

## NCERT Solutions for Class 12 Biology Chapter 8 Human Health and Disease

**Q1.** What are the various public health measures, which you would suggest as safeguard against infectious diseases?

**Answer:**

Health measures as a safeguard against infectious diseases

The public health measures that can be taken to avoid infectious diseases are as follows:

- Vaccination- The populations should be vaccinated timely and properly so that they don't develop diseases. For cholera, TB, hepatitis vaccinations are available
- Education and awareness- Everybody should be educated or made aware of the infectious diseases so that they can protect themselves from infectious diseases
- Sanitation- Adopting public sanitation measures is good for avoiding infectious diseases. We should maintain cleanliness in our surroundings. One should also maintain cleanliness and consume only clean drinking water and contamination-free fruits and vegetables.
- Eradication- The vectors of diseases must be eradicated by destroying the breeding sites of many vectors.

**Q2.** In which way has the study of biology helped us to control infectious diseases?

**Answer:**

Biological research and tools always have been helpful in controlling and eradicating infectious or communicable diseases. biology helps us in various ways, some of them are:

1. By using the knowledge of biology we can, know the nature of the diseases.
2. To find out the mode of transmission of disease, biology plays a very important role, for example, if a person shows symptoms like vomiting or diarrhea, the mode of transmission can be through contaminated food. and disease will take the -faecal route.
3. To provide treatment and cure the infected person by medicines.
4. provide vaccines and immunization treatment for preventing the further spread of disease.

**Q3. How does the transmission of each of the following diseases take place?**

(A) Amoebiasis

**Answer:**

Amoebiasis- It transmits via the consumption of water and food contaminated by amoebic cysts.

(B) Malaria

**Answer:**

Malaria- It transmits from one person to another by means of female Anopheles mosquito. When this mosquito bites a diseased person, along with blood it takes the parasite and while biting a healthy person, the parasite transfers to the healthy person.

(C) Ascariasis

**Answer:**

Ascariasis- It transmits through food and water contaminated with eggs of the parasite.

(D) Pneumonia

**Answer:**

Pneumonia- It transmits through droplet infection i.e. through a sneeze, cough, sharing utensils etc.

**Q4. What measure would you take to prevent water-borne diseases?**

**Answer:**

Drinking contaminated water is one of the main reasons for water born diseases such as typhoid, cholera etc. The measures that can be taken to prevent water-borne diseases are as follows

1. To prevent these diseases we should dispose of sewage, excreta, etc. properly.
2. We should check our water reservoirs regularly.
3. We should consume clean, pure, contamination free water only.

**Q5. Discuss with your teacher what does 'a suitable gene' means, in the context of DNA vaccines.**

**Answer:**

A suitable gene means that special DNA segment which can be injected into the host body to produce specific proteins. These specific proteins should be such that they can kill the particular disease-causing organism present in the host body.

**Q6.** Name the primary and secondary lymphoid organs.

**Answer:**

Lymphoid organs are the organs in which origin, maturation and proliferation of lymphocytes occur. Lymphoid organs are of two types i.e. primary lymphoid organs and secondary lymphoid organs. In primary lymphoid organs, the origin of lymphocytes occurs. These include bone marrow and thymus.

After maturation, lymphocytes migrate to a secondary lymphoid organ-like spleen, lymph nodes, tonsils, peyer's patches of small intestine and appendix. They provide the sites for interaction lymphocyte with antigens.

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**Q8.** Differentiate the following and give examples of each:

(a) Innate and acquired immunity

**Answer:**

| Innate immunity  | Acquired immunity  |
|--|--|
| It is a non-specific type of defence present at the time of birth and provides different kinds of barriers to the entry of foreign agents into the body. | It is pathogen specific defence characterised by memory. |
| It remains throughout the life   | It is short- lived                                       |

|                                |                                      |
|--------------------------------|--------------------------------------|
| Innate immunity is inheritable | Acquired immunity is not inheritable |
|--------------------------------|--------------------------------------|

(b) Active and passive immunity

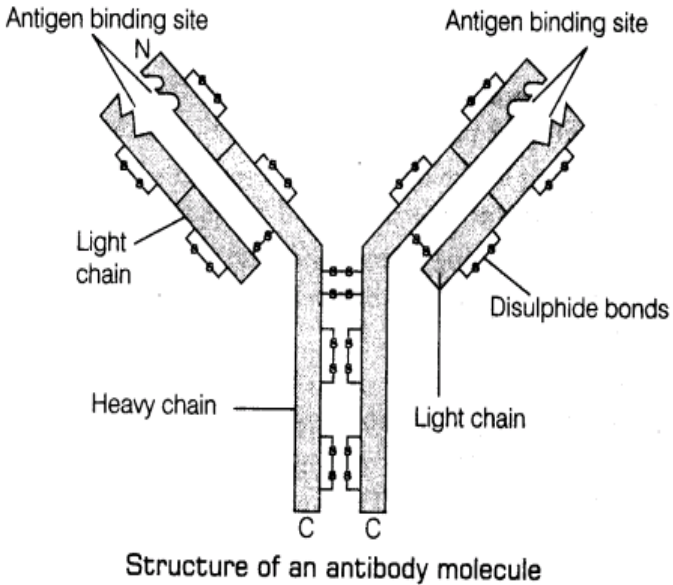
**Answer:**

| Active immunity  | Passive immunity   |
|--|--|
| Active immunity develops in a person's own body in response to an infection or any disease | Passive immunity develops in a person's body when antibodies from outside are injected into the body |
| Active immunity does not have side effects   | It may have side effects   |
| It is long lasting   | It has a short span  |
| Active immunity takes a long period to provide show effect                                 | Passive immunity immediately shoe effects and provides relief  |

**Q9. Draw a well-labelled diagram of an antibody molecule.**

**Answer:**

The well-labelled diagram of an antibody molecule is as follows:



**Q10.** What are the various routes by which transmission of human immunodeficiency virus takes place?

**Answer:**

Acquired immunodeficiency syndrome is caused by the human immunodeficiency virus. The various routes by which transmission of human immunodeficiency virus takes place are:

1. Through sharing of infected needles.
2. Having sex with an infected person without using condoms.
3. Infected mother to baby through the placenta.
4. Through the transfer of blood from an infected person to normal person

**Q11.** What is the mechanism by which the AIDS virus causes deficiency of immune system of the infected person?

**Answer:**

AIDS is a viral disease caused by the HIV virus. It is considered to be one of the most dangerous diseases with no cure until now. HIV affects the immune system of the body and makes it unable to perform its usual functions. The mechanism by which HIV virus causes deficiency of the immune system is as follows:

1. After entering into the system, HIV binds itself to the surface receptors present on helper T-cell and introduces its RNA and reverse transcriptase enzyme into these cells.
2. After this, by utilizing the host cell's machinery, HIV produces a copy of DNA itself through reverse transcription.
3. This copy of DNA gets incorporated into the genome of the host cell. This is called the provirus form, which directs the viral genome to produce new virus particles.
4. The subsequent formation and release of viral particles destroy the host cell. As a result, the number of T helper cells decreases.
5. AIDS occurs when the count of helper T-cells falls very much and the body is unable to fight against diseases.

**Q12.** How is a cancerous cell different from a normal cell?

**Answer:**

Differences between cancerous cells and normal cells

| Cancer cells | Normal cells |
|--------------|--------------|
|--------------|--------------|

|   |   |
|---|---|
| Cancerous cells divide at a faster rate forming a mass of cells called tumour   | Normal cells divide at a normal rate and do not cause the formation of tumors |
| They spread, move to another tissue and affects their normal functions. Thus, they are not restricted to one location | These are restricted to one location  |

**Q13 . Explain what is meant by metastasis.**

**Answer:**

Metastasis- It refers to the process of formation of secondary tumors from the fragments of primary tumors. The pieces of primary tumors are carried to neighbouring tissues via blood. Metastasis is the last stage of cancer.

**Q14. List the harmful effects caused by alcohol/drug abuse.**

**Answer:**

Harmful effects caused by alcohol/drug abuse

1. These reduce the efficiency of all the tissues of our body. Long time use of drugs and alcohol can cause many mental and physical diseases.
2. These dilate the blood vessels and affect the normal functioning of the heart.
3. Excessive drug/alcohol abuse can lead to cirrhosis in the liver.



4. Excessive drug/alcohol abuse may increase the workload of kidneys and causes kidney failure.
5. Long time use of alcohols /drugs can cause impotence.
6. Alcoholics lose their image in society because of their nature created under the influence of alcohols.
7. Drug/alcohol abuse increases family violence which affects their family and social life.

**Q15. D** Do you think that friends can influence one to take alcohol/drugs? If yes, how may one protect himself/herself from such an influence?

**Answer:**

Yes, friends can influence one to take alcohol/drugs. However, we can avoid those conditions in the following ways:

1. We should avoid the company of those friends who take drugs or alcohols.
2. We should increase our will power to stay away from these things.
3. We should have knowledge about the bad results of taking alcohols or drugs.
4. We should take the help of our parents if any question arises in our mind regarding this.
5. We should immediately consult a doctor if any symptoms like depression or frustration felt.

**Q17 .** In your view what motivates youngsters to take to alcohol or drugs and how can this be avoided?

**Answer:**

There are several reasons which motivate youngsters to take alcohol. Some of these are given hereunder:

1. Appreciation from friends on the use of such things.
2. Sometimes youngsters start taking these things just for pleasure
3. To get rid of depression and frustration, youngsters often move to drugs/alcohol.
4. After watching it in movies, adolescents think that taking alcohol or drugs is a sign of being cool and royal. So, they also start following these.
5. Some times the company of wrong friends makes us alcoholic.

We can avoid all these, by sharing our problems with our parents. We should understand the bad effects of alcohols and should not look at alcohols as a sign of royalty or greatness. There are many other ways to solve problems other than alcohol intake. Youngsters should be taught about the moral values.

**Q7. Expand well-known abbreviations**

(a)MALT

**Answer:**

MALT- Mucosal Associated Lymphoid Tissue

(b) CMI

**Answer:**

CMI- Cell Mediated Immunity

(c) AIDS

**Answer:**

AIDS- Acquired Immuno Deficiency Syndrome

(d) NACO

**Answer:**

NACO- National AIDS Control Organisation

(e) HIV

**Answer:**

HIV- Human Immunodeficiency Virus

**Q16.** Why is that once a person starts taking alcohol or drugs, it is difficult to get rid of this habit. Discuss it with your teacher.

**Answer:**

Once a person starts taking alcohols or drug, it becomes very difficult to get rid of this habit. It is mainly because according to this person, alcohol is the only way to attain a normal state. Alcohol does not affect any organ other than the nervous system of a human body.

However, due to the effect on the nervous system other organs also get affected.

Prolonged use of alcohol can make a person so addicted that his nervous system works

normally only in the presence of alcohol or drugs. Even when someone starts withdrawing alcohol or drugs, the body gets affected badly and withdrawal symptoms are seen. Due to these, withdrawal symptoms, people often do not get rid of alcohol.

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