NCERT Textual Exercise (Solved)

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

Ans. Vaccines constitute the greatest achievement of modern medicine. Vaccines eradicated the diseases like small pox, polio, tetanus, measles, hepatitis, cancer and other dangerous infections. Successful vaccines are to be introduced for other deadly disorders like malaria, AIDS, herpes, etc. The traditional vaccines sometimes fail to shield against diseases, but the most promising once are vaccines out of genetic material which aim to improve the immune system to quash dangerous viruses, bacteria or parasites.

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

Ans. The science that makes a study of diseases is called pathology, though in a broad sense it includes diagnostic, prophylactic and curative measures too. Pathology is a study of diseases of all kinds. The diseases caused by a pathogenic organism, the reaction of the host as shown in the form of symptoms, the diagnosis made through a study of their symptoms, etiology of the pathogenic organism and finally steps undertaken to cure the host of its diseases, by eradicating and if it is not possible, by controlling the pathogen.

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

(a) Amoebiasis (b) Malaria

(c) Ascariasis (d) Pneumonia

Ans. See the list.

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

Ans. (a) Boiling drinking water (b) Health education

(c) Control of reservoirs (d) Immunisation

(e) General hygiene, pure water

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

Ans. DISCUSSION.

6. Name the primary and secondary lymphoid organs.

Ans. Primary lymphoid organs – Bone marrow and thymus

Secondary lymhoid organs – Spleen, lymph nodes, tonsils

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. (a) MALT – Mucosal associated lymphoid tissue
(b) CMI – Cell-mediated immunity
(c) AIDS – Acquired immuno deficiency syndrome
(d) NACO – National AIDS control organization
(e) HIV – Human immune deficiency virus

8. Differentiate the following and give examples of each:
(a) Innate and acquired immunity
(b) Active and passive immunity

Ans. See the table

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

Ans. (i) Illicit sexual contact
(ii) Sexual contact with multiple partners
(iii) Transfusion of the blood of infected person

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

Ans.

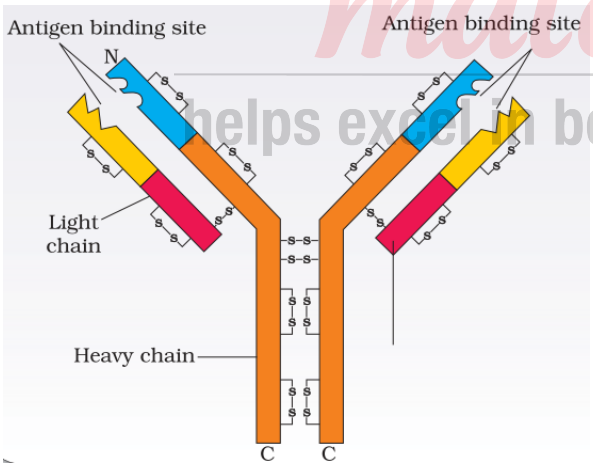

Fig. 1.7 Antibody molecule

Antibodies are proteins that are produced by the body to fight the intrusion of foreign molecules, such as toxins or other poisons. The antibodies are designed to bind very tightly to their target molecules (i.e., the antigens).

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

Ans. HIV critically injures the immune system by infecting and eventually killing T-cells. As a result of progressive destruction of its T-cells, the body is easily ravaged by a number of common infections agents. In many instances, these infections would have caused little injury if the functional T-cells clones available. Unable to battle infections in the normal manner, victims who develop a 'full blown' case of AIDS eventually sclumb.

12. How is a cancerous cell different from a normal cell?

Ans. Cancer is a disease characterised by the excessive and abnormal growth of certain cells. In a healthy individual, the growth of cells is balanced by the rate of cell loss. Thus, when one attains adult age, the size and cellular contents of various body organs remain constant. The balance between the growth of the cells and the rate of cell loss may be dislocated by certain chemicals, physical stresses and viral agents. As a result, the normal growth of the cells may be transformed into cancerous one.

13. Explain what is meant by metastasis.

Ans. The non-regulated growth of the cells that accompanies cellular transformation produces **tumours or neoplasms**, each tumour being the product of proliferation of a single abnormal cell. Malignant tumour cells are cancer cells that spread to and take up residence in neighbouring tissues – a condition called **metastasis**.

14. List the harmful effects caused by alcohol/drug abuse.

Ans. Abuse of depressants emerges from the euphoric state that includes feeling of peace, tranquility, elevation of mood and overcoming fear and apprehension. Following the passage of euphoria, the user may become apathetic and enter into a state of sleep. Victims addicted to depressants appear pale and suffer from malnutrition and constipation. Sex drive is low or absent in them.

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. Yes, friends can influence one to take drugs. One should avoid the company of such friends who initiate to take drugs.

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. DISCUSSION

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

Ans. Human have probably been using mind – affecting drugs since time immemorial. The root cause of addition of man to drugs, smoking and

drinking has been due to his inability to make mental adjustments with stresses and strains, drudgery and extreme misery in daily life. As a temporary measure, to combat adverse situations and to have a certain degree of mental relaxation, humans have been making an extensive use of stimulants, depressants and hallucinogens. Stimulants generally speed up body process, and depressants slow them. Hallucinogens can alter a person's thoughts, feelings and perception.

In preventing drug abuse, the role of parents could be as follow:

(i) Communicate openly with the children, listen to their problems patiently and teach them how to handle the problems.

(ii) Take interest in children's activities and their circle of friends.

(iii) Set an example for children by not taking drugs or alcohol.

(iv) Keep track of prescribed drugs in home.

(v) Learn as much as possible about drugs.