is sick. What would help us to find out.

(a) that the baby is sick? (b) what is the sickness?

Ans. If the baby falls sick and he/she is unable to tell her/his caretakers about her/his illness —

(a) Constant crying of the baby helps to understand that she/he must have some problems in her/his body.

(b) The sickness can be assumed by noticing the frequent touch of that specific body part by the baby.

As for example, if she/he has stomach ache, the baby will touch the stomach region frequently along with crying.

Q.5. Under which of the following conditions is a person most likely to fall sick?

(a) when she is recovering from malaria.

(b) when she has recovered from malaria and is taking care of someone suffering from chicken-pox.

(c) when she is on a four-day fast after recovering from malaria and is taking care of someone suffering from chicken-pox.

Why?

Ans. (c) If a person suffered from malaria, she is already sick. She should take adequate food to cope up this situation. If she keeps four days fast after recovering from malaria her own defence system will be reduced. And, in this condition, if she takes care of chicken-pox patient, she has certainly a chance to get the disease.

Q.6. Under which of the following conditions are you most likely to fall sick?

(a) when you are taking examinations.

(b) when you have travelled by bus and train for two days.

(c) when your friend is suffering from measles. Why?

Ans. (c) As measles is a viral disease, there is always a chance to be infected by this virus, if my friend is suffering from this disease. So, only in this condition, I have a chance to fall sick. Measles is a potentially dangerous viral illness that causes fever and a characteristic rashes.

ADDITIONAL QUESTIONS (As Per CCE Pattern)

A. Very Short Answer Questions (1 Mark)

Other Important Questions

Q.1. What is disease?

Ans. A disease can be defined as a disorder in the physical, physiological or any other function of the body or mind.

Q.2. Who demonstrated the presence of bacteria in air?

Ans. Louis Pasteur demonstrated the presence of bacteria in air.

Q.3. How are communicable diseases transmitted?

Ans. Communicable diseases are transmitted through vectors.

Q.4. Name four bacterial diseases.

Ans. (i) Cholera (ii) Typhoid (iii) Pneumonia (iv) Leprosy

Q.5. What are viral diseases?

Ans. Communicable diseases which occur through virus are called viral diseases.

Q.6. Name two protozoan diseases.

Ans. (i) Malaria (ii) Amoebic dysentery

Q.7. Write the names of some non-communicable diseases.

Ans. Non-communicable diseases : Diabetes, goitre, anaemia, rickets, cancer, etc.

Q.8. What are pathogens?

Ans. Disease-causing organisms are called pathogens.

Q.9. Name some diseases which are caused by droplet infection.

Ans. Common cold, influenza, diphtheria, pneumonia, tuberculosis, etc.

Q.10. What are vectors?

Ans. Vectors are the biological carriers of disease-causing microorganisms.

Q.11. Name one air-borne disease.

Ans. Common cold

Q.12. What is flu?

Ans. Flu or influenza is a contagious disease caused by certain strains of myxoviruses. When an infected person coughs or sneezes, the droplets produced contain flu virus.

Q.13. Why does the AIDS patient become susceptible to cold?

Ans. In AIDS patient, immunity of body decreases for cold.

Q.14. What is HIV?

Ans. HIV or Human Immuno Deficiency Virus belongs to a group of viruses called retroviruses. It destroys the body's ability to fight diseases.

Q.15. What is jaundice?

Ans. Jaundice is a condition of yellowing of skin and whites of the eyes. Yellowing is because of the presence of excessive bilirubin in the blood.

Q.16. What are the hosts of malaria parasite?

Ans. Hosts of malaria parasite are mosquito and human.

Q.17. Which age group is susceptible to marasmus?

Ans. Marasmus is a protein-deficiency disease which occurs in children up to three years.

Q.18. Which hormone production is related to iodine?

Ans. Thyroid hormone.

Q.19. Which type of food we should take when we are sick ?

Ans. We should eat clean and easily digestable food when we are sick.

Q.20. What is pellagra?

Ans. Pellagra is a vitamin deficiency disease of skin.

Q.21. How do children in many parts of India get immune to hepatitis A by the time they are 5 years old? **[2010]**

Ans. The vaccine of hepatitis A is given to the children below 5 years of age to produce immunity against hepatitis A.

B. Short Answer Questions - I (2 Marks)

Previous Years' Questions

Q.1. (a) What is an epidemic disease?

(b) Which organ is affected if a person is suffering from jaundice? **[2011 (T-II)]**

Ans. (a) Epidemic disease : These diseases break out and spread from place to place affecting large number of people, eg, plague in India in 1994.

(b) Jaundice or hepatitis is the viral disease of liver.

Q.2. Why are we normally advised to take bland and nourishing food when we are sick? **[2011 (T-II)]**

Ans. When we are sick, our normal body functioning is disturbed. During that period, if we take bland and nourshing food, it helps in digestion and absorption by the body.

Q.3. Why are antibiotics effective against bacteria but not against viruses? **[2011 (T-II)]**

Ans. Antibiotics are effective against living organism like bacteria while the viruses are DNA fragments, not a living organism. Hence, viruses cannot be killed by any antibiotic.

Q.4. If you visit a friend suffering from malaria, what are the chances of malaria spreading to you? **[2011 (T-II)]**

Ans. Malaria does not spread by direct contact, it can only be transferred to healthy person by vectors or carriers like female *Anopheles* mosquito carrying disease causing protozoan *Plasmodium*.

Hence, I will get sick only if such a mosquito bites me.

Other Important Questions

Q.1. Which bacterium causes peptic ulcer? Who discovered the above pathogen for the first time?

Ans. Peptic ulcer is caused by the bacterium *Helicobacter pylori*. It was discovered by Barry J. Marshall and J. Robin Warren. They were awarded Nobel Prize in 2005 for this discovery.

Q.2. Name any two groups of microorganisms from which antibiotics could be extracted.

Ans. (i) Fungi (ii) Bacteria

Q.3. Give the importance of vaccination.

Ans. (i) Vaccination makes the body resistant to disease by making the body to produce special proteins called antibodies. These antibodies fight off the disease-causing organisms.

(ii) Vaccination provides immunity.

Q.4. Name any two diseases transmitted through vectors.

Ans. Malaria – Vector is mosquito.

Rabies – Vector is dog.

Q.5. Define and give examples of communicable diseases.

Ans. Diseases which can be transmitted directly or indirectly from one individual to another are called communicable diseases.

Example : Typhoid, Common Cold, Malaria, AIDS, Rabies, etc.

Q.6. How do pathogens cause diseases in human being?

Ans. Pathogens can harm their hosts in many ways :

(i) By distructing body tissues.

(ii) By releasing toxins or poisons. The pathogens enter in body and multiply till they produce toxins to make the symptoms of the disease appear. The interval between infection and appearance of first symptom of the disease is called incubation period.

Q.7. What do you mean by disease symptoms?

Ans. The indications of appearing a particular disease on body are called disease symptoms.

Q.8. How many types of chronic diseases have you studied?

Ans. The main chronic disease we have studied are — Tuberculosis, arthritis, diabetes, cancer, cardiovascular diseases, elephantiasis, etc.

Q.9. How does deficiency of iron and iodine affect our body ?

Ans. Iron deficiency leads to deficiency of haemoglobin in red blood cells and results into anaemia. In anaemia, the number of RBCs decreases.

Deficiency of iodine causes swelling of neck due to swelling of the thyroid gland. This disease is called goitre.

Q.10. How can we prevent our children from the disease, kwashiorkor?

Ans. The children can be prevented from the disease kwashiorkor by giving sufficient amount of protein-rich diet. It occurs due to the deficiency of protein alongwith carbohydrates and fats.

Q.11. Sweety suffered from chicken-pox this year. Her grandmother told her that now she would not suffer from this disease again. What is the reason for such a saying? **[2010]**

Ans. Sweety suffered from chicken pox this year. So antibodies formed at the time of suffering from chicken pox will remain in blood for long and she will not suffer from this disease again.

Q.12. Suggest two lines of treatment given to patient suffering from infectious disease. **[2010]**

Ans. (i) Reduce the effects of the disease by taking medicines.

(ii) Provide the clean environment so that the microbes cannot spread the disease.

Q.13. (a) What are antibiotics? **[2010]**

(b) How do antibiotics work against bacterial infections?

Ans. (a) Antibiotics are the chemicals that kill or stop the growth of certain kinds of microbes. They help our body to fight disease.

(b) The antibiotics block the bacterial synthesis without affecting the patient's immunity.

Q.14. (a) What are infectious agents? **[2010]**

(b) What is meant by inflammation?

Ans. (a) The microorganisms which spread the disease from one person to other are called infectious agents. These may be viruses, bacteria, fungi, protozoa, etc.

(b) Inflammation is the defence reaction of tissue to injury, infection or irritation by chemicals.

Q.15. Which system of our body is activated in response to infection and how it responds? **[2010]**

Ans. The body system that fights diseases is called the **immune system.** The immune system recruits many cells to the affected tissue to kill the disease causing germs. This recruitement process is called **inflammation.** During this process, certain local effects such as swelling and pain, and general effects such as fever develop. It takes some time for the immune system to kill germs. So a person with a disease is sick for a while. When the immune system has killed the germs, a person gets better.

Q.16. What are Non-infectious diseases? Give two examples of non-infectious diseases. **[2010]**

Ans. Diseases which do not spread from infected person to healthy person are known as non-communicable or non-infectious diseases. Some non-communicable diseases are : diabetes, arthritis, heart disease, cancer, etc.

Q.17. (a) Name the organ into which malarial parasite enter after mosquito bite. **[2010]**

(b) Give two examples of airborne diseases.

Ans. (a) Liver (b) Tuberculosis and epidemic typhus

Q.18. State one difference between acute and chronic disease, giving one example. **[2010]**

Ans. Acute diseases last for short periods while chronic diseases are long lasting. Cough, cold, cholera, typhoid are acute diseases while tuberculosis, arthritis, diabetes, cancer, etc. are chronic diseases.

Q.19. What are non-infectious diseases? Give two examples of non-infectious diseases. **[2010]**

Ans. Non-infectious diseases are those which cannot be spread person to person i.e. these diseases remain confined to the diseased person and do not infect others by contact or by carriers.

Examples— Diabetes and arthritis

Q.20. Name : **[2010]**

(a) the roundworm found in human intestine, and

(b) two sexually transmitted diseases.

Ans. (a) Ascaris (b) AIDS and Syphilis

C. Short Answer Questions - II (3 Marks)

Previous Years' Questions

Q.1. (a) Which of the following diseases are protozoan in origin?

Dangue, Malaria, Kala-azar and HIV-AIDS.

(b) Suggest any two ways to prevent being infected by protozoa. **[2011 (T-II)]**

Ans. (a) Malaria and kala-azar are the diseases which are protozoan in origin.

(b) There are two ways to prevent being infected by protozoa.

1. To reduce the effects of the disease.
2. To eliminate or kill the cause of the disease.

Q.2. (a) Why taking an antibiotic is not effective in the common cold?

(b) Name two diseases against which infants below one year are vaccinated.

(c) List two symptoms of any one of these diseases. **[2011 (T-II)]**

Ans. (a) Antibiotic is generally used for controlling the growth of organism like bacteria while causal agent of common cold is virus, a DNA fragment. Thus antibiotic is ineffective on it.

(b) The two diseases against which infants below one year are vaccinated are

(i) DPT

(ii) Polio

(c) Two symptoms of Polio are :

(i) Atrophy of skeletal muscles

(ii) Deformity of affected limb.

Q.3. (i) State in brief the principle of immunisation.

(ii) Name any two diseases that can be prevented by immunisation. **[2011 (T-II)]**

Ans. (i) **Principle of immunisation**

It is a specific method for preventing diseases. Immunisations protect the body by either helping it to create new antibodies by presenting part or whole of the disease — causing agent to the persons immune system, a long term approach or by providing it with active antibodies, a temporary solution.

(ii) Two diseases that can be prevented by immunisation are chicken pox and measles.

Q.4. (i) Match the following columns with correct answers :

	Organism/ Bacteria	**Diseases**
(a)	Leishmania	worm
(b)	Staphylococci	Kala-azar
(c)	Trypanosoma	Acne
(d)	Ascaris Lumbricoides	Sleeping sickness

(ii) "High blood pressure can be caused by excessive weight and lack of exercise." Justify the statement. **[2011 (T-II)]**

Ans. (i) The correct order is given below :

	Organism/ Bacteria	**Diseases**
(a)	Leishmania	Kala-azar
(b)	Staphylococci	Acne
(c)	Trypanosoma	Sleeping sickness
(d)	Ascaris Lumbricoides	worm

(ii) The reason is that if we do not loose our weight and do not take regular exercise we have to face the problem of high blood pressure. In this case we need to take treatment for a long time and our body organs get affected. Thus, we suffer poor health for a long period.

Q.5. (i) Give definition of 'health'?

(ii) State and explain in brief the four major factors, which are the causes of disease.

[2011 (T-II)]

Ans. (i) **Health —** The World Health Organisation (WHO) has defined health as "a state of complete physical, mental and social well being and not merely an absence of a disease.

(ii) Four major factors which are the causes of disease are :

(a) Infection by micro-organisms (bacteria, virus, fungi, protozoa) and **worms**; cause communicable diseases.

(b) Malfunctioning of body organs; non-communicable diseases like diabetes and heart diseases are caused by the malfunctioning of pancreas and heart respectively.

(c) Deficiency of one or more nutrients; goitre, marasmus and kwashiorkor are such diseases.

(d) Genetic factors present from the birth of the individual; **haemophilia is a genetic disease.**

Q.6. (i) Differentiate between acute and chronic diseases.

(ii) Give one example each of acute and of chronic diseases.

(iii) Mention any two causes of body's diseases. **[2011 (T-II)]**

Ans. (i)

Acute diseases	**Chronic diseases**
1. Last for few days.	1. Last for very long periods.
2. There are no bad effects on our general health.	2. Have long term bad effects on our general health, such as loss of weight, short breathe, tiredness, etc.
3. Do not reduce our ability to learn.	3. May reduce our ability to learn.

(ii) Example of acute disease — Diarrhoea.

Example of chronic disease — Tuberculosis.

(iii) **Causes of body's diseases are**

(a) The micro-organisms (bacteria, virus, fungi, protozoa) and worms, cause communicable diseases.

(b) Malfunctioning of body organs, non communicable diseases like diabetes and heart diseases are caused by the malfunctioning of pancreas and heart respectively.

Q.7. (i) Match the following columns with correct answers :

So.	**Column-I**	**Column-II**
(a)	Fungal disease	Dengue fever
(b)	Viral disease	Cholera
(c)	Protozoan disease	Skin disease
(d)	Bacterial disease	Malaria

(ii) Name any one disease caused when the microbes target :

(a) liver (b) lungs **[2011 (T-II)]**

Ans. (i) The malfunctioning of pancreas and heart respectively.

So.	Column-I	Column-II
(a)	Fungal disease	Skin disease
(b)	Viral disease	Dengue fever
(c)	Protozoan disease	Malaria
(d)	Bacterial disease	Cholera

(ii) (a) Jaundice (b) Tuberculosis

Q.8. Prevention of disease is more desirable than its treatment". Justify the statement by discussing three major strategies to be adopted for the prevention of infectious diseases. **[2011 (T-II)]**

Ans. Yes it is true that preventation is more desirable than treatment. It is clear from the following points :

(a) **Sanitation :** Keep the environment clean by proper disposal of garbage, sewage and covering, cleaning of drains. This reduces the chance of vector borne disease.

(b) **Nutrition :** Well balanced diet full of vital nutrient like carbohydrates, vitamins and mineral should be taken to develop strong immune system. It ultimately kill pathogen even before their multiplication.

(c) **Proper Exercise and relaxation :** Proper exercise improves. Blood circulation, tone muscle, improve bowel movement and appetite. While relaxation is necessary for relieving tension and providing rest for muscle. Thus finally all contribute to strong immune system.

Q.9. (a) Which system of our body is activated in response to infection and how it responds?

(b) Explain how HIV-AIDS virus affects and damages our body? **[2011 (T-II)]**

Ans. (a) Immune system of our body is activated in response to infection and certain local effects such as swelling and pain and general effects such as fever may develop.

(b) In case of AIDS, the virus affects the body's immune system and damages its function. It is because of these subsequent infections that people suffering from AIDS die due to minor cold or gut infection.

Q.10. (a) Explain why antibiotics are more effective in curing bacterial diseases than viral diseases.

(b) List one general mode of prevention of jaundice. **[2011 (T-II)]**

Ans. (a) Antibiotics are generally used for controlling growth of organism like bacteria, causing bacterial disease. On the other hand viruses is a non living, DNA fragment on which antibiotic is ineffective, thus on viral disease.

(b) Eating hygenic food and drinking disineffected (by chlorination, boiling or ozonisation) water.

1. Spread through air.
2. Spread through water

Q.11. What is human immune system? What is a vaccine? How immunisation can be achieved? **[2011 (T-II)]**

Ans. The body system that fights diseases is called the immune system. The immune system recruits many cells to the affected tissue to kill the disease-causing germs.

A vaccine is a suspension of disease – producing micro-organisms which is modified by killing or weakening (attenuated) so that the suspension will not cause disease. Immunisation can be achieved by making the body resistant to disease by making the body to produce special body organs called antibodies. These antibodies fight off the disease causing organisms.

Q.12. List any two differences between infectious and non-infectious diseases. Write any one example of each disease. **[2011 (T-II)]**

Ans.

Infectious Diseases	Non-infectious diseases
1. They are caused by attack of pathogen.	1. They are caused by factors other than living pathogen.
2. Transmission of infection occurs through direct contact or some medium.	2. Transmission is absent except for hereditary diseases where it occurs from parent to offspring.
Example — Malaria	Example — Goitre

Q.13. (a) If a person is suffering from jaundice, name the mode of its transmission and the organ affected by this disease.

(b) List one general mode of prevention of jaundice.

(c) It has been observed that despite the availability of the vaccine for Hepatitis A in the market, it may not be necessary to be given to children by the time they are 5 years old. Why? **[2011 (T-II)]**

Ans. (a) **Mode of Transmission of Jaundice.**

1. Hepatitis A is spread mostly by contaminated food and water.
2. Hepatitis B is transmitted by contact with infected body secretions (sweat, saliva, tear, etc.) and blood. Liver is affected by this disease.

(b) **Prevention of Jaundice**

Eating hygienic food and drinking disinfected (by chlorination, boiling or ozonisation) water.

(c) Because after 5 years the children will be able to develop immunity against hepatitis A.

Q.14. (a) Doctors diagnosed that Radha was suffering from HIV-AIDS. List any two methods by which she might have contacted the disease. Name the organ affected by this disease.

(b) Why antibiotics cannot be used for its treatment? Justify your answer. **[2011 (T-II)]**

Ans. Two methods are

(i) **Spread through physical contact –** One of the way is physical contact, through sexual act.

(ii) **Through blood to blood contact –** Besides sexual contact, AIDS virus can also spread through blood to blood contact (during blood transfusion or by use of an infected needle or razor) and during pregnancy from an infected mother to her baby.

This infects and destroys helper — T cells which are essential for combating infections.

(b) Antibiotics cannot be used for treatment because antibiotics is used to kill or stop the

growth of certain kinds of microbes while AIDS is caused by virus of H.I.V. (Human Immuno-deficiency Virus) where antibiotic is ineffective.

Q.15. Ravi suffered from tuberculosis, while Rehman suffered from typhoid. Which disease caused more damage and why? **[2011 (T-II)]**

Ans. Since tuberculosis is a chronic disease having longer duration, developing slowly with a milder course. It will cause more damage to body than a typhoid which is an acute disease of shorter duration.

Q.16. (a) Mention two factors on which severity of disease manifestation depends?

(b) Once you have been infected with small pox, there is no chance of suffering from it again. Give reason.

(c) Mention the two ways of preventing 'diseases'? **[2011 (T-II)]**

Ans. (a) Two factors on which severity of disease manifestation depends are —

1. Laboratory tests done on the patients by the physicians.
2. Look for the signs of a particular disease in a patient.

(b) Because in the case of many diseases, immunity is created by a person having the disease and recovering from it. Small pox give the body a lasting immunity. This means that once you have one of these diseases, you won't get it again.

(c) **Two ways of preventing diseases.**

1. Drinking water must be free from all types of germs.
2. There should be proper garbage disposal, sewage disposal, covering and cleaning of drains and occasional spraying of insecticides.

Q.17. (a) Define antibiotic. Explain how it is able to control bacterial infections but not viral infections.

(b) Write two water borne diseases. **[2011 (T-II)]**

Ans. (a) A substance or compound that kills or inhibits the growth of bacteria is called antibiotic. Examples : Penicillin, Ampicillin. Viruses are DNA fragments and are not living organisms. Hence, cannot be killed by any antibiotic.

(b) Two water borne diseases are : (i) Cholera (ii) Jaundice

Q.18. What are the principles of treatment of a disease? **[2011 (T-II)]**

Ans. Principles of Treatment

Basically, two approaches are adopted to treat an infectious disease. These are

(i) to reduce the effects of the disease and

(ii) to eliminate or kill the cause of the disease.

In the first approach depending on the symptoms we take.

(i) medicines to reduce fever or pain or to stop loose motion as the case may be and

(ii) rest so as to conserve energy.

However, the first approach will not lead to killing of disease-causing organisms or microbes like bacteria, viruses, fungi or bacteria. For a complete recovery from the disease, it is essential that medicines specific to the disease — causing microbe are taken. For example, for creating bacterial diseases medicines or antibiotics that block bacterial synthesis without affecting our own have to be taken by the patient.

Q.19. Identify the diseases which spread through the following means? Also name the target organs.

(a) Sexual contact (b) Mosquitoes (c) From air via nose **[2011 (T-II)]**

Ans. (a) Sexual contact — AIDS
Target organ — lymph nodes.
(b) Mosquitoes — Malaria
Target organ — Liver
(c) From air via nose — Common cold
Target organ — Lungs.

Q.20. In previous years a group of people did not have the fear of contacting exposed to small pox and would provide nursing care for the victims. Discuss why? **[2011 (T-II)]**

Ans. These days, there is no case of small pox anywhere in the world. But as recently as a hundred years ago, small pox epidemics were quite prevalent. In such an epidemic, people used to be very scared of coming near someone suffering from the small pox disease since they were afraid of catching the disease. But, there was one group of people who did not have this fear. These people would provide nursing care for the patients of small pox. This was a group of people who had suffered with small pox and survived it, although with a lot of scarring.

Q.21. What would be the symptoms if the microbe infects the following targets?
(a) Lungs (b) Liver (c) Brains **[2011 (T-II)]**

Ans. (a) **Lungs —** Symptoms will be cough and breathlessness.
(b) **Liver —** Symptoms will be fever and loss of appetite.
(c) **Brain —** Symptoms will be headache, vomitting, fits and even unconsciousness.

Q.22. Suggest three ways to prevent spreading of infectious diseases. **[2011 (T-II)]**

Ans. Three ways to prevent spreading of infectious diseases are
(i) Health education
(ii) Proper sanitation
(iii) Immunization (vaccination)

Q.23. What are vectors? Name the vectors of malaria and kala-azar. **[2011 (T-II)]**

Ans. Vectors : They are living organisms which spread the pathogen from an infected person to a healthy person. Usually, a part of their life cycle is passed inside a body of pathogen. Vector of malaria is female *Anopheles* mosquito and the vector of Kala azar is sand fly.

Q.24. How principle of immunization is implemented for eliminating polio? **[2011 (T-II)]**

Ans. For the eradication of polio from our country**,** Government of India started Pulse Polio Programme in Dec. 1995. The aim of this programme is to eradicate polio from our country. Polio vaccine called oral Polio Vaccine (OPR) is given to children orally (through the mouth), as per the National Immunisation Schedule (NIS). A dose of 3 drops is given to the child each at the age of 1.5, 2.5 and 3.5 months. A booster dose is given at the age of 1.5 years.

Q.25. (a) What are communicable disease?
(b) What are the common methods of transmission of disease? **[2011 (T-II)]**

Ans. (a) Communicable diseases are those which are passed on from one person to another in various ways- through air, water, food, physical contact and insects.
(b) Common methods of transmission of disease are through air, water, sexual act and through vectors and carriers.

Q.26. A person was bitten by a stray dog. After some days his nature gets irritated, he started fearing water.

(a) Name the disease.
(b) Is there any plan vaccine available?
(c) Is there any plan of your local authority for the control of this disease? **[2011 (T-II)]**

Ans. (a) Rabies
(b) Five antirabies vaccines are given at an interval 0 – 3 – 7 – 14 – 30 days of dog's bite.
(c) (i) Immunization of stray cuts and dogs with anti rabies vaccine.
(ii) Rabid dog should be killed if it shows excessive salivation.

Q.27. (a) Name the organism causing the following diseases.
(i) Kala-azar (ii) Sleeping sickness
(b) Give one example each of acute and chronic disease. **[2011 (T-II)]**

Ans. (a) (i) Kala azar is caused by a protozoan *Leishmania donovani.*
(ii) Sleeping sickness is caused by a protozoan *Typanosoma gambiense*.
(b) Acute disease — Cold
Chronic disease — Tuberculosis.

Q.28. It was diagnosed that a patient has lost the power of fighting any infection.
(i) Name the disease the patient is suffering from.
(ii) Name the pathogen responsible for the disease.
(iii) Describe any two modes of its transmission for one person to another. **[2011 (T-II)]**

Ans. (i) The patient is suffering from AIDS.
(ii) HIV (Human Immunodeficiency Virus) is responsible for causing AIDS.
(iii) AIDS is transmitted from one person to another by —
— HIV infected mother to her foetus (baby).
— Using HIV infected syringe or blood.

Q.29. Write any three common preventive measures against communicable diseases. **[2011 (T-II)]**

Ans. (i) Proper sanitation.
(ii) Provision of safe water supply.
(iii) Immunization (vaccination).

Q.30. Define immunity. Explain natural and acquired immunity. **[2011 (T-II)]**

Ans. The body's power to resist and overcome infection is called immunity.
Natural immunity — It is also called innate (in born) immunity. It is inherited by the organism from the parents and protects it from birth throughout life. This immunity is virtue of genetic constitutional make-up.
Acquired immunity : It is developed by an animal in response to a disease caused by infection of microbes. Acquired immunity is specific and is mediated by antibodies or lymphoid cells.

Q.31. Name the infectious disease that leads to immuno deficiency. Write the scientific name of the pathogen causing the disease. Mention the body organs it primarily affects. **[2011 (T-II)]**

Ans. AIDS.
AIDS is caused by HIV (Human Immunodeficiency virus).
AIDS affects the immunity of the whole body.
But primarily some organs like lungs, intestine, liver, etc. are affected.

Q.32. List three limitations which a person has to face while suffering from an infectious disease. **[2011 (T-II)]**

Ans. (i) The infected person should live in isolation till the treatment gets over.
(ii) The patient should not spit anywhere.
(iii) He/she should follow the proper sanitation, and personal hygiene habits.

Q.33. (a) Write few common signs and symptoms of a disease if brain is affected.
(b) Give one local and one general effect of inflammation process. **[2011 (T-II)]**

Ans. (a) A few symptoms of a disease if brain is affected, are — Headache, vomitting, fits and even unconsciousness.
(b) Local effect of inflammation — Swelling
General effect of inflammation — Fever.

Q.34. Mention the symptoms because of which you will visit the doctor and why? **[2011 (T-II)]**

Ans. If you feel a condition in which body health is departing from a state of health, an alteration of the body interrupting the performance of vital functions, you will visit a doctor. A doctor will look the sign of a particular disease.

Q.35. (a) Mohan suffered from chicken pox in his childhood. He would not suffer from this disease again. Mention reason for this.
(b) On which factor does the severity of disease manifestation depends? Explain with an example. **[2011 (T-II)]**

Ans. (a) Mohan suffered from chicken pox in his childhood, so he should have potential antigens in his body which will give protection from getting infected by the same disease again.
(b) On the basis of sign and symptoms the severity of disease manifestation depends. For example Malaria causing protozoans enters the human body through a mosquito, affects the liver and red blood cells.

Q.36. (a) Why a person suffering from AIDS cannot fight even very small infections?
(b) In a slum area many people are suffering from malaria mention any two unhygienic conditions that must be prevailing in that locality?
(c) Why female *Anopheles* mosquito feeds on human blood? **[2011 (T-II)]**

Ans. (a) In case of AIDS, the virus affects the body's immune system and damage its function. So a person cannot fight even very small infections due to body's immune system getting weakened.
(b) (i) The stagnant water in ponds, wells, ditches, coolers, etc.
(ii) Sustenance of garbage in nearby areas.
(c) The female *Anopheles* mosquito usually require a blood meal for the development of eggs. After obtaining a full blood meal, the female will rest for a few days while the blood is digested and eggs are developed.

Q.37. (a) What is immunizations?
(b) Categorise the following into acute/chronic/infectious/non infectious diseases : typhoid, TB, Goitre, Elephantiasis. **[2011 (T-II)]**

Ans. (a) Immunization is a process of producing a state of immunity in a person or animal.
(b) Typhoid — Acute disease.
TB — Chronic disease.
Goitre — Non-infectious disease.
Elephantiasis — Infectious disease.

Q.38. Give cause and remedy of :

(a) Hepatitis (b) AIDS (c) Malaria **[2011 (T-II)]**

Ans. (a) **Hepatitis :** It is a serious disease caused by hepatitis virus. It can cause liver damage.

Remedy of Hepatitis include —

(i) Washing of hands before eating and after toilet.

(ii) Proper disposal of excreta to prevent contamination of water, milk and food.

(iii) Vaccines for Hepatitis A and Hepatitis B should be taken.

(b) **AIDS** — It is caused by a virus (HIV), Human Immunodeficiency Virus. Once a person is infected, the virus remains in the body life long.

Remedy of AIDS

Avoid the of HIV positive blood or infected blade, razor, etc.

(c) **Malaria** — It is spread by female *Anopheles* mosquito and the causal organism is a protozoan *Plasmodium.*

Remedy of Malaria

(i) Elimination of small ponds and puddles to prevent breeding of mosquito.

(ii) Quinine is a medicine for malaria treatment. It is obtained from a tree.

Q.39. (a) Immune system is essential for our health. Comment on the above statement.

(b) How can we acquire immunity? **[2011 (T-II)]**

Ans. (a) Our body can fight and kill most of the germs. The body system that fights diseases is called the **immune system.** The immune system recruits many cells to the affected tissue to kill the disease-causing germs. This recruitement process is called **inflammation.** It takes some time for the immune system to kill germs. So a person with a disease is sick for a while. When the immune system has killed the germs, a person gets better.

(b) Our body have a natural immune system which helps to protect us from microbes. The body's power to resist and overcome infection (immunity) varies from person to person, so some people especially children require artifical immunity to fight the infections. Thus, artificial immunity can be provided to children particularly by injecting specific vaccines in the body for protection against the diseases.

Q.40. (a) Define 'disease'.

(b) Explain briefly the two groups of causes of diseases. **[2011 (T-II)]**

Ans. (a) A disease can be defined as a disorder in the physical, physiological or any other function of the body or mind.

(b) Causes of diseases are the agents and factors which produce the diseases. These are.

(i) **Immediate cause :** It is the real cause of the disease, which is also called the **first level of cause.** For infectious diseases, the immediate cause is the pathogen, viz, virus fungus, protozoan worm. Suppose a baby is suffering from loose motions. The first level of cause is the pathogen which may be virus or bacterium. The pathogen reaches inside the body through unclean drinking water, contaminated food, milk bottle and other articles.

(ii) **Contributing causes :** They make a person prone to catching the disease. All the persons are not equally susceptible to a disease. Some contract the disease while other do not though they may receive equal amount of contamination. The susceptibility may be due to poor health related to under-nourishment. In some persons, susceptibility or non-susceptibility to a pathogen is genetically related. The contrib-

uting causes of under nourishment and poor heredity are also called **second level of causes** as they are connected with a particular person.

Q.41. How do diseases spread through air? Name two such diseases. **[2011 (T-II)]**

Ans. **Diseases spread through air —** A number of disease causing microbes spread through air. This occurs through the little droplets thrown out when an infected person sneezes or cough or spits **(this is called droplet** infection) A healthy person standing nearby can inhale these droplets, causing infection in that person.

Air-borne diseases are more common in crowded areas as well as in poorly ventilated rooms.

Examples — Pneumonia, Common cold.

Q.42. Observe the example and complete the rest :

Ex. diabetes : non communicable : : chicken pox. communicable.

(a) Pneumonia : acute : : tuberculosis : _____

(b) Anthrax : bacteria : : elephantiasis : _____

(c) AIDS : _____ : : elephantiasis : brain. **[2011 (T-II)]**

Ans. (a) Pneumonia : acute : : tuberculosis : chronic

(b) Anthrax : bacteria : : elephantiasis : virus

(c) AIDS : Lungs : : encephalitis : brain.

Other Important Questions

Q.1. Give two examples for each of the following :

(a) Acute disease (b) Chronic disease (c) Infectious disease

Ans. (a) Acute disease – Common cold, diarrhoea

(b) Chronic disease – Leprosy, tuberculosis

(c) Infectious disease – Small pox, chicken pox

Q.2. What is an antibiotic? Give two examples.

Ans. A substance or compound that kills or inhibits the growth of bacteria is called antibiotic. Examples : Penicillin, Ampicillin.

Q.3. Why are antibiotics not effective for viral diseases?

Ans. Viruses are DNA fragments and are not living organisms. Hence, cannot be killed by any antibiotic.

Q.4. Give any three factors necessary to remain healthy.

Ans. The three important factors to remain healthy are :

(i) Personal cleanliness – Cleaning of all body parts.

(ii) Nutrition – By taking a balanced diet.

(iii) Physical exercise, rest, sleep and relaxation are also necessary to remain healthy.

Q.5. Name the target organs for the following diseases :-

(a) Hepatitis (b) Faint or unconsciousness (c) Pneumonia

Ans. (a) Hepatitis – Liver (b) Faint or unconsciousness – Brain (c) Pneumonia – Lungs

Q.6. Who discovered 'vaccine' for the first time?

Ans. Edward Jenner discovered smallpox vaccine for the first time in 1796.

Q.7. Classify the following diseases as infectious or non-infectious :
(a) AIDS (b) Tuberculosis (c) Cholera (d) High blood pressure
(e) Heart disease (f) Pneumonia

Ans. Infectious Disease : AIDS, Tuberculosis, Cholera, Pneumonia.
Non-infectious Diseases : High blood pressure, Heart disease.

Q.8. Give two symptoms of each of the following diseases
(a) Malaria (b) Marasmus (c) Typhoid

Ans. (a) Symptoms of Malaria :
(i) Headache (ii) Fever with cramping
(b) Symptoms of Marasmus :
(i) Ribs become prominent (ii) Dry, thin and wrinkled skin.
(c) Symptoms of Typhoid :
(i) Prolonged fever with headache.
(ii) Low fever in morning followed by high fever in the afternoon.

Q.9. What are chronic disease and acute diseases? Which one causes more damage to our body and how? **[2010]**

Ans. Diseases which last for short periods and are severe are called **acute diseases.** On the other hand diseases which are long lasting are called **chronic diseases.** Chronic diseases have drastic long term effects on people's health. Acute diseases, which last for a short period, do not cause bad effects on our health.
Our body get more damaged when we suffer from a chronic disease such as tuberculosis or cancer or heart diseases. We need to take the treatment for a long time and our body organs get affected. Thus, we suffer poor health for a long period.

Q.10. It was diagnosed that the body of a patient has lost its power of fighting any infection. Name the disease he is suffering from. What type of microbe is responsible for this disease and how does it spread from one person to another? **[2010]**

Ans. This person is suffering from AIDS disease. Human Immuno deficiency Virus (HIV) is responsible for this disease.
The AIDS virus can spread by entering the body through—
(i) sexual contact
(ii) infected blood or syringes
(iii) from pregnant mother to her baby (foetus).

Q.11. What is immunization? Name any four diseases which can be prevented by immunization. **[2010]**

Ans. Immunisation is a specific method for preventing diseases. Immunisation protects the body by either helping it to create new antibodies by presenting part or whole of the disease–causing agent to the person's immune system, a long term approach or by providing it with active antibodies, a temporary solution.
Polio, tuberculosis, measles, tetanus, etc. are the diseases which can be prevented by immunisation.

Q.12. (a) What are antibodies? (b) How do they work? **[2010]**

(c) How penicillin is effective to control bacterial disease?

Ans. (a) Antibiotics are chemicals that kill or stop the growth of certain kinds of microbes. They help our body to fight disease.

(b) The antibiotics block the synthesis or growth of bacteria without affecting the person's immune system.

(c) Penicillin is the most effective antibiotic used to treat various infections. It breakdown the bacterial cell wall and inhibit their growth.

Q.13. Give reasons for the following : **[2010]**

(a) If a person had small pox once, there is no chance that he/she will suffer from it again.

(b) A person suffering from HIV-AIDS may die due to minor cold or gut infection.

(c) Health is a state of being well physically, mentally and socially.

Ans. (a) If a person had small pox once, it caused the formation of antibodies upon inoculation. These antibodies remain in blood for long and when the germs of this disease attack the body again the antibodies will fight the germs.

(b) In case of AIDS, the virus affects the body's immune system and damages its function. It is because of these subsquent infections that people suffering from AIDS die due to minor cold or gut infection.

(c) Physical health implies "perfect functioning" of all the organs and systems of the body. Mental health implies a state of balance and harmony between the individual and the surrounding world. A person is socially healthy if he has a good job, a good house, a happy family, good neighbours and understanding friends.

Q.14. What are the various means by which infectious diseases spread? Explain giving examples. **[2010]**

Ans. The infectious diseases are spread to healthy persons in two ways :

1. Direct transmission, and **2. Indirect transmission.**

Direct Transmission (transmission from an infected person to a healthy person without intermediate agents)

(i) **Contact with infected person**	— chicken pox, small pox
(ii) **Droplet infection** (through sneezing, coughing and spitting)	— common cold, diphtheria, influenza, tuberculosis.
(iii) **Contact with soil**	— tetanus
(iv) **Animal bites**	— rabies
(v) **Through placenta** (from mother to foetus)	— German measles.

Indirect Transmission (transmission through intermediate agents)

(i) **By carriers or vectors**	— Malaria is spread by female Anopheles; house fly is the carrier for cholera.
(ii) **Through agents like ice, water food and blood**	— Dysentery, typhoid; AIDS and hepatitis B are transmitted through blood.
(iii) **Air-borne**	— Epidemic typhus, Tuberculosis
(iv) **Unclean hands and fingers**	— Ascariasis.

(v) **Through contaminated articles like towels, garment, utensils, crockery, surgical instruments, books, toys, door handles syringes,** — Several diseases like diphtheria, hepatitis A, eye and skin infections.

Q.15. Define Health. List four factors affecting Health. **[2010]**

Ans. Health is a state of complete physical, mental and social well-being and not merely an absence of a disease. It is also a harmonious balance of the state of human individual integrated into his environment.

The four factors affecting health are —

(i) Physical condition (ii) Mental condition

(iii) Social condition (iv) Environment

D. Long Answer Questions (5 Marks)

Other Important Questions

Q.1. Explain giving reasons

(a) Balanced diet is necessary for maintaining a healthy body.

(b) Health of an organism depends upon the surrounding environmental conditions.

(c) Our surrounding area should be free of stagnant water.

(d) Social harmony and good economic conditions are neccessary for good health.

Ans. (a) A balanced diet contains all the essential organic and inorganic nutrients carbohydrate, fat, protein, vitamin, minerals, roughage and water which protect our body from diseases, help in growth and development and fight infections.

(b) Good environmental conditions help us to prevent diseases, increase the life span, improve health standards. The surrounding environmental condition includes :

(i) Proper disposal to sewage and domestic wastage.

(ii) Drinking water should be pure.

(iii) Control measures to prevent communicable diseases.

(iv) Children should be given health education.

(c) Stagnant water is a best breeding ground for mosquitoes and other disease causing organisms. There should not be any water logging in our surroundings.

(d) (i) The social factors which affect health are drugs, smoking, chewing tobacco, alcoholism, etc. All these factors affect health adversely.

(ii) The economic status of a person has a great impact on his health. Poverty is the root cause of nutritional disorders in our country.

Q.2. Why is immune system essential for our health?

Ans. The body's defence against a disease is called immunity. The immunity that exists naturally in our body is called natural immunity. The body produces disease fighting substances called antibodies. Thus, immunity is body's defence mechanism of fight against diseases and infections.

Q.3. What precautions will you take to justify "prevention is better than cure"?

Ans. Precautions to justify 'Prevention is better than cure".

(i) Keep yourself as clean as possible.

(ii) Maintain cleanliness in home as well as in the neighbourhood.
(iii) Eat balanced food to prevent nutrient deficiency.
(iv) Take a bath daily.
(v) Always wash your hands before and after every meal.
(vi) Maintain proper provisions for safe disposal of human excreta and domestic waste.
(vii) Awareness on sexually-transmitted disease should be given to every person as possible to avoid these diseases.
(viii) Well-isolated sewer system should be provided.

Q.4. Becoming exposed to or infected with an infectious microbe does not necessarily mean developing noticeable disease. Explain.

Ans. Our immune system protects us against various infectious diseases. The infectious agents are viruses, bacteria and parasites. The white blood cells of the defence system are produced in the marrow of our bones. The cells are carried to the blood to specialized organs where they develop immune responses against infections.

Some WBCs like macrophages destroy and engulf bacteria and damaged cells. The body cells produce antibodies which can neutralise viruses, bacteria or toxic proteins in blood and body fluids.

Infectious diseases may be self-limiting. It means that our immune system can successfully eliminate pathogens. Many viral diseases are self-limiting. Other infections may require treatment with antimicrobial drugs appropriate for specific pathogen.

Hence, it explains that becoming exposed to or infected even with an infectious microbe may not cause noticeable disease. In this case, our body–immunity plays an essential role.

Q.5. Why is AIDS considered to be a 'Syndrome' and not a disease?

Ans. AIDS stands for Acquired Immunity Deficiency Syndrome.

- Acquired means you can get infected with it.
- Immune deficiency means a weakness in the body's system that fights diseases.
- Syndrome means a group of health problems that make up a disease.

The symptoms of AIDS are primarily the result of conditions that do not normally develop in individuals with healthy immune system. Most of these conditions are infections caused by bacteria, viruses, fungi and parasites that are normally controlled by the elements of our immune system.

People suffering from AIDS have an increased risk of cancer. Additionally, they also show symptoms like fever, swollen glands, chills, weakness and weight loss. Thus, HIV virus, progressively reduces the effectiveness of immune system and leaves a person susceptible to many infections and tumors. Hence, AIDS is better known as a syndrome rather than a disease.

Q.6. What are the different means by which the disease causing microbes enter the body? How do they damage different organs after entering them? **[2010]**

Ans. The disease causing microbes also known as pathogens cause diseases in human beings by entering

(i) through the air we inhale,
(ii) through the water we drink and food we eat,

(iii) through skin.

These modes of transmission may be direct or indirect.

Direct Transmission (transmission from an infected person to a healthy person without intermediate agents)

(a) Contact with infected person	— chicken pox, small pox.
(b) Droplet infection	— common cold, diphtheria, (through sneezing) influenza, tuberculosis (coughing and spitting)
(c) Contact with soil	— tetanus.
(d) Animal bites	— rabies.
(e) Through placenta (from mother to foetus)	— German measles.
(f) Sexual contact	— AIDS, syphilis.

Indirect Transmission (transmission through intermediate agents)

(a) By carrier or vectors	— Malaria spread by female *Anopheles;* house fly is the carrier for chloera.
(b) Through agents like ice, water food and blood (vehicle-borne)	— Dysentery and typhoid; AIDS and hepatitis B are transmitted through blood.
(c) Air-borne	— Epidemic typhus, tuberculosis.
(d) Unclean hands and fingers	— Ascariasis
(e) Through contaminated articles like towels, garments, utensils, crockery, surgical instruments, books, toys, door handles, syringes, etc.	— Several diseases like diphtheria, hepatitis A, eye and skin infections, AIDS, etc.

The pathogens after entering the host or a healthy person either affect the functioning of different organs or damage the tissues of the organs.

Q.7. (a) Name any two air-borne diseases. How does the disease causing microbes spread through air? **[2010]**

(b) How does HIV virus spread from a patient to a healthy person? Give any two methods of transmission of this disease.

(c) How does the immune system of our body function?

Ans. (a) Common cold and tuberculosis are air-borne diseases. When an infected person throw out the little droplets during sneezing or coughing or spitting, these disease causing organsims (microbes) spread in air and infect the other healthy persons.

(b) In case of AIDS, the virus affects the body's immune system and damage its function. Many of the symptoms of HIV are due to body's immune system getting weakened and thus infection takes place.

Two methods of transmission of AIDS are —

(i) Through the infected syringe or infected blood.

(ii) From the infected pregnant mother to her baby (foetus).

(c) The body system that fights diseases is called the **immune system.** The immune system recruits many cells to the affected tissue to kill the disease-causing germs. This

recruitement process is called **inflammation.** During this process, certain local effects such as swelling and pain, and general effects such as fever may develop. It takes some time for the immune system to kill germs. So a person with a disease is sick for a while. When the immune system has killed the germs, a person gets better.

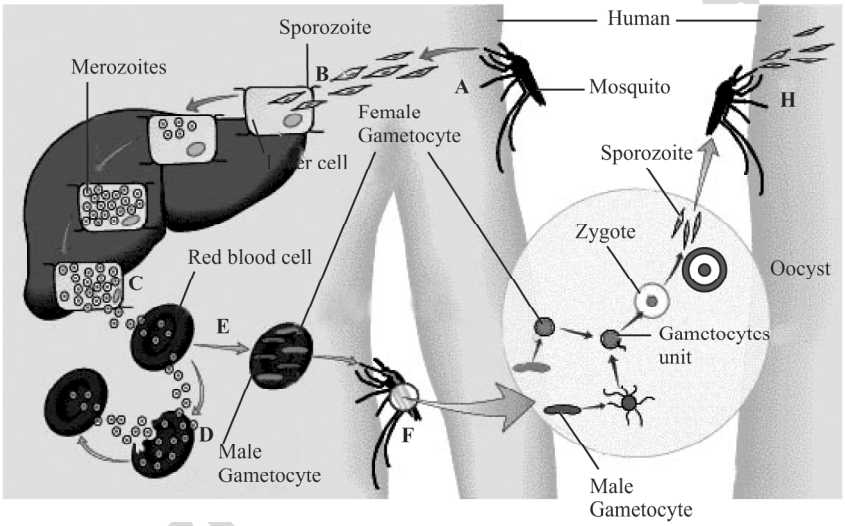
II. FORMATIVE ASSESSMENT

A. Activities

1. To study the life-cycle of a malarial parasite.

Materials Required : A chart showing the life-cycle of malarial parasite i.e. *Plasmodium,* permanent slides of malarial parasite *Plasmodium* and compound microscope.

Observation :



Procedure :

- Study the chart carefully and note down the different stages of life-cycle of *Plasmodium,* starting with the mosquito bite.
- Observe the permanent slides showing different stages of *Plasmodium,* under low power of microscope.
- Draw a flow chart of different stages of life-cycle of *Plasmodium.*

Female *Anopheles* bites humans

↓

Sporozoite (in liver cells of human)

↓

Merozoite (in liver cells)

↓

Enters in male gametocyte

↓

Gametocytes unit

↓

Zygote

↓

Sporozoite in Oocyst

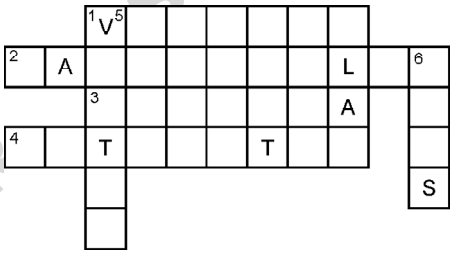
↓

Mosquito bites the humans, sucks the blood and sporozoites enter into the stomach of mosquito (Female *Anopheles*)

B. Puzzle

Across

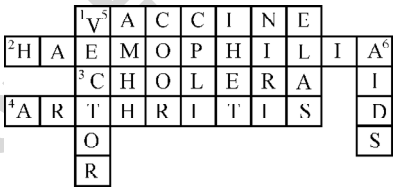
1. A suspension of disease producing micro organisms
2. A genetic disease of humans
3. An example of acute disease
4. An example of chronic disease



Down

5. A carrier of specific germs
6. A disease which spreads through infected blood or syringes.

Ans.



C. Group Activities

1. Find out the steps undertaken by municipal authorities for the supply of clean drinking water in your locality.
   Analyse the various steps and answer the following questions :
   (i) Whether these steps are adequate or not?
   (ii) Can you suggest any other steps?
   (iii) What can be done to reduce the amount of water wastage?
2. Think of the situations in which the word 'health' is used in our daily life. Note down the ways in which our health become poor. Give the precautions which should be taken to avoid getting sick.
3. Prepare the groups of 4-5 students. Ask each group to spread the awareness of pulse polio programme in their locality and list the number of children below 5 years with their address for giving polio-vaccine.

D. Survey

1. Survey your neighbourhood to find out :
   (i) how many people suffered from acute diseases during the last three months.
   (ii) how many people developed chronic diseases during this same period.
   (iii) and finally, the total number of people suffering from chronic diseases in your neighbourhood. Make a list of these three types of people. What do you think could be the reason for these differences? What do you think would be the effect of these differences on the general health of the population?
2. Conduct a survey in your locality. Talk to ten families who are well-off and ten families who are very poor (in your estimation). Both sets of families should have children who are below five years of age. Measure the heights of these children. Draw a graph of the height of each child against its age for both sets of families.
   - Is there a difference between the groups? If yes, why?
   - If there is no difference, do you think that your findings mean that being well-off or poor does not matter for health?

E. Seminar

Topics :

1. "Infectious diseases can be prevented by public health hygiene measures that reduce exposure to infectious agents."
   [**Hints :** Discuss the following points
   (i) Preventing the exposure to disease-causing microbes.
   (ii) Importance of proper and sufficient food.
   (iii) Proper sanitation facilities in every locality.
   (iv) Effective immunisation programme]
2. "Acute and chronic diseases in relation to health".
   [**Hints :** Discuss the following points :-
   (i) Effect of acute diseases on our health.
   (ii) Precautions to be taken to avoid acute diseases.
   (iii) The drastic long term effects of chronic diseases on our health.
   (iv) Carriers and vectors of chronic diseases.]

F. Debate

1. How important is social dimension of human-health?
2. Public hygiene is the key for prevention of communicable diseases.
3. Poor people are affected more by chronic diseases.
4. Preventing infections is mostly related to preventing exposure.