

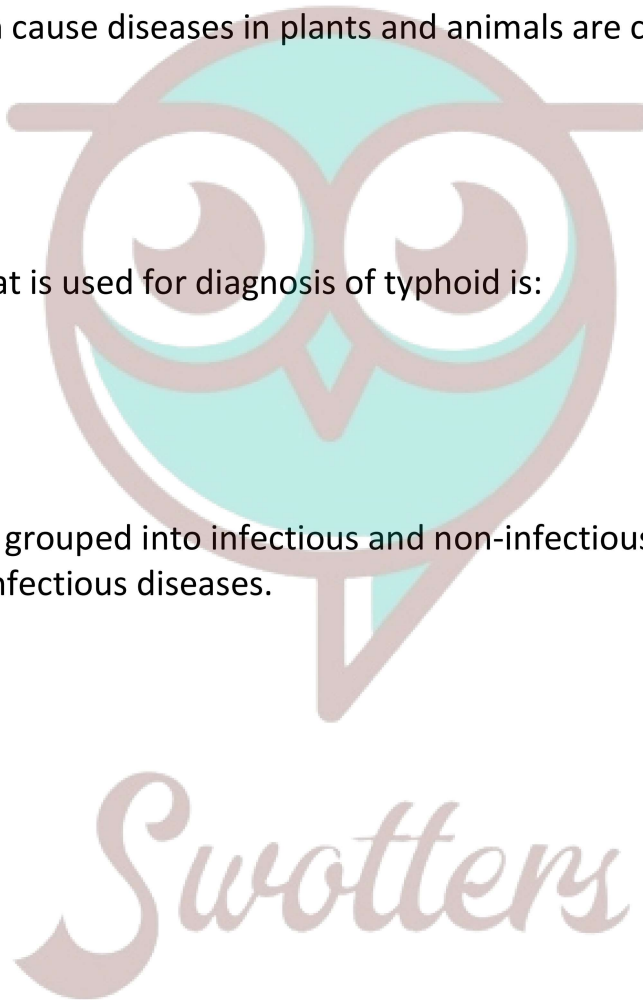
BIOLOGY



Important Questions

➤ Multiple Choice Questions:

- The term 'Health' is defined in many ways. The most accurate definition of the health would be:
 - Health is the state of body and mind in a balanced condition
 - Health is the reflection of a smiling face
 - Health is a state of complete physical, mental and social well-being
 - Health is the symbol of economic prosperity.
- The organisms which cause diseases in plants and animals are called:
 - pathogens
 - vectors
 - insects
 - worms.
- The chemical test that is used for diagnosis of typhoid is:
 - ELISA Test
 - ESR Test
 - PCR Test
 - Widal Test.
- Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases.
 - Cancer
 - Influenza
 - Allergy
 - Smallpox.
 - i and ii
 - ii and iii
 - iii and iv
 - ii and iv
- The sporozoites that cause infection when a female Anopheles mosquito bites a human being are formed in:
 - Liver of human
 - RBCs of mosquito
 - Salivary glands of mosquito
 - Intestine of human.
- The disease chikungunya is transmitted by:
 - Houseflies
 - Aedes mosquitoes



- (c) Cockroach
(d) Female Anopheles.
7. Many diseases can be diagnosed by observing the symptoms in the patient. Which group of symptoms are indicative of pneumonia?
- (a) Difficulty in respiration, fever, chills, cough, headache
(b) Constipation, abdominal pain, cramps, blood clots
(c) Nasal congestion and discharge, cough, sore throat, headache
(d) High fever, weakness, stomach pain, loss of appetite and constipation.
8. Which type of immune response is responsible for the rejection of tissues/ organs in the patient's body post-transplantation?
- (a) auto-immune response
(b) humoral immune response
(c) physiological immune response
(d) cell-mediated immune response.
9. In malignant tumours, the cells proliferate, grow rapidly and move to other parts of the body to form new tumours. This stage of disease is called:
- (a) metagenesis
(b) metastasis
(c) teratogenesis
(d) mitosis.
10. When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that:
- (a) the patient was not efficient at his work
(b) the patient was not economically prosperous
(c) the patient shows behavioural and social maladjustment
(d) he does not take interest in sports.
11. Which of the following are the reason(s) for Rheumatoid arthritis? Choose the correct option.
- (i) Lymphocytes become more active
(ii) Body attacks self cells
(iii) More antibodies are produced in the body
(iv) The ability to differentiate pathogens or foreign molecules from self cells is lost
- (a) i and ii
(b) ii and iv
(c) iii and iv
(d) i and iii
12. AIDS is caused by HIV. Among the following, which one is not a mode of transmission of HIV?

- (a) Transfusion of contaminated blood
- (b) Sharing the infected needles
- (c) Shaking hands with infected persons
- (d) Sexual contact with infected persons.

13. 'Smack' is a drug obtained from the:

- (a) latex of *Papaver somniferum*
- (b) leaves of *Cannabis sativa*
- (c) flowers of *Datura*
- (d) fruits of *Erythroxylon coca*.

14. The substance produced by a cell in viral infection that can protect other cells from further infection is:

- (a) serotonin
- (b) colostrum
- (c) interferon
- (d) histamine.

15. Transplantation of tissues/organs to save certain patients often fails due to rejection of such tissues/organs by the patient. Which type of immune response is responsible for such rejections?

- (a) auto-immune response
- (b) humoral immune response
- (c) physiological immune response
- (d) cell-mediated immune response.

➤ Very Short Question:

1. Name the diagnostic test which confirms typhoid.
2. Name the two major groups of cells required to attain specific immunity.
3. You have heard of many incidences of Chickengunya in our country. Name the vector of the disease.
4. Breast fed babies are more immune to diseases than the bottle fed babies. Why?
5. Name the pathogen which causes malignant malaria.
6. Which microorganism is used to produce hepatitis B Vaccine?
7. What is the reason of shivering in malarial patient?
8. When is a tumour referred to as malignant?
9. Why does an AIDS patient suffer from many infections?
10. Name two curable sexually transmitted diseases?

➤ Short Questions:

1. Where are B-cells and T-cells formed? How do they differ from each other?
2. Given below are the pathogens and the diseases caused by them. Which out of these pairs is not correct matching pair and why?
 - (a) Wuchereria – Filariasis
 - (b) Microsporum – Ringworm
 - (c) Salmonella – Common Cold
 - (d) Plasmodium – Malaria
3. What would happen to the immune system, if thymus gland is removed from the body of a person?
4. Lymph nodes are secondary lymphoid orgDescribe the role of lymph nodes in our immune response.
5. What is the role of histamine in inflammatory response? Name few drugs which reduce the symptoms of allergy.
6. What do you mean withdrawal Symptoms? What are its characteristics?
7. Enumerate the two properties of cancer cells that distinguish them from normal cell.
8. What are allergens? How do they cause inflammatory response inside human body?

➤ Long Questions:

1. (i) How and at what stage does Plasmodium enter a human body?
(ii) With the help of a flow chart only shows the stages of asexual reproduction in the life cycle of the parasite in the infected human.
(iii) Why does the victim show symptoms of high fever?
2. What is Immune system? Mention the two types of the immune system.
3. Medically it is advised to all young mothers that breastfeeding is the best for their newborn babies. Do you agree? Give reasons in support of your answer.

➤ Assertion and Reason Questions:

1. For question, two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.
 - a) Both assertion and reason are true, and reason is the correct explanation of assertion.
 - b) Both assertion and reason are true, but reason is not the correct explanation of assertion.
 - c) Assertion is true, but reason is false.

d) Both assertion and reason are false.

Assertion : Proto-oncogenes are cellular genes required for normal growth.

Reason: Under normal conditions, they could lead to the oncogenic transformation of the cell.

2. For question, two statements are given-one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

a) Both assertion and reason are true, and reason is the correct explanation of assertion.

b) Both assertion and reason are true, but reason is not the correct explanation of assertion.

c) Assertion is true, but reason is false.

d) Both assertion and reason are false.

Assertion : Cornea is considered as an immunologically privileged site

Reason: A transplanted cornea is rarely rejected.

➤ Case Study Questions:

1. Read the following and answer any four questions from (i) to (v) given below:

A group of teenagers was involved in drug abuse. 'They used syringes and needles to inject drugs. 'They indulged in this habit when they became adults. Administration of drug through needles became a piece of cake for them. Raj was the most active drug abuser amongst them and used to take drugs in high profile parties. In a span of time he started losing weight and suffered persistent diarrhoea. He developed constant low grade fever and used to catch opportunistic infection. When he consulted a doctor, he got himself tested for HIV in his blood and finally diagnosed with AIDS.

Based on the above information, answer the following questions.

(i) Select the incorrect statement.

a) AIDS is a disorder of cell mediated immune system of the body.

b) AIDS is caused by Human Immunodeficiency virus.

c) AIDS infections were detected in India for the first time in prostitutes of Chennai, Tamil Nadu in 1986.

d) December 10 is recalled as World AIDS Day.

(ii) How do you think Raj got AIDS infection?

a) Through transfusion of HIV infected blood

b) Sexual intercourse with an infected partner

c) Sharing towel with infected friend

d) Use of contaminated needles and syringes to inject drugs

(iii) How AIDS can be diagnosed?

- a) ELISA test
- b) Ames test
- c) Pap's test
- d) Widal test

(iv) How can AIDS be prevented?

- a) Blood tests of blood donor before transfusion to check for the presence of AIDS virus.
- b) Use of disposable needles and syringes for injecting medicines and vaccination
- c) Having protected sex by use of condoms
- d) All of these

(v) Select the correct statement for AIDS virus.

- a) It is rhomboid in shape with a diameter of 10-15 cm.
- b) Its genome consists of ds DNA.
- c) It consists of reverse transcriptase enzyme.
- d) Its envelope consists of lipid bilayer and three protein coats.

2. Read the following and answer any four questions from (i) to (v) given below:

Siddharth is a chain smoker. He got into this habit in early adolescence due to peer pressure and gradually got addicted to this habit. Its now almost 20 years he is into the habit of smoking. Since few months he is experiencing pain in chest, shortness of breath, wheezing and chronic cough with phlegm. He seeked advice of a medical practitioner who diagnosed him with lung cancer. Based on the above information, answer the following questions.

(i) What do you think is the possible carcinogen responsible for Siddharth's lung cancer?

- a) Nitrosamines
- b) Benzo(a)pyrene
- c) Hydrazine
- d) All of these

(ii) How is lung cancer diagnosed?

- a) Computerised tomography scan
- b) Sputum cytolog
- c) Biopsy of lung tissue
- d) All of these

(iii) From which of the following type of cancer is Siddharth suffering from?

- a) Sarcoma
- b) Carcinoma
- c) Lymphoma
- d) Leukemia

(iv) Select the correct statement.

- a) Surgery, radiotherapy and chemotherapy can be used to treat lung cancer.
 - b) Chemotherapy involves the exposure of cancerous parts to X rays which destroy rapidly growing cancer cells.
 - c) Surgical removal of lung cancer tissue is suggested at advanced stage 4.
 - d) Monoclonal antibodies can effectively treat lung cancer and can cure it completely.
- (v) **Assertion:** Lung cancer if not treated at an early stage can spread to other initial organs of the body.

Reason: Cancer cell have uncontrolled proliferation and ability to invade new sites (metastasis).

- a) Both assertion and reason are true and reason is the correct explanation of assertion.
- b) Both assertion and reason are true but reason is not the correct explanation of assertion.
- c) Assertion is true but reason is false.
- d) Both assertion and reason are false

✓ Answer Key-

➤ **Multiple Choice Answers:**

1. (c) Health is a state of complete physical, mental and social well-being
2. (a) pathogens
3. (d) Widal Test.
4. (d) ii and iv
5. (c) Salivary glands of mosquito
6. (b) Aedes mosquitoes
7. (a) Difficulty in respiration, fever, chills, cough, headache
8. (d) cell-mediated immune response.
9. (b) metastasis
10. (c) the patient shows behavioural and social maladjustment
11. (b) ii and iv
12. (c) Shaking hands with infected persons
13. (a) latex of Papaver somniferum
14. (c) interferon
15. (d) cell-mediated immune response.

➤ Very Short Answers:

1. Widal test
2. B-lymphocytes and T-lymphocytes.
3. Aedes mosquitoes.
4. The mother's milk consists of antibodies (Ig A) such antibodies are not available to bottle fed babies.
5. Plasmodium falciparum.
6. Yeast.
7. After sporozoite infection, when RBC ruptures, a toxic substance haemozoin is released which cause chilling and high fever.
8. A tumour is said to be malignant when grows rapidly, invade & damage the surrounding normal tissues.
9. Because in AIDS patient, immune system greatly weakens & cannot fight against any infection.
10. Gonorrhoea & Syphilis

➤ Short Answer:

1. B-cells and T-cells are formed in bone marrow. B-cells produce antibodies but T-cells do not produce antibodies but help B-cells to produce them.
2. Salmonella : Common cold is not a matching pair.
3. T-lymphocytes are developed and matured in thymus gland, Immune system will become weak on removal of thymus gland.
4. Lymph nodes provide the sites for interaction of lymphocytes with the antigen. When the microorganisms enter the lymph nodes, lymphocytes present there are activated and cause the immune response.
5. Histamine acts as allergy-mediator which cause blood vessels to dilate. It is released by mast cells. Antihistamine steroids and adrenaline quickly reduce the symptoms of allergy.
6. Withdrawal symptoms refers to the characteristic unpleasant symptoms by body of a drug addict if regular dose of drug is abruptly discontinued. These include anxiety, shakiness, sweating, restlessness, depression, muscular cramps etc.
7. Ans.
 - (i) Ancontrolled proliferation of cells without any differentiation
 - (ii) Ability of these cells to invade other tissues called metastasis.
8. The substance which causes the hypersensitive reaction of the immune system is called an allergen. dust, pollen grains etc. These allergens are actually weak antigens. First

exposure to allergen does not cause allergy but consequent exposure, allergen combines with Ig E on mast cell. That causes cells to burst & release Histamines which cause inflammatory response.

➤ Long Answer:

- (i) Sporozoite stage enters human body along with saliva of female anophel mosquito as it bites to suck blood.
(ii) Asexual phases of the life history of plasmodium in the body of a human
(iii) When the parasite attacks red blood cells, it leads to its rupture with the release of haemozoin, which is a toxin. As the haemozoin is released into blood, symptoms (high fever) of malaria appear.
- The system which protects our body from pathogens and other foreign invaders is called the immune system. It is of two types.
 - Innate
 - AcquiredInnate immunity is non-specific and is present by birth. It includes physical barriers, physiological barriers, cellular and cytokinin barriers.
Acquired immunity is pathogen-specific and is obtained with experience. It is of two types- Humoral and cell-mediated.
- Yes, I do agree with the fact that breastfeeding is the best for newborn babies. Mammary glands start producing milk at the end of pregnancy. The milk produced during the initial few days of lactation is called colostrum which contains several antibodies. It helps in developing resistance for newborn baby against diseases. It helps the baby fight off viruses and bacteria. Thus breast milk is packed with a disease-fighting substance that protects newborn babies from illness. Breast milk also naturally contains many of the vitamins and minerals that a newborn requires. It is easily digested as well. There is no constipation, diarrhoea and upset stomach.

➤ Assertion and Reason Answers:

- (c) Assertion is true, but reason is false.

Explanation:

Proto-oncogenes are cellular genes required for normal growth. If they are muted or overexpressed, they may become oncogenes that contribute to the malignant transformation of the cell.

- (a) Both assertion and reason are true, and reason is the correct explanation of assertion.

Explanation:

Some transplanted tissues do not stimulate an immune response. For example, a transplanted cornea is rarely rejected because lymphocytes do not circulate into the anterior chamber of the eye, that's why this site is considered as immunologically privileged site.

➤ Case Study Answers:

1.

(i) (d) December 10 is recalled as World AIDS Day.

Explanation:

Every year, December 1 is designated as World AIDS Day.

(ii) (d) Use of contaminated needles and syringes to inject drugs

(iii)(a) ELISA test

Explanation:

ELISA test, also called EIA for enzyme immunoassay is used to detect HIV antibody. It checks for certain proteins that the body makes in response to HIV.

(iv)(d) All of these

(v) (c) It consists of reverse transcriptase enzyme.

Explanation:

HIV is spherical with a diameter of 90-120 nm. Its genome consists of single stranded RNA. The envelope consists of a lipid bilayer derived from host cell membrane and projection knob like glycoproteins. It contains two protein coats.

2.

(i) (d) All of these

Explanation:

Carcinogen in tobacco smoke include polynuclear aromatic hydrocarbons,ββ naphthylamine, benzo (a) pyrene, nitrosamines, hydrazine, etc.

(ii) (d) All of these

Explanation:

A CT scan can reveal small lesion in lungs. Examination of sputum under microscope reveals the presence of lung cancer cells. A sample of lung tissue is obtained through some invasive procedure and careful analysis of cancer cells is done in lab to reveal the type of lung cancer.

(iii) (b) Carcinoma

(iv) (a) Surgery, radiotherapy and chemotherapy can be used to treat lung cancer.

Explanation:

Chemotherapy involves administration of certain anticancer drugs which kill cancer cells. Monoclonal antibodies coupled to appropriate radioisotopes can detect cancer specific antigens and hence cancer.

- (v) (a) Both assertion and reason are true and reason is the correct explanation of assertion.

Explanation:

Cancer cells have lost the ability of contact inhibition and so proliferate in an uncontrolled manner. They detach from their source organ and invade fresh sites, this is called metastasis.



Swotters