

# NCERT Solutions for Class 12 Biology

## Chapter 7 – Human Health and Disease

### 7.1

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

**Ans:** Public health guidelines are preventive steps to monitor the steep rise of different infectious diseases in your body. These steps are proven to be vital and must be taken to eliminate the spread of infectious agents. Here are a few common practices that are usually taken,

**(1) Individual & Community Sanitation Has to be Established:** Keeping oneself and others clean is one of the biggest and most crucial ways to avoid contracting transmitted diseases. Having a germ-free body, eating healthy meals, consuming fresh water, and other practices are all part of one's hygiene. Water tanks must be cleaned & disinfected frequently, including trash and human waste should be disposed of properly.

**(2) Separation of Sick Individuals:** It's necessary to manage sick individuals isolated to lower the likelihood of transmitting airborne illnesses, including TB, chickenpox, respiratory illnesses, and others.

**(3) Vaccination:** Vaccination is the procedure of applying a substance that imitates the germ within the body to safeguard the host against communicable illnesses. It gives the human system both active & passive immunity. Numerous diseases, including tetanus, polio, measles, mumps, rubella, and others, can be treated with various immunization techniques.

**(4) Elimination of Vectors:** Vectors are supposed to transmit several harmful illnesses, including chikungunya, dengue fever, filariasis, and the parasite malaria. These deadly infections are readily avoided by managing the cleanliness of the outer area and reducing the growth of mosquitoes. One way to eliminate mosquitoes from developing within a living community is to keep streams of water from getting stagnated.

Frequent cooler maintenance with insect repellent and the extensive usage of pesticides like malathion in reservoirs & drainage systems becomes extremely vital to manage the cleanliness of our living ecosystem. To prevent the eggs of mosquitoes from growing in still water, aquatic organisms like *Gambusia* are employed in wetlands.

## 7.2

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

**Ans:** We now have commendable awareness of the prevention techniques used to combat multiple infectious & hazardous illnesses due to advancements in biology that occur after an individual begins using drugs or alcohol. We can now better understand the developmental stages of different parasites, diseases, vectors & how they spread and how to prevent them, thanks to biology.

Numerous infectious illnesses, including smallpox, chickenpox, TB, and others, have been almost completely eradicated because of vaccination campaigns. Biotechnology has greatly benefited the development of safer or more advanced drugs and vaccinations. Antibiotics have also been employed in the treatment of deadly disorders.

## 7.3

### **How does the transmission of each of the following diseases take place? (a) Amoebiasis (b) Malaria (c) Ascariasis (d) Pneumonia**

**Ans:**

<b>Illness</b>	<b>Causative Organism</b>	<b>Ways of Spreading</b>
(a) Amoebiasis	Entamoeba histolytica	Polluted food and drinking water are the main ways that this vector-borne illness originates. The vector responsible for the transmission of this deadly illness is the household insect.
(b) Malaria	Plasmodium spp.	The female Anopheles bite from mosquitoes is how this vector-borne illness is propagated.

(c) Ascariasis	Ascaris lumbricoides	Fecal-oral transmission is being spread through polluted food and contaminated water.
(d) Pneumonia	Streptococcus pneumoniae	It gets spread via contamination of droplets from a affected person's sputum.

#### 7.4

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

**Ans:** Drinking polluted water can easily spread waterborne diseases, including cholera, typhoid & hepatitis B. We must safeguard ourselves from waterborne diseases by properly eliminating sewage/excreta & maintaining frequent sanitation protocols. It's highly essential to manage the sanitation models, including filtering, boiling, and cleaning public water bodies.

#### 7.5

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

**Ans:** A "suitable gene" in the overall scheme of DNA immunizations is a certain DNA fragment that may be inserted within the host body's lymphocytes to cause the production of particular proteins. In addition to giving the host immunity to illness, the particular proteins eliminate the organism that causes illness in the host's physical body.

#### 7.6

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

**Ans:** The following are the identification numbers of the major and supplementary lymphoid tissues:

- (a) Along with the bone marrow, the thymus is the most vital lymphoid organ in the human body.
- (b) The appendices, tonsils, spleen, lymphatic vessels & Peyer's lesions of the small intestinal tract are prime examples of secondary lymphoid elements.

## 7.7

**The following are some well-known abbreviations, which have been used in this chapter. Expand each one to its full form: (a) MALT (b) CMI (c) AIDS (d) NACO (e) HIV**

**Ans:**

Here are the extensive versions for the above-mentioned abbreviations as follows:

- (a) MALT – Mucosa–Associated Lymphoid Tissue
- (b) CMI – Cell-Mediated Immunity
- (c) AIDS – Acquired Immunodeficiency Syndrome
- (d) NACO – National AIDS Control Organization
- (e) HIV – Human Immunodeficiency Virus

## 7.8

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

**(a) Innate and acquired immunity (b) Active and passive immunity.**

**Ans: (a)**

<b>Innate Immunity</b>	<b>Acquired Immunity</b>
This kind of defense system is not pathogen-specific.	This kind of immune system is unique to the virus.
It safeguards the person from birth & passed down from their parents.	It comes about during birth rather than being in the person from birth.
Boundaries opposing the entry of foreign pathogenic organisms are provided by this sort of antibody.	B-lymphocytes & T-lymphocytes regulate initial and subsequent replies, which is how they function.
It doesn't possess a particular recollection.	Immunological recollection is one of its characteristics.

**(b)**

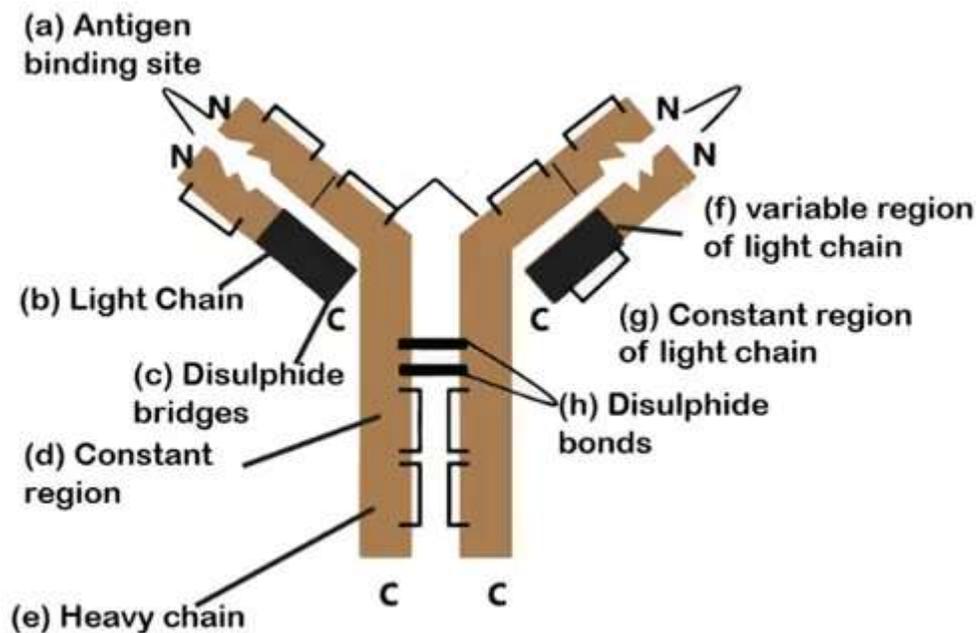
<b>Active Immunity</b>	<b>Passive Immunity</b>
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This kind of developed immunity occurs when the immune system creates antibodies to fight off pathogens.	It is a type of acquired immunity where predefined antibodies are sent from one individual to another.
Its effects linger for an extended duration.	It does not have a long-lasting effect.
Antibody production and reaction are sluggish and require expertise.	It is fast and provides immediate relief.
The method of vaccination involves injecting microbes into the human circulatory system. An illustration of robust protection is this matter.	The method of sending antibiotic substances in the mother's breast milk to the infant is a prime example of passive immunity.

7.9

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

**Ans:**



7.10

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

**Ans:** The deadly HIV (Human Immunodeficiency Virus) accounts for causing AIDS (Acquired Immunodeficiency Syndrome). This harmful influenza virus can spread in multiple ways, such as:

- Having intercourse with an unhealthy individual without protection.
- Giving an unaffected individual an injection of blood from somebody who is infected.
- Distributing contaminated vials & catheters.
- A pregnant woman with HIV can pass it to her child via the womb.

### 7.11

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

**Ans:** The human immunodeficiency virus (HIV) spreads via sexual or physical contact with blood and causes AIDS (Acquired Immunodeficiency Syndrome). HIV targets and infiltrates macrophages upon reaching the circulatory system of an individual. The inverted transcriptase enzyme aids in the replication of the virus's RNA, which results in the production of viral genetic material within the macrophages. The viral gene sequence then guides the creation of virus fragments & is integrated with the human host DNA.

HIV concurrently infiltrates the support cells, T-lymphocytes. It multiplies & creates viral offspring there. When discharged through the bloodstream, these freshly created offspring viruses target the body's various functioning helper T cells. Consequently, a contaminated person's body gradually loses T-lymphocytes. It lowers an individual's antibodies.

### 7.12

#### **How is a cancerous cell different from a normal cell?**

**Ans:** The differences are given below in the table.

<b>Normal Cell</b>	<b>Cancerous Cell</b>
Normal cells have an interaction-blocking characteristic. As a result, these particular cells cease to divide whenever they enter into contact with additional cells.	The ability to block interaction is absent from malignant cells. As a result, they keep dividing, becoming tumors or masses of cells.
The normal cells proceed with a maturation procedure once they reach a particular development threshold.	They don't differentiate.
The typical cells stay limited to a certain area.	These organelles are not stationary in one place. They invade nearby tissues & interfere with their normal operation.

## 7.13

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

**Ans:** Malignant tumors display the metastasis property. It represents the harmful process by which malignant cells migrate to other bodily areas. Uncontrolled cell division results in the formation of tumors, which are masses of cells. Many of the tumor's cells shed and make their way into the circulation. The aforementioned cells travel throughout the human body via the circulatory system. As a result, they start to develop additional tumors by aggressively multiplying depending on where they are.

## 7.14

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

**Ans:** Drugs & alcohol produce negative repercussions on the user, his loved ones, and the community as a whole. The following is an inventory of detrimental effects:

**(a) Consequences on the People:** Drinking damages a person's body. A person's liver & neurological system are harmed when they drink too much alcohol. Since an outcome, the person has more signs like despair, exhaustion, hostility, diminished hunger & loss of weight. At other times, severe quantities of drinking liquor can also contribute to pulmonary collapse, culminating in a state of unconsciousness & death. Additionally, alcohol has to be avoided by pregnant women because its consumption could hinder the baby from growing normally.

**(b) Impact upon the Household:** Any family member who drinks too much alcohol has a terrible impact on the family. Domestic issues like arguments, annoyances, and insecurity might result from it.

**(c) Social Repercussions:** Impulsive conduct, intentional disorder, assault, weakening social networks, and a decline in enthusiasm for social and other events are all examples of hasty conduct.

**(B) Pharmaceutical Impacts:** One whose work gets hooked on drugs may cause many issues for their loved ones as well as for themselves.

- **Impacts of drugs on a Person:** Medications damage a person's neurological system, which causes some other systems, including the liver, kidneys, and others, to become dysfunctional. HIV is most commonly transmitted among these people since these individuals take narcotics into the human body using shared injection equipment. Continuous negative consequences include sadness, mood fluctuations, & more aggressive behavior among men and women.

- **Impacts on Community and the Household:** Drug addicts cause issues for both their families and society as a whole. That individual turns irritable, dissatisfied, and unpleasant.

### 7.15

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

**Ans:** Indeed, I believe that friendships have a significant impact on someone's decision to use drugs or drink. A person must execute some of these actions to safeguard themselves from the misuse of drugs:

- (a) Strengthen your resolve to abstain from alcohol and illicit substances. Alcohol should not be experimented with for pleasure or interest.
- (b) Steer clear of acquaintances who use drugs.
- (c) Ask classmates and family for assistance.
- (d) Invest in other hobbies & interests and get the necessary information and guidance around drug misuse.
- (e) Obtain prompt clinical and expert help from therapists and psychiatrists if signs of sadness and despair appear.

### 7.16

**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.**

**Ans:** The characteristics of addiction to drugs & alcohol are linked to exhilaration and a fleeting sense of a healthy lifestyle. The body's synapses become more tolerant when medications are used often, which leads to increased drug intake.

### 7.17

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

**Ans:** Many variables might encourage children to use drugs or alcohol. A thirst for knowledge, a desire for thrill, and the knack of experimenting are the first sources of drive. To overcome negative feelings (such as anxiety, stress, despair, and disappointment) and to succeed in a variety of disciplines, certain adolescents begin abusing substances such as alcohol and cocaine. A number of media, including TV, films, online platforms, and newspapers, are additionally in

charge of encouraging younger adults to drink for enjoyment. Influence from others and unsteady, dismissive family relationships are two of these elements that might contribute towards an individual's dependence on substance abuse. The following are proactive strategies that combat drug and alcohol abuse:

- (a) Adults ought to encourage their kids and work to strengthen their determination.
- (b) Families ought to inform their kids about the negative consequences of alcohol consumption. They ought to be offering people the information and guidance they need about the negative effects of alcoholism.
- (c) Parents are responsible for discouraging their toddlers from dabbling with booze. It is important to keep children distinct from peers who use narcotics.
- (d) It's important to support kids in investing their spare time in supplementary and leisure pursuits.
- (e) When the youngster exhibits abrupt signs of stress and despair, appropriate clinical & expert support must be given.