

Question 1.  
State the functions of mast cells in allergy response. (All India 2019)  
Answer:  
The function of mast cell is allergy response is that it releases histamin which cause inflammatory reactions in the body.

Question 2.  
State the function of interferons. (All India 2019)  
Answer:  
Interferons protect non-infected cells from the other viral infected cells by releasing cytokine barriers.

Question 3.  
How do monocytes act as a cellular barrier in humans to provide innate immunity? (2018)  
Answer:  
Monocytes phagocytose and destroy microbes present in the blood to provide innate immunity.

Question 4.  
How do cytokine barriers provide immunity in humans? (2018)  
Answer:  
Cytokine barriers include interferons, which are secreted by virus infected cells. They provide protection to non-infected cells from further same viral infection.

Question 5.  
Name two diseases whose spread can be controlled by the eradication of Aedes mosquito. (2018)  
Answer:  
Dengue fever and chikungunya are two diseases, whose spread can be controlled by the eradication of Aedes mosquito.

Question 6.  
Suggest a method to ensure an anamnestic response in humans. (Delhi 2017)  
Answer:  
Anamnestic response is the quick and intense response, which occurs when an individual encounters a particular antigen for the second time. It is aided by the memory of primary response stored in B-cells. By the administration of a dead or attenuated pathogen in the body of person, a secondary immune response can be ensured due to the presence of memory cells in the body.

Question 7.  
Retroviruses have no DNA. However, the DNA of the infected host cell does possess viral DNA. How is it possible? (All India 2015)  
Answer:  
Retroviruses have RNA as their genetic material. After getting into the body of a person, the virus enters the macrophages. Here, RNA is replicated to form viral DNA by using enzyme reverse transcriptase. The viral DNA now, gets incorporated into the host cell’s DNA and directs the infected cells to produce viruses.

Question 8.  
Indiscriminate diagnostic practices using X-rays, etc., should be avoided. Give one reason. (Delhi 2015)  
Answer:  
Indiscriminate diagnostic practices using X-rays should be avoided, because there are several potential risks from exposure to ionising radiations, e.g. cancer can be developed in later stages of life, various tissues can also get affected leading to cataract, hair loss, etc.

Question 9.  
In what way is monocyte a cellular barrier with reference to immunity? (Delhi 2015)  
Or  
Name any two types of .cells that act as ‘cellular barriers’ to provide innate immunity in humans. (Delhi 2014)  
Answer:  
Cellular barriers include certain types of leucocytes of our body such as polymorphonuclear leucocytes, monocytes and natural killer in the blood as well as macrophages in tissues. These can phagocytose and destroy microbes and provide innate immunity to humans.

Question 10.  
How do cytokinin barriers help in evading viral infections? (Delhi 2015)  
Or  
How do interferons protect us? (All India 2012)  
Answer:  
Cytokinins are virus infected cells, which secrete proteins called interferons. They protect non-infected cells from further viral infection by inhibiting their replication and making cell resistant to further infection.

Question 11.  
Why is Gambusia introduced into drains and ponds? (All India 2014)  
Answer:  
Gambusia is a fish that feed upon mosquito larvae. Thus, it is introduced in drains and ponds to destroy disease vectors.

Question 12.  
Why is secondary immune response more intense than the primary immune response in humans? (All India 2014)  
Or  
When does a human body elicit an anamnestic response? (All India 2013; Delhi 2011C)  
Answer:  
The secondary or anamnestic immune response is based on the memory of primary response, i.e. first encounter with an antigen. Due to this, the second generated immune response is more fast and have higher affinity for antigen and therefore, it is more intense than primary immune response in humans.

Question 13.  
How does haemozoin affect the human body when released in blood during malarial infection? (Foreign 2014)  
Answer:  
The release of toxic haemozoin by the ruptured RBCs during malarial infection results in recurrence of high fever and chill every 3-4 days.

Question 14.  
What is an autoimmune disease? Give an example. (Foreign 2014)  
Answer:  
The abnormal response of an immune system, in which it fails to recognise ‘self’ and ‘non-self’ and starts destroying its own cells and molecules is called autoimmune disease. Rheumatoid arthritis is an example of autoimmune disease, which destroys articular cartilage and fusing bones.

Question 15.  
Why sharing of injection needles between two individuals is not recommended? (Delhi 2013)  
Answer:  
Sharing of injection needles may act as a mode of transmission of certain diseases including AIDS. Thus, it is not recommended.

Question 16.  
State two different roles of spleen in the human body? (All India 2012)  
Answer:  
The two different roles of spleen in human body are

* Spleen acts as a filter to trap blood-borne microorganisms.
* It is a large reservoir of erythrocytes.

Question 17.  
Why do pollen grains of some flower trigger sneezing in some people? (Foreign 2012)  
Answer:  
Pollen grains are allergens that cause allergy in some people due to release of chemicals like histamine and serotonin from mast cells. These trigger the inflammatory responses in body, e.g. sneezing, wheezing, etc.

Question 18.  
What is it that prevents a child to suffer from a disease he/she is vaccinated against? Give one reason. (Delhi 2010)  
Answer:  
Due to vaccination body produces antibodies in large numbers. It protects the child by neutralising the pathogenic agents during infection. The vaccine also generates memory B-cells and T-cells that can recognise pathogens on subsequent exposure and produce intense immune response.

Question 19.  
How does malaria differ from chikungunya with reference to their vectors? (All India 2010C)  
Answer:  
Malaria is spread by female Anopheles mosquito, whereas chikungunya is spread by female Aedes mosquito.

Question 20.  
Malaria, typhoid, pneumonia and amoebiasis are some of the human infectious diseases. Which one of these is transmitted through mechanical carriers? (Foreign 2010)  
Answer:  
Amoebiasis is transmitted through mechanical carrier, i.e. houseflies.

Question 21.  
Differentiate between the roles of B-lymphocytes and T-lymphocytes in generating immune responses. (Delhi 2019)  
Answer:  
For B and T-lymphocytes, Refer to page no. 210.

Question 22.  
Principle of vaccination is based on the property of ‘memory’ of the immune system. Taking one suitable example, justify the statement. (Delhi 2019)  
Answer:  
For vaccination, Refer to page no. 211.

Question 23.  
Why is the structure of an antibody molecule represented as HgLa ? Name any two types of antibodies produced in a human body. (2018C)  
Answer:  
For structure of antibody molecule. Refer to page no. 210-211.

Question 24.  
Mention one application for each of the following  
(i) Passive immunisation  
(ii) Antihistamine  
(iii) Colostrum  
(iv) Cytokinin-barrier (All India 2017)  
Answer:  
Applications of given components are as follows  
(i) Passive immunisation provides a faster immune response.  
(ii) Antihistamine is used to reduce the symptoms of allergy, such as sneezing, watery eyes, rashes, running nose, etc.  
(iii) Colostrum consists of antibodies (e.g. IgA) that provide immunity to an infant against infections.  
(iv) Cytokinin barrier produces interferons and protects non-infected cells from further viral infection.

Question 25.  
Name the cells HIV (Human Immunodeficiency Virus) gains entry into after infecting the human body. Explain the events that occur in these cells. (All India 2016)  
Or  
How do macrophages in the human body act as HIV factory? (All India 2010)  
Or  
Name the cells that act as HIV factory in humans when infected by HIV. Explain the events that occur in the infected cell.  
Answer:  
After infecting the human body, the HIV gains entry into macrophages.  
Events occurring in these cells are as follows

* RNA genome of the virus replicates to form viral DNA by enzyme reverse transcriptase.
* Viral DNA gets incorporated into the macrophage DNA and directs the infected cells to produce new viruses.
* Macrophages continue to produce virus particles and thus called HTV factory.

Question 26.  
Name the causative organism of the disease amoebiasis. List three symptoms of the disease. (All India 2016)  
Or  
(i) Name the protozoan parasite that causes amoebic dysentery in humans.  
(ii) Mention two diagnostic symptoms of the disease.  
(iii) How is this disease transmitted to others? (All India 2016, Delhi 2012)  
Answer:  
The disease amoebic dysentery or amoebiasis is caused by an intestinal parasite, Entamoeba histolytica, which is found in the large intestine of human. Transmitting agent is housefly, which acts as mechanical carrier. It transmits the parasite from faeces of infected person to the food.  
Symptoms include constipation, abdominal pain and cramps, stools with excess mucous and blood clots.

Question 27.  
(i) Name any two causative organisms responsible for ringworm.  
(ii) State any two symptoms of the disease. (Delhi 2016C)  
Answer:  
(i) Causative organisms responsible for ringworm are Microsporum, Epidermophyton and Trichophyton (all fungi).

(ii) Two symptoms of the disease are

* Intense itching
* Appearance of dry, scaly lesions on various body parts.

Question 28.  
(i) Name any two helminths which are known pathogenic to human.  
(ii) List any two symptoms of the diseases caused by any one of them. (Delhi 2016)  
Or  
List the symptoms of ascariasis. How does a healthy person acquire this infection? (All India 2014)  
Answer:  
(i) Helminths worms, which pathogenic to human are

* Ascaris, the roundworm.
* Wuchereria, the filarial worm.

(ii) Ascaris is an intestinal parasite that causes ascariasis. Symptoms of ascariasis are internal bleeding, muscular pain, fever, anaemia and blockage in intestinal passage.  
A healthy person acquires this infection through consumption of water, vegetables or fruits contaminated with the eggs of parasite Ascaris.

Question 29.  
Name any two secondary lymphoid organs in a human body and state the function of any of them. (Delhi 2016)  
Answer:  
Secondary lymphoid organs provide the site for interaction of lymphocytes with the antigen, which then proliferate to become effector cells, e.g. spleen, tonsils and lymph nodes.  
Lymph nodes help to trap antigens entering the tissue fluid, whereas spleen trap the blood-borne microbes.

Question 30.  
How are oncogenic viruses different from proto-oncogenes?  
Answer:  
Oncogenic viruses The cancer causing viruses which have viral genes or oncogenes are called, oncogenic viruses.  
Proto-oncogenes These genes are present in normal cells, which when activated under certain conditions could lead to oncogenic transformation of the cells, thus leading to cancer.

Question 31.  
(i) Which organ of the human body is initially affected when bitten by an infected female Anopheles! Name the stage of the parasite that infects this organ.  
(ii) Explain the events that are responsible for chill and high fever in the patient. (Delhi 2016C)  
Answer:  
(i) Liver is initially affected by the sporozoites stage dud to the bite of female Anopheles.  
(ii) Rupture of RBC and release of haemozoin is responsible for chill and high fever.

Question 32.  
Name an allergen and write the response of human body when exposed to it. (Delhi 2014C)  
Answer:  
The allergen can be pollen grains, spores or dust particles. When the allergens are inhaled or enter body system, they stimulate body to produce IgE antibodies and trigger an antiallergic reaction. The chemicals such as histamine and serotonin are released from mast cells in response to allergen, thereby causing dilation of blood vessels. These chemicals also elicit inflammatory response that may result in sneezing, watery eyes, running nose, etc.

Question 33.  
Differentiate between active and passive immunity. (Delhi 2014C)  
Answer:  
Differences between active and passive immunity are as follows

|  |  |
| --- | --- |
| Active immunity | Passive immunity |
| Develops when body’s own cells produce antibodies in response to infection or vaccine. | Develops when antibodies produced in other organisms are injected or administered into a person to counteract antigen. |
| Slow in response, but long lasting effects. | Provides immediate relief, but short lived, |
| e.g. Immunity developed by vaccination. | e.g, Injection of tatanus. |

Question 34.  
How does a vaccine for a particular disease immunise the human body against that disease? (Delhi 2013C)  
Answer:  
During vaccination for a particular disease, an antigen or antigenic protein or weak pathogen, which is in inactive form is introduced into the body to induce mild immune response.

The vaccine generates antibodies that neutralises the toxin/pathogen and produces memory-B or T-cells, which recognise the pathogen in the subsequent encounters and produce antibodies.

Question 35.  
Why is a person with cuts and bruises following an accident administered tetanus antitoxin? Give reasons. (All India 2013)  
Or  
Why does a doctor administer tetanus antitoxin and not a tetanus vaccine to a child injured in a roadside accident with a bleeding wound? All India 2010  
Answer:  
A person with cuts and bruises following an accident is administered tetanus antitoxin, because this toxin contains performed antibodies against the pathogen Clostridium tetani. This inactivates the pathogen and provide passive immunity. Also, tetanus antitoxin provide instant response unlike tetanus vaccine, which take time to develop immunity.

Question 36.  
A patient showed symptoms of sustained high fever, stomach pain and constipation, but no blood clot in stools. Name the disease and its pathogen. Write the diagnostic test for the disease. How does the disease get transmitted? (Delhi 2013C)  
Answer:  
The symptoms, such as constant high fever, stomach pain and constipation, weakness and headache are shown in typhoid.  
Its causative’agent is a bacterium called Salmonella typhi. Widal test is used for its diagnosis. Typhoid is transmitted through contaminated food and water.

Question 37.  
A student on a school picnic to a park on a windy day started sneezing and having difficulty in breathing on reaching the park. The teacher enquired whether the student was allergic to something.  
(i) What is an allergy?  
(ii) Write the two unique characteristics of the system involved in the response observed in the student. (Delhi 2013)  
Answer:  
(i) Allergy is a hypersensitive response to a foreign substance coming in contact with or entering the body, e.g, sneezing, watery eyes, etc.  
(ii) It is due to the release of histamine and serotonin by the mast cells.

Question 38.  
A young boy when brought a pet dog home started to complain of watery eyes and running nose. The symptoms disappeared when the boy was kept away from the pet.  
(i) Name the type of antibody and the chemicals responsible for such a response in the boy.  
(ii) Mention the name of any one drug that could be given to the boy for immediate relief from such a response. (Delhi 2013)  
Answer:  
(i) In case of allergy, IgE antibodies are involved. Histamine and serotonin are responsible for such responses.  
(ii) Antihistamine could be given for immediate relief.

Question 39.  
(i) Highlight the role of thymus as a lymphoid organs.  
(ii) Name the cells that are released from the above mentioned gland. Mention, how they help in immunity? (Delhi 2012)  
Answer:  
(i) Thymus is a primary lymphoid organs of the immune system. Here, immature lymphocytes get differentiated into antigen-sensitive T-lymphocytes.  
(ii) T-lymphocytes are released from thymus, after their maturation get completed. They themselves do not produce antibodies, but help B-cells to produce them. They are also responsible for Cell Mediated Immune (CMI) response.

Question 40.  
Name the parasite that causes filariasis in humans. Mention its two diagnostic symptoms. How is this transmitted to others? (Delhi 2012)  
Answer:  
Wuchereria (W. bancrofti and W. malayi) is the filarial worm that causes filariasis in humans.  
Diagnostic Symptoms

* The presence of nematodes in lymph vessels causes collection of fluid. It may lead, to swelling in arms, breasts, legs and genital region.
* Inflammation of lower limbs result in deformities.  
  It is transmitted to a healthy person through the bite of the female mosquito vector, Culex.

Question 41.  
Name and explain the two types of immune responses in humans. (All India 2012)  
Answer:  
Immune responses are of two types

* Primary response The reaction of the body’s immune system to the first attack of microbe (antigen) is called primary immune response. It is slow and less intense.
* Secondary response The reaction of the body’s immune system to any subsequent infection of the same microbe is termed as secondary immune response. It is fast and intense.

Question 42.  
Name the two special types of lymphocytes in humans. How do they differ in their roles in immune response? (All India 2012)  
Answer:  
Two special types of lymphocytes in humans are

* B-lymphocytes or B-cells
* T-lymphocytes or T-cells

Differences between B and T-lymphocytes are as follows

|  |  |
| --- | --- |
| B-lymphocytes | T-lymphocytes |
| They produce antibodies against antigen. | They stimulate B-cells to produce antibodies. |
| They do not respond to organ transplant. | They react to organ transplant. |

Question 43.  
(i) Name the group of virus responsible for causing AIDS in humans. Why are these virus so, named?  
(ii) List any two ways of transmission of HIV infection in humans other than sexual contact? All India 2012  
Answer:  
(i) Retrovirus is the group of viruses causing AIDS in humans. They contain RNA as genetic material and with the help of enzyme reverse transcriptase, they make viral DNA using RNA as a template. Thus, they are called retrovirus.

(ii) (a) By sharing infected needles.  
(b) By transfusion of blood contaminated with HIV.

Question 44.  
Why is an antibody represented as H2L2? (Foreign 2012)  
Answer:  
Antibody is represented as H2I2 because each antibody molecule has four peptide chains, i.e. two small light (L) chains and two longer heavy (H) chains.

Question 45.  
Name the different types of cell providing cellular barrier responsible for innate immunity in humans. (Foreign 2012)  
Answer:  
For cellular barrier as innate immunity, Refer to page no. 209.

Question 46.  
List any two emergent circumstances, when a medical doctor would recommend injection of a preformed antibody into the body of a patient and why? (Delhi 2011C)  
Answer:  
In case of snake bite and in tetanus infection. Preformed antibodies help in providing quick immune response.

Question 47.  
List the two types of immunity a human baby inborn with. Explain the differences between the two types. (All India 2011)  
Answer:  
Two types of immunity with which human baby is born include.

* Innate immunity It is inherited type of immunity and it protects an organism from birth throughout the life. It is not specific to particular pathogen and consists of four types of barriers namely physical, physiological, cellular and cytokine.
* Natural passive immunity It is passively transferred from mother to foetus through placenta, e.g. IgG antibodies can cross placental barrier to reach the foetus.

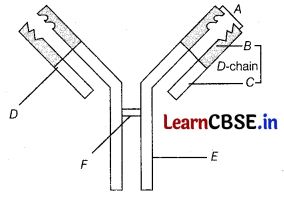
Question 48.  
How is an allergic reaction caused by an allergen? Name the drug that can reduce the symptoms of allergy? (All India 2011C)  
Answer:  
An allergic reaction is caused by allergens as these can produce IgE type of antibodies. These antibodies causes the release of histamine and serotonin like chemicals from mast cells, which cause allergic reactions. The use of drugs like antihistamine, adrenaline and steroids quickly reduce the symptoms of allergy.

Question 49.  
Name the two types of immunity in a human body. Why are cell-mediated and humoral immunities so called? (Delhi 2011)  
Answer:  
Types of immunity system in humans are

* Innate immunity and acquired immunity are two main types of immunities in human body.
* Cells mediated immunity is so called as it is mediated by specialised cells, the T-lymphocytes that recognise self and non-self cells. Humoral immunity is so called because it is mediated by antibodies, which are found circulating in body fluid (humor) e.g. blood.

Question 50.  
Write the scientific names of the causal organisms of elephantiasis and ringworm in humans. Mention the body parts affected by them. (Delhi 2011)  
Answer:

* Elephantiasis is caused by Wuchereria bancrofti and W. malayi. These affect lower limbs and genital organs.
* Ringworm is caused by Microsporum, Trichophyton and Epidermophyton. They affect the skin, nails and scalp.

Question 51.  
Identify A, D, E and F in the diagram of an antibody molecule given below, (Delhi 2011)  
  
Answer:  
A-Antigen binding region,  
D-Light chain  
E-Heavy chain  
F-Disulphide bond/bridge

Question 52.  
Name the host and the site, where the following occur in the life cycle of a malarial parasite.  
(i) Formation of gametocytes.  
(ii) Fusion of gametocytes. (Delhi 2010)  
Answer:  
(i) Formation of gametocytes occurs in the erythrocytes (RBCs) of human beings.  
(ii) Fusion of gametocytes occurs in the intestine of mosquito.

Question 53.  
Define the term health. Mention any two ways of maintaining it. (All India 2010)  
Answer:  
Health can be defined as a state of complete physical, mental and social well-being. It can be maintained by taking balanced diet, maintaining personal hygiene, regular exercise/yoga, vaccination against infectious diseases, etc. (1+1)

Question 54.  
Identify A, B, C and D in the following table. (Foreign 2010)

|  |  |  |
| --- | --- | --- |
| Name of the human diseases | Name of the causal bacterial virus | Specific organ or its part affected |
| Typhoid | Salmonella typhi | A |
| Common cold | B | C |
| Pneumonia | Streptococcus pneumoniae | D |

Answer:  
A – Small intestine  
B – Rhinovirus  
C – Nose, respiratory passage  
D- Alveoli of lungs.

Question 55.  
The barriers in the innate immunity are given in the following table. Identify A, B, C and D. (Delhi 2010C)

|  |  |
| --- | --- |
| Types of barrier | Barriers |
| Physical | Skin, A |
| Physiological | B, in the eye |
| C | Interferon |
| Cellular | WBC, D |

Answer:  
A-Epithelium lining  
B-Tears  
C-Cytokinin  
D-Polymorphonuclear leucocytes.

Question 56.  
(i) How does a vaccine affect immunity?  
(ii) How can we get immunisation against tetanus? (All India 2010)  
Answer:  
(i) In vaccination, a preparation of antigenic proteins of pathogen or inactivated/ weakened pathogen (vaccine) are introduced into the body. The antibodies produced in the body against these antigens would neutralise the pathogenic agents during actual infection. The vaccines also generate memory-B and T-cells.  
(ii) Preformed antibodies for tetanus are directly injected to acquire quick immune response. This is called passive immunisation against tetanus.

Question 57.  
Why do normal cells not show cancerous growth? (All India 2010)  
Answer:  
Normal cells do not show cancerous growth as

* Their growth and division are regulated by certain regulatory mechanisms.
* They show the property of contact inhibition, by virtue of which contact with other cells inhibit their uncontrolled growth.

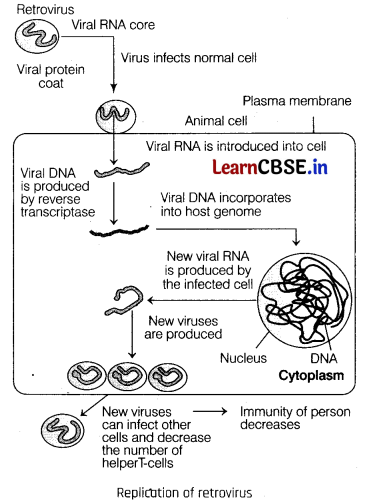
Question 58.  
State the effect of carcinogens on human body. Name the carcinogenic ionising and non-ionising radiations. Mention their carcinogenic effects. (All India 2010C)  
Answer:  
Carcinogens can transform normal cell into cancerous cells.  
Carcinogenic ionising radiations are X-rays and gamma rays. Carcinogenic non-ionising radiations are UV-rays.  
These radiations cause changes in base sequences, i.e. mutations that lead to transformation of normal cells into cancerous cell.

Question 59.  
(i) Explain the property that prevents normal cells from becoming cancerous.  
(ii) All normal cells have inherent characteristic of becoming cancerous. Explain.  
Answer:  
(i) For concerous cells Refer to Answer No. 57.  
(ii) All normal cells have ceUular oncogenes (c-onc) or proto-oncogenes. When activated under certain conditions, such genes could lead to oncogenic transformation of cells, i.e. they may become cancerous.

Question 60.  
Name a human disease, its causal organism, symptoms (any three) and vector spread by intake of water and food contaminated by human faecal matter. (All India 2017)  
Or  
A patient is down with amoebiasis. List the symptoms that confirm this infection. Name the causative pathogen. (Delhi 2015c)  
Answer:  
Amoebiasis is a disease spread by intake of water and food contaminated by human faecal matter. Causal organism Entamoeba histolytica. Symptoms

* Abdominal pain
* Constipation with cramps
* Faeces with excess mucus Vector or carrier of pathogen is housefly.

Question 61.  
(i) What precaution(s) would you recommend to a patient requiring repeated blood transfusion?  
(ii) If the advise is not followed by the patient there is an apprehension that the patient might contract a disease that would destroy the immune system of his/her body. Explain with the help of schematic diagram only how the immune system would get affected and destroyed. (Delhi 2017)  
Answer:  
(i) Repeated blood transfusion may result in contracting diseases like AIDS. The recipient must ensure that the donor’s blood is being screened for HIV and other pathogens. Also, he should make sure that doctors are using fresh needles.

(ii) In the absence of such measures, the patient can get infected by HIV (Human Immunodeficiency Virus), which causes AIDS. It is a threatening disorder that weakens the immune system by attacking helper T-cells in the body. A schematic diagram showing the cycle of proliferation and effects of retrovirus (HIV) in infected person is as follows  


Question 62.  
(i) It is generally observed that the children who had suffered from chickenpox in their childhood may not contract the same disease in their adulthood.  
Explain giving reasons the basis of such an immunity in an individual. Name this kind of immunity.  
(ii) What are interferons? Mention their role. (Foreign 2016)  
Answer:  
(i) A child who had suffered from chickenpox in childhood may not contract disease in his/her adulthood. It is because during the first encounter with pathogen (chickenpox) specific antibodies (by humoral immune response) are produced to counter the attack. During this attack, memory cells are also produced. Due to this, on subsequent exposure to the same pathogen, the immune response is more rapid and intense. That is why, second exposure to the chickenpox does not cause disease. It is known as acquired immunity of the body.

(ii) Interferons are special kind of proteins secreted by virus infected cells. These protect the healthy cells from the virus attacks.

Question 63.  
Certain attributes of innate immunity are given in the table below. Identify A, B, C, D, E and F respectively in it. (Delhi 2016C)

|  |  |  |
| --- | --- | --- |
| Types of barrier | Example of the barrier | Function |
| (i) A | B | Prevent microbial growth |
| (ii) C | Polymorpho nuclear leucocytes | D |
| (iii) Cytokine | E | F |

Answer:  
(i) A – Physiological barriers  
B – Lysozyme in saliva

(ii) C – Cellular barriers  
D – Fhagocytose and destroy microbes

(iii) E – Interferons  
F – Prevention of viral infections

Question 64.  
State the three characteristics of acquired immunity. List the different ways by which it can be attained by humans. (Delhi 2016C)  
Answer:  
The characteristics of acquired immunity are

* It is pathogen specific.
* It is characterised by memory.
* Responses can be characterised as a primary response (of low intensity) and secondary response.

Acquired immunity can be attained by humans in the following ways

* Active immunity The antibodies are produced in the host body as a response to foreign entitities, i.e. on living microbes or other proteins. The onset of response is slow.
* Passive immunity The readymade antibodies are directly introduced to protect the body against foreign agents.

Question 65.  
How are primary and secondary immune responses carried out in the human body? Explain. (Delhi 2016C)  
Answer:  
The primary response is the first response of immune system to a newly introduced foreign agent, while a second intensified immune response to same foreign agent is the secondary or anamnestic response. Immune responses are produced by two types of lymphocytes

* B-Iymphocytes These produce an army of proteins in response to pathogens, i.e. antibodies in the blood. The different types of antibodies secreted are IgA, IgM, IgE and IgG. This response generated via antibodies of the immune system is also called the humoral immune response.
* T-lymphocytes are the mediators of the cell-mediated immunity (CMI). The cell-mediated immune response is responsible for the graft rejection.

Question 66.  
(i) HIV and Hepatitis-B are STDs. Mention the two other ways by which they can be transmitted to a healthy person.  
(ii) Why is early detection of STD essential? What can it lead to otherwise? Explain. (Delhi 2016C)  
Answer:  
(i) STDs like AIDS and hepatitis-B can be transmitted to a healthy person in the following ways

* Unsafe blood transfusion.
* From infected mother to foetus throught lactation.

(ii) Early detection of STD is essential for timely cure. Otherwise this can lead to Pelvic Inflammatory Diseases (PIDs), abortions or even cancer of the reproductive tract. (IVi)

Question 67.  
A youth in his twenties met with an accident and succumbed to the injuries. His parents agreed to donate his organs. List any two essential clinical steps to be undertaken before any organ transplant. Why is the transplant rejected sometimes? What views would you share with your health club members to promote organ donation? (Delhi 2015C)  
Answer:  
Organ transplantation involves the removal of damaged/injured tissues or organs from the body of a person and their substitution by similar tissues/organs from a donor. Tissue matching, blood group matching are essential clinical steps before undertaking any graft/transplant. Transplantation may result in the rejection of transplanted organs as the immune system recognises the protein in the transplanted tissue or organs as foreign and initiates cellular immunity. We should raise and promote awareness about organ donation, about need of organ and tissue donors. There are lakhs of people waiting for organ donation and many people die daily while waiting for transplant. Organs and tissues from one donor can save upto 40-50% lives. So, we should encourage and get registered for organ donation to save many lives.

Question 68.  
(i) State what happens in the human body when malarial parasites infected RBCs burst to release the parasites in the blood.  
(ii) Mention the specific sites in the host body, where production of  
(a) sporzoites and  
(b) gametocytes takes place in the life cycle of the malarial parasites. (Delhi 2015C)  
Answer:  
(i) When the RBCs infected with malarial parasites burst open, they release a toxic substance called haemozoin, which is responsible for the chill and high fever recurring every three to four days.  
(ii) (a) Sporozoites They are produced in the gut (inside oocyte on the surface of stomach) of the female Anopheles mosquitoes.  
(b) Gametocytes RBCs of human body.

Question 69.  
What is the functional difference between B-and T-cells. (Delhi 2015)  
Answer:  
B-and T-cells are lymphocytes involved in immune responses generated by the host’s body. Functional differences between B- Cells and T-Cells are as follows

|  |  |
| --- | --- |
| B-lymphocytes | T-lymphocytes |
| They are formed and mature in bone marrow. | They are formed in bone marrow, but maturation occurs in thymus gland. |
| They produce antibody against antigen. The immune response produced is called humoral or antibody mediated immunity. | They directly attach the antigen or direct B-cells to produce antibody. They produce cell-mediated immune response. |
| They do not respond to organ transplantation. | They respond to organ transplantation. |

Question 70.  
Mention any two human diseases caused by round worms. Name their causative agents and their mode of transmission into the human body. (All India 2015C)  
Answer:  
Roundworms are nematodes, that cause helminthic disease in humans.  
Two human diseases caused by roundworms are

* Ascariasis It is caused by intestinal endoparasite of humans, Ascaris lumbricoides. Infection occurs through contaminated vegetables, fruits and water.
* Filariasis It is caused by filarial worms, Wuchereria bancrofti and W. malayi. It is transmitted by the bite of female Culex mosquito.

Question 71.  
At what stage is Plasmodium picked up by the female Anopheles? Describe the life cycle of the parasite in this insect. (Delhi 2015C)  
Answer:  
Female Anopheles pick up Plasmodium at gametocyte stage from human body.  
Inside mosquito’s body, the gametocytes develop to form male and female gametes. These gametes fuse and form zygote, which further divides to form many sporozoites in the intestine of mosquito. These sporozoites later move into salivary glands. See text on page no. 206.

Question 72.  
(i) Differentiate between benign and malignant tumours.  
(ii) Why is colostrum a boon to the newborn baby? (Delhi 2015C)  
Answer:  
(i) Differences between benign and malignant tumours are as follows

|  |  |
| --- | --- |
| Benign tumour | Malignant tumour |
| Tumour remains confined to the affected organ. The rate of tumour growth is usually slow. | The tumour spreads to other organs of the body. Rate of tumour growth is usually rapid. |
| These tumours cause limited damage. | These tumours have neoplastic cells that migrate to other sites of the body and start a new tumour wherever they land. This property is called metastasis. |
| It is non-cancerous. | It is cancerous. |

(ii) The milk produced during the initial few days of lactation is called colostrum, which contains IgA antibodies. These are essential to develop resistance in newborn babies as they provide passive immunity. Thus, breast- feeding during the initial period of infant growth is recommended by doctors for bringing up a healthy baby.

Question 73.  
A heavily bleeding and bruised road accident victim was brought to a nursing home. The doctor immediately gave him an injection to protect him against a deadly disease.  
(i) Write what did the doctor inject into the patient’s body?  
(ii) How do you think this injection would protect the patient against the disease?  
(iii) Name the disease against which this injection was given and the kind of immunity it provides. (All India 2015)  
Answer:  
(i) The doctor must have injected the tetanus vaccine into the patient.  
(ii) The vaccine injection stimulates the body to make antibodies against the tetanus toxin.  
(iii) The disease is tetanus, which is caused by bacterium Clostridium tetani. It may enter the skin through a cut or puncture wound. Once bacteria is under the skin, it makes a toxin that causes severe and painful muscle spasms, which can even be fatal. The injection provides passive immunity.

Question 74.  
Community service department of your school plans a visit to a slum near the school with an objective to educate the slum dwellers with respect to health and hygiene,  
(i) Why is there a need to organise such visits?  
(ii) Write the steps you will highlight, as a member of this department, in your interactions with them to enable them to lead a healthy life. All Indio 2Q14  
Answer:  
(i) The community service department of schools plans a visit to a slum is educate them about health, hygiene and nutrition. These, people are’always at risk of acquiring infections due to poor hygiene. Therefore, there is always a need to organise visits to slums so, as to educate and create awareness among them regarding the importance of hygiene.

(ii) The points to be highlighted while interacting with the slum people may be:

* Importance of cleanliness and hygiene of body as well as surroundings.
* Awareness and prevention of infectious diseases.
* Use of public facilities, i.e. toiletries.
* Consumption of properly cooked and hygienic food and water.
* Administration of vaccines to newborn children, so as to prevent diseases.

Question 75.  
(i) Name and explain giving reason, the type of immunity provided to the newborn by the colostrum and vaccinations.  
(ii) Name the type of antibody  
(a) present in colostrum.  
(b) produced in response to allergens in human body. (Foreign 2014)  
Answer:  
(i) The immunity provided to the newborn by colostrum and vaccinations is called passive immunity.

This is because both in colostrum and vaccines the antibodies conferred are not produced by own body, but are rather transferred passively to recipient’s body. Such as IgA antibodies pass through milk (colostrum) to infants and provides passive immunity against infection.

(ii) (a) The type of antibody present in colostrum is IgA.  
(b) IgE is produced in response to allergens in human body.

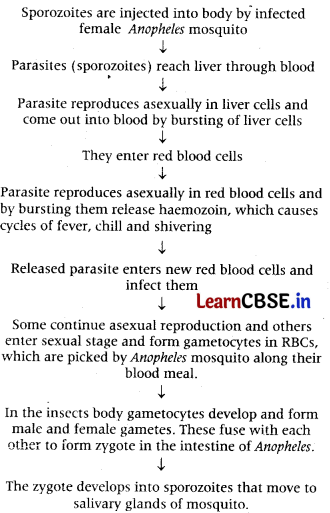
Question 76.  
(i) Name the causative organisms for the following diseases  
(a) Elephantiasis  
(b) Ringworm  
(c) Amoebiasis  
(ii) How can public hygiene help to control such diseases? Delhi 2014c  
Answer:  
(i) The causative agents or organisms for the following diseases are:  
(a) Elephantiasis- Wuchereria bancrofti  
(b) Ringworm- Microsporum  
(c) Amoebiasis-Entamoeba histolytica

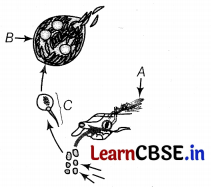
(ii) Maintenance of public hygiene includes

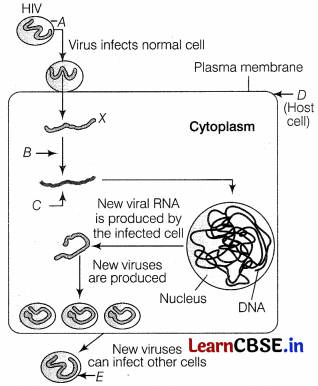
* keeping body and surroundings clean.
* consumption of clean drinking water, fruits and vegetables, etc.
* proper disposal of waste and excreta.
* regular cleaning and disinfection of tanks and other water reservoirs, etc.
* all the above measures help to control the increase in vectors of infectious diseases and their breeding places. Thus, there would be reduced chances of transmission of infectious diseases.

Question 77.  
Name the cells HIV attacks first, when it gains entry into a human body. How does this virus replicate further to cause immunodeficiency in the body? (Delhi 2013C, 2010; All India 2D10C)  
Or  
Trace the events occur in human body to cause immunodeficiency, when HIV gains entry into the body. (Delhi 2011)  
Answer:  
The HIV virus attacks the macrophages first in human body. The further replication of virus causes immuno deficiency in the following way

* RNA is replicated to form viral DNA by the enzyme reverse transcriptase.
* Viral DNA gets incorporated into the host cell’s DNA and directs the infected cells to produce viruses.
* Macrophages continue to produce virus particles and function as HIV factories.
* The virus particles enter helper T-lymphocytes in the blood, where they continue to replicate and produce viral progenies.
* The number of helper T-lymphocytes progressively decreases in the body of the infected person.
* With the decrease in number of T-cells, the immunity also decreases. The person is unable to produce any immune response even against common bacteria like Mycobacterium, parasites like Toxoplasma, viruses and fungi.

Question 78.  
Trace the life cycle of malarial parasite in human body, when bitten by infected female Anopheles. (All India 2012)  
Or  
Trace the life cycle of Plasmodium in humans from the stage of entry until it is picked up by the female Anopheles. (All India 2010)  
Answer:  
Life Cycle of Malarial Parasite (Plasmodium) in Human Body  


Question 79.  
Study a part of the life cycle of malarial parasite given below. Answer the questions that follows.  
  
(i) Mention the role of A in the life cycle of the malarial parasite.  
(ii) Name the event C and the organ where this event occurs.  
(iii) Identify the organ B and name the cells being released from it. (Delhi 2012)  
Answer:  
(i) A is female Anopheles mosquito, these mosquitoes act as vectors and transmit the disease from infected to healthy individuals.  
(ii) The event C is fertilisation. It occurs in the intestinal wall of mosquito.  
(iii) B is salivary glands of mosquito, sporozoites cells are released from it.

Question 80.  
Study the diagram showing replication of HIV in humans and answer the following questions accordingly.  
  
(i) Write the chemical nature of the coat A.  
(ii) Name the enzyme B acting on X to produce molecule C. Name C.  
(iii) Mention the name of the host cell D the HIV attacks first, when it enters into the human body.  
(iv) Name the two different cells the new viruses E subsequently attack. (All India 2011)  
Answer:  
(i) A – Protein coat  
(ii) B – Reverse transcriptase, A-viral RNA, C – Viral DNA  
(iii) D – Macrophages (animal or human cell)  
(iv) E – Macrophages and helper T-cells.

Question 81.  
(i) Name the causative agent of typhoid in humans.  
(ii) Name the test administered to confirm the disease.  
(iii) How does the pathogen gain entry into the human body? Write the diagnostic symptoms and mention the body organ that gets affected in severe cases? All India 2011  
Answer:  
(i) Salmonella typhi.  
(ii) Widal test.  
(iii) Pathogens enter the human body through contaminated food and water.  
Diagnostic symptoms high fever, weakness, stomach pain. The body organ affected is small intestine.

Question 82.  
An antibody molecule is represented as H2L2. Explain. (Delhi 2010.)  
Answer:  
For Antibody H2L2, Refer to Answer No. 44.  
Refer to figure 8.2. on page no. 210.

Question 83.  
(i) All human beings have cellular oncogenes, but only few suffer from cancer disease. Give reasons.  
(ii) How is a malignant tumour different from a benign tumour? (Foreign 2010)  
Answer:  
(i) Ail cells have cellular oncogenes (c-onc) or proto-oncogene, but only few suffer from cancer disease because these genes code for certain growth factors. Under certain conditions, they get activated and lead to oncogenic transformation causing cancer. This transformation is induced by physical, chemical and biological factors called carcinogens.

(ii) For differences between benign and malignant tumours, Refer to Answer No. 72 (i).

Question 84.  
Under polio prevention programme, infants in India were given polio vaccines on a large scale at regular intervals to eradicate polio from the country.  
(i) What is a vaccine? Explain, how does it impart immunity to the child against the disease.  
(ii) With the help of an example each, differentiate between active and passive immunity. (Foreign 2015)  
Answer:  
(i) Vaccine is a preparation of inactivated or weakened pathogen of polio virus or protein that is injected into a person to provide protection against disease. Refer to Answer No. 34.  
(ii) Refer to Answer No. 33.

Question 85.  
(i) Cancer is one of the most dreaded diseases. Explain ‘contact inhibition’ and ‘metastasis’ with respect to disease.  
(ii) Name the group of genes that have been identified in normal cells that could lead to cancer. How do these genes cause cancer?  
(iii) Name any two techniques that are useful in detecting cancers of internal organs.  
(iv) Why are cancer patients often given a-interferon as part of the treatment? (Delhi 2014)  
Answer:  
(i) Contact inhibition is the property exhibited by normal cells. It prevents their uncontrolled proliferation when they are in contact with other neighbouring cells. But cancerous cells seem to have lost this property and continue to divide despite being in contact with other cells, which leads to masses of cells called tumours.

Metastasis is the property exhibited by malignant tumours which grows rapidly, invades neighbouring tissues and is capable of reaching distant sites through blood and lymph thus, spreading malignant tumours to other organs or parts of body. These two properties make ‘cancer’ one of the dreaded diseases.

(ii) The group of genes called cellular oncogenes or proto-oncogenes in normal cells could lead to cancer. These genes are present in inactivated or suppressed form. Some factors, i.e. physical, chemical or biological called carcinogens are capable of activating these oncogenes and thus, transforming normal cells into cancerous one.

(iii) The two techniques useful in detecting cancers of internal organs, are CT (Computed Tomography) and MRI (Magnetic Resonance Imaging).

(iv) As tumour cells are capable of avoiding recognition and destruction by immune system, the cancer patients are given a-interferons, which are biological response modifiers. It helps in activating the immune system and destroy tumours.

Question 86.  
(i) Name and explain any four lymphoid organs present in humans.  
(ii) Categorise the named lymphoid organs as primary or secondary lymphoid organs, giving reasons. (Foreign 2014)  
Answer:  
(i) The four lymphoid organs are:

* Bone marrow Major lymphoid organs as both B and T-lymphocytes are formed here and p-lymphocytes mature here only.
* Thymus T-lymphocytes mature in thymus and they are responsible for cell mediated iinmupe response.
* Spleen Bean-shaped organ comprising of single mass of lymphoid tissues. In foetal stage, it produces all type of blood cells but only lymphocytes are produced in adult stage.
* Lymph nodes These are small solid structures composed of lymphoid tissue. They produce lymphocytes and plasma cells and also act as filters for lymph.

(ii) The above described lymphoid organs, such as bone marrow and thymus can be grouped under primary lymphoid organs, because these act as organs where both B and T-lymphocytes mature and acquire their antigenic specificity. Whereas the spleen and lymph nodes are considered as secondary lymphoid organs where the lymphocytes undergo proliferation and differentiation. These are the site of acquired immune response to antigens and formation of effector cells.

Question 87.  
A person in your colony has recently been diagnosed with AIDS. People/residents in the colony want him to leave the colony for the fear of spread of AIDS.  
(i) Write your view on the situation, giving reasons.  
(ii) List the possible preventive measures that you would suggest to the residents of your locality in a meeting organised by you so that they understand the situation.  
(iii) Write the symptoms and the causative agent of AIDS. (All India 2013)  
Answer:  
(i) AIDS is not contagious, i.e: it does not spread by shaking hand, talking and use of common utensils. So, there is no need of fear to live with the AIDS patient.  
(ii) Some preventive and safe steps to be suggested are:

* Taking out HIV affected blood from blood bank, ensuring the use of only disposable needles and syringes in all public and private hospitals and clinics.
* Free distribution of condoms in public.
* Advocating safe sex and promoting regular check-up for HIV in population.

(iii) AIDS is caused by Human Immunodeficiency Virus (HIV), a retrovirus. This virus attacks on T-helper cells, thus destroying the immune system.  
The common symptoms of AIDS are weakness, fever, weight loss, regular illness, etc.

Question 88.  
Describe the asexual and sexual phases of life cycle of Plasmodium that causes malaria in humans. (Delhi 2013)  
Answer:  
For life cycle of Plasmodium, Refer to page no. 206.

Question 89.  
Mention the useful as well as the harmful drug obtained from the latex of poppy plant. (Delhi 2013)  
Answer:  
Morphine is obtained from latex of poppy plant. It is useful as an analgesic. Heroin formed after acetylation of morphine is harmful as it is a depressant.

Question 90.  
How does smoking tobacco in human lead to oxygen deficiency in their body? (Delhi 2012)  
Answer:  
Smoking increases carbon monoxide (CO) content in blood and reduces the concentration of haem-bound oxygen. This causes oxygen deficiency in the body. (1)

Question 91.  
(i) Name the source plant of heroin drug. How is it obtained from the plant? (2018C)  
(ii) Write the effects of heroin on the human body.20ia c  
Answer:  
(i) Heroin is obtained from Papaver somniferum. It is extracted from the latex of the plant.  
(ii) Heroin is a depressant and slows down body function.

Question 92.  
Why are adolescents especially advised not to smoke? How does smoking affect the functioning of the body? (Outside Delhi 2016C)  
Answer:  
Adolescents are advised not to smoke for the following reasons

* Smoking paves way for hard drugs.
* Smoking is associated with increased incidences of cancers of lung, throat and bronchitis and emphysema. It also increases carbon monoxide content in blood and reduces the concentration of haem-bound oxygen.

Question 93.  
Name two drugs obtained from poppy plant. ‘These drugs are medically useful, but are often abused’. Taking the mentioned examples justify by giving reasons. (Delhi 2016 C)  
Or  
How are morphine and heroin related? Mention the effect each one of them has on the human body? (All India 2014C)  
Answer:  
Both morphine and heroin are extracted from the latex of plant Papaver somniferum.  
Heroin is actually obtained by the acetylation of morphine. Thus, both heroine and morphine are related.  
Morphine acts as an effective sedative and pain-killer while heroin acts as depressant and slows down body functions.

Question 94.  
What happens to an individual when a regular dose of drugs/alcohol is abruptly discontinued? What characteristics manifest in the individual under such a situation? (Outside Delhi 2016C)  
Or  
What is ‘withdrawal syndrome’? List any two symptoms it is characterised by. (Foreign 2014)  
Answer:  
If the regular dose of drug or alcohol in an addicted person is discontinued abruptly, the body exhibits characteristic and unpleasant symptoms called ‘withdrawal syndrome’.  
The ‘withdrawal syndrome’ is characterised by symptoms like anxiety, nausea and excessive sweating.

Question 95.  
Write the scientific name of the source plant of the drugs-marijuana and hashish and mention their effects on human body. (Delhi 2014C)  
Or  
Name the plant source of ganja. How does it affect the body of the abuser? (All Indio 2012)  
Answer:  
The scientific name of source plant of drugs marijuana, hashish and ganja is Cannabis sativa. These drugs usually affect the cardiovascular system of human body.

Question 96.  
Name the plant source of the drug popularly called smack. How does it affect the body of the abuser? (Delhi 2012)  
Or  
Name the opioid drug and its source plant. How does the drug affect the human body? (All India 2010)  
Answer:  
Smack is obtained from Papaver somniferum (poppy plant).  
Drug’s affects

* It binds to specific opioid receptors present in our central nervous system and gastro-intestinal tract.
* It is a depressant that slows down the body functions.

Question 97.  
Identify A, B, C and D in the following table. (Delhi 2012C)

|  |  |  |
| --- | --- | --- |
| Scientific name of the source plant | Drug | Harmful effects/Human body part affected |
| Papaver somniferum | A | Depressant/ slows body function |
| Cannabis sativa | Cannabinoids | B |
| Erythroxylum coca | C | D |

Answer:  
A- Heroine  
B – Cardiovascular system  
C – Cocaine  
D – Central nervous system

Question 98.  
Why is tobacco smoking associated with rise in blood pressure and emphysema (oxygen deficiency in the body)? Explain. (All India 2011)  
Answer:  
The nicotine present in tobacco stimulates  
adrenal glands to secrete adrenaline and nor-adrenaline. Both these hormones increase blood pressure and heart rates. ID  
Smoking is associated with increased incidence of lung cancers. It increases carbon monoxide level of the blood, which competes with oxygen for transport. As the concentration of haem-bound oxygen decreases, there is oxygen deficiency in the body. It also increases the craving for hard drugs.

Question 99.  
Why is there a fear amongst the guardians that their adolescent wards may get trapped in drug/alcohol abuse? (All India 2017)  
Answer:  
There is always a fear amongst guardians that their adolescents may get trapped in drug/alcohol abuse due to following reasons:

* Adolescence is accompanied by several biological and behavioural changes. It is a vulnerable phase of mental and psychological development of an individual in which an individual may get addicted to alcohol/drugs very easily.
* In this age, the first use of drugs or alcohol may be out of curiosity or experimentation, which later on turns to addiction.
* Adolescents usually take drugs due to social pressure, need of adventure, excitement to avoid stress, depression and frustration.

Question 100.  
Explain ‘addiction’ and ‘dependence’ in respect of drug/alcohol abuse in youth. (All India 2017)  
Answer:  
Addiction is a psychological attachment to certain effects such as euphoria and a temporary feeling of well-being associated with drugs and alcohol. These drive people to take them without need or even when it becomes self-destructive. In the absence of any guidance or counselling, the person gets addicted and becomes dependent on their use.

Dependence on drug/alcohol is the tendency of the body to manifest a characteristic and unpleasant withdrawal syndrome, if regular dose of drugs/alcohol is discontinued abruptly. Withdrawal symptoms are characterised by anxiety, shakiness, nausea and sweating. Sometimes, it can be so severe that they may be life threatening.

Question 101.  
Prior a sports event blood and urine samples of sports persons are collected for drug tests.  
(i) Why is there a need to conduct such tests?  
(ii) Name the drugs the authorities usually look for.  
(iii) Write the generic names of two plants from which these drugs are obtained. (Delhi 2016)  
Answer:  
(i) It is necessary to conduct these tests as sports-persons often take drugs to increase their performance.  
(ii) Cocaine and morphines are the drugs the authorities usually look for.  
(iii) Morphine is extracted from the latex of poppy plant Papaver somniferum. Cocaine is obtained from the coca plant Erythroxylum coca.

Question 102.  
A team of students are preparing to particfpate in the interschool sports meet. During a practice session you find some vials with labels of certain cannabinoids.  
(i) Will you report to the authorities? Why?  
(ii) Name a plant from which such chemicals are obtained.  
(iii) Write the effect of these chemicals on human body. (Delhi 2015)  
Answer:  
(i) Yes, I will report it to the authorities, because cannabinoids are classified as drugs and taking them without medical supervision is illegal.  
(ii) Cannabinoids are obtained from various parts of plant Cannabis sativa.  
(iii) Effect The cannabinoids interact with cannabinoid receptors in the brain and affect the cardiovascular system of the body.

Question 103.  
Do you support ‘dope test’ being conducted on sports persons participating in a prestigious athletic meet? Give three reasons in support of your answer. (All India 2014C)  
Answer:  
Yes, the ‘dope test’ should be conducted on sports persons participating in a prestigious athletic meet. This is done to find out if any participant had taken any kind of performance enhancing drugs.  
The use of drugs in sports should be banned as

* they increase muscle strength.
* promote aggressiveness.
* increase athletic performance.

Because of above reasons, use of such drugs, e.g. steroids, analgesics, diuretics should be banned for participants as it would be unfair on the part of other participants (not consuming such drugs).

Question 104.  
‘Prevention is better than cure’ is an apt slogan to safeguard adolescents from drug abuse. List any 6 steps that could be taken in this regard. (All India 2013C)  
Answer:  
Six steps that could be taken to prevent adolescents from drug alcohol abuse are as follows

* A child should not be pushed unduly to perform beyond his/her limits in studies, sports or any other activities.
* Educating and counselling him/her to face problems and stresses and accept disappointments and failures as part of life.
* Parents and teachers can identify the danger signs and take appropriate steps to diagnose the malady and underlying causes.
* Help should be taken from qualified psychologists and psychiatrists.
* Parents and teacher should become more supportive.
* Help of close friends and relatives can also be taken.

Question 105.  
Write the source and the effect on the human body of the following drugs  
(i) Morphine  
(ii) Cocaine  
(iii) Marijuana (Delhi 2011)  
Answer:  
(i) Morphine is obtained from the latex of Papaver somniferum. It is a depressant, which slows down the body functions.  
(ii) Cocaine is obtained from Erythroxylum coca. It is a stimulant and produces a sense of euphoria and increased energy.  
(iii) Marijuana is obtained from the inflorescence of Cannabis sativa. It affects cardiovascular system of the body.

Question 106.  
(i) Name the drug used  
(a) as an effective sedative and pain killer.  
(b) for helping patients to cope with mental illness like depression, but often misused.  
(ii) How does moderate and high dosage of cocaine affect the human body? (Foreign 2011)  
Answer:  
(i) (a) Morphine is an effective sedative and pain-killer.  
(b) Lysergic Acid Diethylamides (LAD) or barbiturates are often misused.

(ii) Moderate dose of cocaine have a stimulating action on central nervous system. It produces a sense of euphoria and increased energy. High dosage of cocaine causes hallucinations.

Question 107.  
Municipal corporation has deputed personals to check mosquito breeding in your school. Which places they should check for mosquitoes and name two diseases which are spread by them.  
Answer:  
They should check water tanks, flower pots, etc. These are the places where mosquitoes breed. Mosquitoes spread dengue and malaria.

Question 108.  
It is commonly observed that parents feel embarrassed to discuss freely with their adolescent children about sexuality and reproduction. The result of this parental inhibition is that the children go astray sometimes.  
(i) Explain the reasons that you feel are behind such embarrassment amongst some parents to freely discuss such issues with their growing children.  
(ii) By taking one example of a local plant and animal, how would you help these parents to overcome such inhibitions about reproduction and sexuality? (All India 2017)  
Answer:  
(i) The reasons behind the embarrassment amongst some parents to freely discuss sexuality and reproduction related issues are as follows

* Communication gap is a big reason for the same. The parents feel that talking about such issues will have a negative impact on children.
* In India, sex-related issues are considered as taboos, so people feel awkward while talking about them.
* Social beliefs are also responsible for this. Most parents think that there has to be a V line of respect between parents and their children. Parents usually think that their child is too young to discuss over this topic.

(ii) To overcome this inhibition, parents can make children understand about sexuality via scientific perspective.  
For example, in order to tell them about sexuality parents can take the example of cucurbit and papaya. In cucurbits, both male and female reproductive structures are present on the same plant, i.e, they are bisexual, while in papaya both male and female reproductive structures are present on different plants, i.e. they are unisexual. Similarly, in animals, earthworm is bisexual or hermaphrodite while cockroaches are unisexual. The concept of reproduction can be taught in same way by citing the examples of asexual reproduction in lower animals and sexual reproduction in higher animals.

Question 109.  
Modern life style in big cities and towns is surely making the life more easy and comfortable for people. On the contrary, many more health issues and problems are on the rise and one of them is allergic reactions.  
(i) Write any four steps you would suggest to minimise the cause of the above allergic responses.  
(ii) List any two allergens. How does the human body respond to them? Explain. (Delhi 2014)  
Answer:  
(i) Allergy is a hypersensitive reaction of the immune system to certain antigens present in the environment. The following steps can be used to minimise the allergic reactions

* Provide a less protected environment in early childhood.
* Avoiding exposure to allergens like mites in dust, pollens, animal dander, etc.
* Use of drugs; like antihistamine, adrenaline and steroids.
* Exposing the patient to small doses of allergens and studying possible reactions.

(ii) Mist in dust and pollens are allergens. The human body responds to them by producing IgE antibodies and releasing chemicals like histamine and serotonin from mast cells.

Question 110.  
Peer pressure plays a negative role in triggering smoking habits in adolescents. As a school captain list any two activities you would like to organise with the help of senior students of your school and any other two activities you would like your school authorities to organise for the students to tackle this problem. Explain how these activities will help in doing so. (Delhi 2015)  
Answer:  
As a captain, we will organise craft competition to create the awareness among the students. Secondly, we will prepare some students to deliver debate during morning assembly to make it more effective and with the help of school authorities, we will prepare hoardings and put them Up on walls. We will also distribute some brochure amongst the students including the lecture of principal during morning assembly, we can also arrange a play on any auspicious occasion.

Question 111.  
You have attended a birthday party hosted by one of your classmates. You found some guests at the party sitting in a corner making a lot of noise and consuming ‘something’. After a while one of the boys from the group started screaming, behaving abnormally and sweating profusely.  
(i) Would you inform your parents/school authorities? Yes/No? Give reason in support of your answer.  
(ii) Prepare a note to be circulated amongst the schoolmates about the sources and dangers of any two drugs.  
(iii) Write any two ways that you will suggest to your school principal, so as to promote awareness amongst the youth against the use of these drugs. (Foreign 2015)  
Answer:  
(i) Yes, I will inform the school authorities, because such kind of behaviour may lead to terrible consequences in future. It may lead to addiction to drugs. (1)  
(ii) Following are two drugs that are most commonly available

|  |  |  |
| --- | --- | --- |
| Drugs | Sources | Danger |
| Cocaine | Coca plant | Damage to blood vessel, increased heart rate, even death. |
| Marijuana | Cannabis sativa | Mental retardation, lung infection, lung cancer. |

(iii) Ways to promote awareness amongst the youth against the use of these drugs are as follows:

* All students must be inspired to adopt a healthy life style.
* There should be a counsellor who must talk to students about their problems and situations that force them to adopt wrong habits.

Question 112.  
An active member of an awareness group conducts regular programmes to sensitise public against alcoholism amongst youth as a serious health hazard in his locality.  
Identify the values this member of the group is trying to propagate amongst the people in his locality. (Value Based Question, Delhi 2013C)  
Answer:  
Member of an awareness group is trying to aware public, commonly youth about the harmful impacts of alcohol.  
He wants to tell people that alcohol has several ill effects which affect the body of the individual in many ways as follows

* Alcohol affects the foetus in case of pregnancy.
* It leads to reckless behaviour, vandalism and violence.
* It causes aggressiveness, rebellious behaviour and depression.
* Fatigue, isolation, fluctuations in weight are the other ill effects.
* Change in sleeping pattern, loss of appetite and lack of personal hygiene is also seen in addicts.