



## Mentor Guru

### Class 12 – Biology

#### Chapter 7 – Human Health and Diseases

#### Short Types Question with Answer

**Q.1. How is active immunity different from passive immunity?**

**A.1.** Following are the differences:

Active Immunity	Passive Immunity
Produced by the immune system actively	Produced by the immune system passively
Antibodies are produced by immunogens	Antibodies are transferred not produced
It involves antigens	Involves antibodies
It is durable	It is transient
Natural active immunity is by clinical infection	Natural passive immunity is by transfer of antibodies through the placenta

**Q.2. How is benign tumour different from the malignant tumour?**

**A.2.** Listed below are the differences.

<b>Benign Tumour</b>	<b>Malign Tumour</b>
It does not metastasize	Metastasizes to other parts of the body
Slow-growing	Fast-growing
Does not invade the ambient tissue	Invades the surrounding tissue
Chances of recurrence are less after surgery	Recur even after surgery
Examples: Myomas, Adenomas, Neuromas	Examples: Carcinomas, Sarcomas

**Q.3. What do you think is more dangerous – Active smoking or passive smoking? State why.**

**A.3.** Active and passive smoking can equally be dangerous, as passive smoking exposes one to the same harmful effects as active smoking. Once smoke is inhaled, it induces cough, prolonged exposure can cause emphysema, bronchitis and infections of the respiratory tract thereby causing lung cancer eventually.

**Q.4. Elucidate why “Prevention is better than cure”.**

**A.4.** It is because some diseases have the potential to cause extensive damage to the organs or tissues of the body which can affect their functioning capacity. It can induce a permanent debilitating effect not only physically but also mentally affecting one’s psychology. It also incurs an additional financial burden.

**Q.5. List three remedial measures to treat microbial infections.**

**A.5.** Following are the preventive measures:

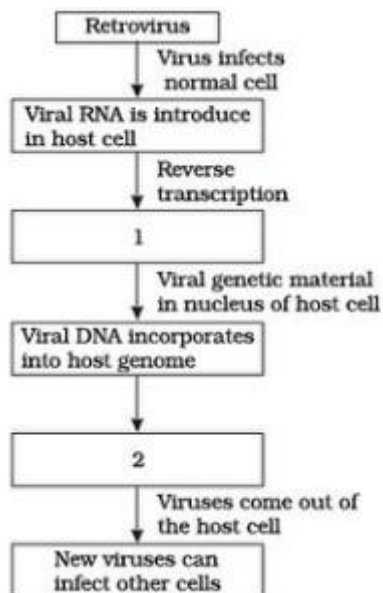
- Avoid being in crowded places
- Consume healthy food, safe drinking and pure air
- Maintaining community as well as personal hygiene through vaccine administration

**Q.6. The diagram shows replication of the retrovirus in the host. Note and answer the following questions.**

**(a) Fill in the missing data in boxes labelled 1 & 2.**

**(b) Why is it named as retrovirus?**

**(c) While the virus is being replicated and released, does the infected cell survive?**



**A.6. (a)** 1 – Viral DNA is produced by reverse transcriptase. 2 – New viral RNA is produced by the infected cell. (b) RNA produces DNA by reverse transcription and is the genetic material of the virus. (c) An infected cell can survive.

**Q.7. Fill the missing data in the table depicting diseases, their causatives and symptoms.**

Name of the Disease	Causative organism	Symptoms
(i) Ascariasis	<i>Ascaris</i>	—
(ii) —	<i>Trichophyton</i>	Appearance of dry, scaly lesions on various parts of the body
(iii) Typhoid	—	High fever, weakness, headache, stomach pain, constipation.
(iv) Pneumonia	<i>Streptococcus pneumoniae</i>	—
(v) —	<i>Rhino viruses</i>	Nasal congestion and discharge, sorethroat, cough, headache
(vi) Filariasis	—	Inflammation in lower limbs

### A.7.

Name of the disease	Causative Organism	Symptoms
Ascariasis	Ascaris	Muscular pain, internal bleeding, fever, anaemia, blockage of the intestinal passage
Ringworm	Trichophyton	The appearance of scaly lesions, dry skin on various parts of the body
Typhoid	Salmonella Typhimurium	Stomach pain, High fever, headache, weakness, constipation.
Pneumonia	Streptococcus pneumonia	Fever, cough, chills, headache. Fingernails and lips may turn gry to bluish in some cases.
Common cold	Rhinoviruses	Nasal congestion and discharge, sore throat, cough, headache.

Filariasis

Wuchereria(W.bancrofti,  
W.malayi)

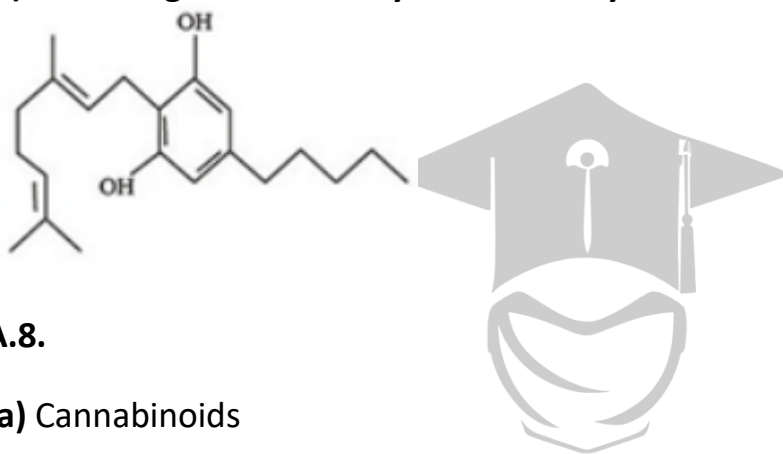
Inflammation in lower limbs

**Q.8. Answer the following questions on the outline structure of a drug shown below:**

**(a) Name the group of drugs this structure represents.**

**(b) List the modes of consumption of this drug**

**(c) Which organ of the body is affected by the consumption of this drug?**



**A.8.**

**(a) Cannabinoids**

**(b) Oral Ingestion or inhalation**

**(c) The cardiovascular system and the heart are affected**

**Q.9. What is the full form of MRI and CT? Where are they used? State the difference between them.**

**A.9.** MRI – Magnetic Resonance Imaging CT – Computed Tomography MRI uses magnetic fields and is a non-invasive technique whereas CT uses X-rays and is an invasive technique. MRI gives a better contrast of softer tissues compared to CT but cannot be used on patients with metal implants and pacemakers. CT provides a 3D and sectional picture of any part or section of the body.

**Q.10. Why is the use of cannabinoids prohibited in games and sports?**

**A.10.** It was banned since athletes misused these drugs so as to improve their performances. Cannabinoids can have adverse negative effects on health in the long run that can impede the normal functioning of the organs.

**Q.11. What is secondary metabolism?**

**A.11.** It is used to refer to pathways and metabolites produced by metabolism that are not essential for the survival of entities. In plants, metabolites help in the development and growth of plants. It also promotes primary metabolism. It is also known as specialized metabolism.

**Q.12. Why are diseases like cholera, typhoid, dysentery etc., more common in overcrowded places?**

**A.12.** It is because they are infectious diseases and can communicate from person to person. Water gets mixed with the excreta of infected people thereby contaminating it. Such water, if consumed causes the infection to spread to non-infected people.

**Q.13. Which plant yields cannabinoids? List any two cannabinoids. Name the part of the body that is affected by its consumption.**

**A.13.** Cannabinoids are obtained from the inflorescence of the Cannabis Sativa plant. Some of the cannabinoids are – Marijuana, charas, ganja etc. These substances have the potential to interact with the cannabinoid receptors of the body that are located in the brain. It also affects the cardiovascular system of the body.

**Q.14. What causes asthma/allergy in metropolitan cities of India? List some of its symptoms.**

**A.14.** More polluted environment lowers the immunity levels and sensitivity to allergens in metropolitan cities. Dust in the surroundings rises the chances of allergy in children. Few symptoms are – watery eyes, sneezing, difficulty in breathing and running nose.

**Q.15. State the principle of vaccination. How can vaccines be used to prevent microbial infections? Write the name of the entity from which the hepatitis B vaccine is synthesized.**

**A.15.** It is based on the principle of 'memory' of the immune system. In vaccination, a preparation of antigenic proteins or inactivated pathogen is introduced in the body. These antigens generate a primary immune response by generating antibodies with memory B-cells and T-cells. Hence when the vaccinated person is attacked again by the same pathogen, the current T-cells and B-cells recognize the antigen and cause massive production of antibodies and lymphocytes. Yeasts produce the hepatitis-B vaccine.

**Q.16. What is cancer? What causes a normal cell to turn cancerous? How is it different from a normal cell?**

**A.16.** Cancer is an uncontrolled and abnormal division of cells. Under certain conditions, genes such as proto-oncogenes or cellular oncogenes present in normal cells get activated leading to their oncogenic transformation causing cancer. Following are the differences between normal and cancerous cells.

<b>Normal cells</b>	<b>Cancerous cells</b>
They divide in a controlled manner	Divide uncontrollably
Cells exhibit contact inhibition	Cells do not display contact inhibition
Definite lifespan	Indefinite lifespan

**Q.17. Detect the medical ailment in the following case – Strong hypersensitive reactions displayed by a person when exposed to a few substances in the air. Identify the cells causing this reaction. State a precautionary measure to avoid such a reaction.**

**A.17.** The patient is allergic to the substances in the air. Allergies are due to the release of chemicals such as serotonin and histamine from the mast cells. One of the precautionary measures can be to avoid coming in contact with such allergens present in the air.

**Q.18. Is it advantageous to have an identical twin for an organ transplant? If yes/no, why?**

**A.18.** It is advantageous since the organ has the same surface markers. Hence the immune system of the recipient will not detect it as alien or imported and thereby will not react against it. The immune system reacts killing the foreign tissue only if it detects different surface markers.

**Q.19. What is a lifestyle disease? List two lifestyle diseases. What is their causative?**

**A.19.** It is a disease or disorder which is associated with the way a person lives. They are caused by certain work-related ethics, posture, specific food habits or even exposure to harmful substances or radiations. It could even arise due to lack of physical activity, exercise, mental disturbance etc. Examples – Heart Disease, Cancer, Obesity etc.

**Q.20. Which pathogenic virus would mutate faster, one with DNA or RNA? Why?**

**A.20.** The pathogenic virus with RNA would mutate faster than DNA as DNA is more stable and possesses better repair mechanisms. They have the potential to rectify the changes in base pairs (if any) as soon as a change has occurred.

### **Long Type Questions with Answer:**

**Q.1. What causes adolescents to start using drugs? How can the use of drugs be avoided?**

**A.1.** Few reasons that cause adolescents to start consuming drugs are:

- Curiosity to experiment
- For excitement and adventure sake
- Peer pressure
- In an attempt to push one's physical and mental boundaries and produce more work
- To overcome depression and frustration caused due to failure in miscellaneous activities.
- Lack of support from family

**Remedial measures** to avoid usage of drugs are:

- Avoid pressuring children to perform beyond his/her academic capabilities
- Educate and counsel children to deal with stress and disturbances in life
- Seek help from family, peers
- Stay alert on the danger signs by adopting suitable measures to treat them
- Seek medical/professional help for rehabilitation and de-addiction.

**Q.2. State the behavioural changes observed in an alcohol addict and remedial measures to overcome the problem.**



**A.2.** Following changes are observed:

- Alcohol drinks are costly, it may deprive the family of their basic needs
- Drinking is associated with crimes and dissolution of cultural and moral inhibitions.
- Few corrupt practices and violence are often directly or indirectly related to alcohol consumption

**Remedial measures:**

- Avoid getting influenced by pressure from peers
- Counselling and education aids in overcoming issues like stress, failure and disturbance
- Seek aid from family and peers
- Staying aware of danger signals, if one finds himself amidst a group of people consuming alcohol.
- Seeking medical or professional help is one of the resorts for people suffering from addiction, to lead a healthy and normal life.

**Q.3. How to detect cancer? What are a few approaches to treat cancer?**

**A.3.** Cancer can be detected at early stages and early detection is essential. Following are a few can diagnosis and detection areas:

- Tests for increases cell counts(blood cancer)
- Histo-pathological and biopsy of blood/tissues/bone marrow
- Radiography, CT, MRI to detect cancer of internal organs
- Identification of cancer-specific antigens
- Application of molecular biology techniques to detect genes with inherited susceptibility to a few cancers

**Treatment of cancer:** Listed below are a few approaches that can be used to treat cancer.

- Surgery to remove the tumour
- Immunotherapy to boost the killing of cancer cells
- Radiotherapy to kill cancerous cells
- Chemotherapy
- Administration of biological response mediators such as  $\alpha$ -interferons that activate the immune system thus helping in destroying the tumour

**Q.4. Explain why excessive dosage and abusive usage of drugs such as amphetamines, LSD and barbiturates used to treat mental illness, are considered harmful? What are the major effects of the usage of drugs in humans?**

**A.4.** Its harmful effects are:

- Shakiness, anxiety, sweating and nausea, loss of mind control
- Vandalism, violence and reckless behaviour
- Fluctuations in appetite and weight, lack of interest in personal hygiene
- Isolation, depression, withdrawal, aggressive behaviour, fatigue
- Social adjustment problems
- Severe and life-threatening withdrawal symptoms
- Excessive drug dosage can lead to coma and eventually death may occur due to respiratory failure, cerebral haemorrhage or heart failure

**Q.5. What is a recombinant DNA vaccine? List two such vaccines. State their advantages.**

**A.5.** Recombinant DNA vaccines consist of plasmid, which is a small circular DNA. It contains a pathogen DNA to produce one or two specific proteins of the pathogen. This DNA is then inserted into the yeast or bacteria cells to utilize the machinery of the cell to generate pathogen's polypeptides. These vaccines can be used to stimulate the organization of immune responses. Vaccines hence produced are used on a large scale for the manufacture of

- Hepatitis-B vaccine (yeast)
- Bird flu DNA vaccine

**Some of their advantages are:**

- These vaccines are always more beneficial than attenuated vaccines as they do not mutate again
- They are distinctly pure and specific and evokes strong immune responses.

**Q.6. What Is Typhoid? List out the symptoms of Typhoid?**

**A.6.** Typhoid is an infectious disease caused by the Salmonella typhi or S. Typhi bacteria, which infects the intestinal tract and the blood cells of an individual.

Listed below are a few common symptoms of Typhoid:

- Headache
- Dry cough
- Sweating
- Skin Rashes
- Muscle aches
- Abdominal pain
- Weakness and fatigue
- Diarrhoea or constipation
- Loss of appetite and weight loss
- Sustained fever or fever with the elevating body temperature.

### **Q.7. What is Ringworm? What are the different types of ringworm?**

**A.7.** Ringworm is a type of skin infection, caused by the fungus. It is a contagious skin disorder, which can spread by the skin contact with an infected person. There are different types of ringworm and are mainly classified based on the body parts which get infected. The most common forms of ringworm are tinea pedis, tinea capitis, tinea cruris and tinea corporis.

Types of Ringworm are:

Ringworm is classified based on the part of the body it affects.

1. Tinea corporis: This fungal infection might occur in any part of the body.
2. Tinea capitis: It is also called scalp ringworm. This fungal infection affects the scalp.
3. Tinea cruris: This fungal infection affects the skin around the buttocks, inner thighs, and groin. It is also known as the Jock itch.
4. Tinea pedis: This fungal infection affects both the foot, in between the fingernails and toenails. It is also known as Athlete's foot.

### **Q.8. What are the factors responsible for triggering asthma attacks?**

**A.8.** Asthma is a chronic condition, which alters the airways of the human respiratory system. There are several factors responsible for triggering asthma attacks and they vary from person to person. Listed below are a few of them.

- Pollen.

- Smoking.
- Sinusitis.
- Allergies.
- Pollution.
- Pet dander.
- Common cold.
- Dust and dust mites.
- Respiratory infections.
- Side effects of Medication.
- Exhausted gases from vehicles and industries.

**Q.9. Define minerals and list out the essential minerals along with the deficiency diseases caused by the lack of essential minerals.**

**A.9.** Minerals are inorganic nutrients that include trace elements such as copper, zinc, iodine, iron, along with the macronutrients such as calcium, potassium, magnesium and sodium. The important minerals required by our body are calcium, chloride, magnesium, phosphorus, potassium, sodium and sulphur.

Here is the list of deficiency diseases caused by the lack of minerals in our body.

1. Anaemia.
2. Joint pain
3. Loss of appetite.
4. Retarded growth.
5. Excessive bleeding.
6. Brittle and weak bones.
7. Diarrhoea or vomiting.
8. Dental cavities and gum disease.
9. Goitre and enlarged thyroid gland.
10. Purple colored or blood spots under the skin.

**Q.10. List out the major deficiency diseases caused due to lack of essential minerals and vitamins?**

**A.10.** Here is the list of incredibly common nutrients deficiencies disorders caused due to lack of essential minerals and vitamins.

<b>Vitamins and Minerals</b>	<b>Deficiency Diseases</b>
Vitamin-A (Retinol)	Night blindness, Xerophthalmia, chronic diarrhoea, etc.
Vitamin-B1 (Thiamine)	Beri-beri, Weight loss, confusions, short-term memory loss, etc.
Vitamin-B2 (Riboflavin)	Dry skin, Mouth ulcers, itchy and watery, etc.
VitaminB12 (Cyanocobalamin)	Anaemia, fatigue, fatigue, breathlessness, etc.
Vitamin-C (Ascorbic acid)	Fatigue, depression, skin rashes, internal bleeding, etc.
Vitamin-D (Calciferol)	Rickets, Fatigue, Tiredness, etc.
Vitamin-K (Phylloquinone)	Excessive bleeding due to injury
Calcium	Brittle bones and excessive bleeding
Phosphorus	Bad teeth, Rickets, osteomalacia and osteoporosis.
Iron	Anaemia, fatigue with low red blood cell count.

Iodine	Goitre, enlarged thyroid gland and hypothyroidism.
Copper	Low appetite, muscle weakness, anaemia, low white blood cell count, and retard growth.



# Mentor Guru