



INDIAN SCHOOL AL WADI AL KABIR



Class: XII	DEPARTMENT: SCIENCE 2026 – 2027 SUBJECT: BIOLOGY	Date: 26/08/2026
Worksheet:07 with answers	UNIT- VIII- BIOLOGY IN HUMAN WELFARE CHAPTER:07- HUMAN HEALTH AND DISEASE	Note: A4 FILE FORMAT
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

I. MULTIPLE CHOICE QUESTIONS (1M)

1. Typhoid fever is confirmed by using which chemical test?
A. Widal test
B. ELISA test
C. PCR test
D. ESR test
2. Which infectious stage of Plasmodium does a mosquito inject into humans?
A. Merozoite
B. Sporozoite
C. Gametocyte
D. Trophozoite
3. Morphine is extracted from the latex of which plant?
A. *Cannabis sativa*
B. *Erythroxylum coca*
C. *Papaver somniferu. Atropa belladonna*
4. Which antibody molecule is shaped like a 'Y' and has two light chains and two heavy chains?
A. H₁L₁
B. H₄L₄
C. H₂L₂
D. H₂L₄
5. How do malignant tumor cells spread to distant body sites to start new tumors?
A. Contact inhibition
B. Metastasis through blood
C. Cellular differentiation
D. Biopsy transformation

Two statements are given - one labelled as **Assertion (A)** and the other labelled as **Reason (R)**.
Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.

- A. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

- B. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
 C. Assertion (A) is true, but Reason (R) is false.
 D. Assertion (A) is false, but Reason (R) is true.
6. **Assertion(A):** Tobacco smoke contains high amounts of carbon monoxide (CO).
Reason(R): Carbon monoxide binds to hemoglobin and increases the oxygen-carrying capacity of the blood.
7. **Assertion(A):** Mother's milk called colostrum provides protection to a newborn baby.
Reason(R): Colostrum is rich in IgA antibodies that give passive immunity to the infant.
8. **Assertion(A):** An HIV-infected person usually dies due to common bacterial or fungal infections.
Reason(R): The HIV virus attacks and destroys Helper T-lymphocytes, breaking down the immune system.
9. **Assertion(A):** Normal cells show a property called contact inhibition.
Reason(R): Contact inhibition allows normal cells to divide continuously and pile up to form a tumor.

II. VERY SHORT ANSWER TYPE QUESTIONS(2M)

10. Differentiate between Benign and Malignant tumors.
 11. What measures would you take to prevent waterborne diseases?
 12. The following are some well-known abbreviations, which have been used in this chapter. Expand each one to its full form:
 (a) MALT
 (b) CMI
 (c) AIDS
 (d)NACO
 (e) HIV
 13. What are the various routes by which transmission of human immunodeficiency virus takes place?

III. SHORT ANSWER TYPE QUESTIONS (3M)

14. Draw a well-labelled diagram of an antibody.
 15. How does the transmission of each of the following diseases take place?
 (a)Amoebiasis (b) Malaria
 (c)Ascariasis (d) Pneumonia
 16. (a) Why are breast-fed newborn babies more naturally immune to environmental infections than bottle-fed babies?
 (b) Classify the type of immunity provided by vaccination versus that provided by mother's milk.(CBSE 2020)

IV. CASE STUDY BASED QUESTIONS (4M)

17. An investigation was conducted on two patients, Patient A and Patient B, who visited a hospital clinic with different health complications.
Patient A is a 45-year-old male who recently underwent a kidney transplant operation. Although the surgery went well, his body began rejecting the new organ a few weeks later. The doctors had to immediately increase his dosage of specialized immunosuppressive drugs.
Patient B is a 28-year-old female who was rushed to the clinic after accidentally walking through a dusty warehouse. She experienced sudden, violent bouts of sneezing, red, watery eyes, and severe breathing difficulties. The doctor immediately injected her with an antihistamine and adrenaline, which brought her symptoms down almost instantly.

The hospital pathologists explained that both conditions are direct results of our body's highly evolved immune system reacting to different foreign substances. While one patient suffered from an exaggerated response to environmental factors, the other patient's body was aggressively defending its biological identity by recognizing a foreign tissue graft.

- A. Why did Patient A's immune system treat the new kidney as an enemy?
- B. What would happen to Patient A if he completely stopped taking his immune-suppressing drugs?
- C. Why did Patient B experience a runny nose, watery eyes, and sneezing so suddenly?
- D. Identify the two emergency medications given to Patient B to lower her allergic reaction.

V. LONG ANSWER TYPE QUESTIONS (5M)

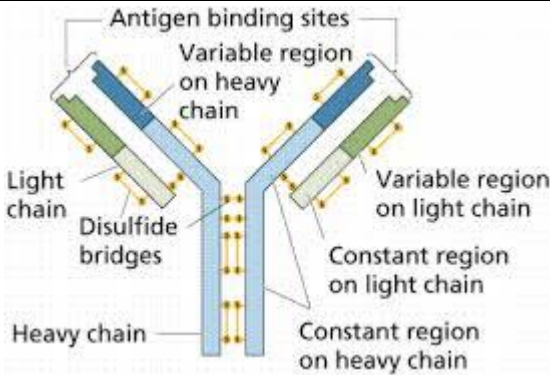
18. List the harmful effects caused by alcohol/drug abuse.
19. What is the mechanism by which the AIDS virus causes deficiency of the immune system of the infected person?

VI. BOARD QUESTIONS

20. When an ELISA test is conducted on an immune-suppressed person, he tests positive for a pathogen. Identify the disease the patient is suffering from and name the causative entity. (CBSE 2026)
21. (a) What is the reason for severe shivering and high fever in malarial patients?
(b) Name the specific pathogen that causes the most fatal/malignant form of malaria. (CBSE 2026)

Answer Key

Q. No.	Answer
1	A. Widal test
2	B. Sporozoite
3	C. <i>Papaver somniferum</i>
4	C. H ₂ L ₂
5	B. Metastasis through blood
	ASSERTION & REASONING
6.	C. Assertion (A) is true, but Reason (R) is false.
7.	A. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
8.	A. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
9.	C. Assertion (A) is true, but Reason (R) is false.
II	VERY SHORT ANSWER TYPE QUESTIONS(2M)
10.	Benign Tumors: These tumors remain confined to their original location. They do not spread to other parts of the body and cause little damage Malignant Tumors: These are a mass of proliferating cells called neoplastic cells. They grow rapidly, invade neighboring tissues, and spread to distant sites through blood to start new tumors (a property called metastasis)
11.	Waterborne diseases can be prevented by – (i) Consumption of clean drinking water , food, vegetables, and fruits. (ii) Proper disposal of waste material and human excreta (sewage).

	(iii) Periodic cleaning and disinfection of water reservoirs, community tanks,
12.	(a) MALT – Mucosal Associated Lymphoid Tissue (b) CMI-Cell-Mediated Immunity (c) AIDS – Acquired Immuno Deficiency syndrome (d) NACO – National AIDS Control Organization (e) HIV – Human Immuno Deficiency Virus
13.	Various routes by which transmission of human immunodeficiency virus takes place are (i) Illicit sexual contact. (ii) Sexual contact with multiple partners. (iii) Transfusion of the blood of infected person. (iv) Intravenous drug users that shares needles are at high risk of contracting AIDS.
III	SHORT ANSWER TYPE QUESTIONS (3M)
14.	
15.	(a) Amoebiasis – It is usually contracted by ingesting water or food contaminated by amoebic cysts. (b) Malaria – It is transmitted from one person to another by the female Anopheles mosquito. The mosquito picks up the parasite along with the blood when it bites an infected person. When this mosquito bites an other healthy person, the parasites migrate into his blood with the saliva, which the mosquito injects before sucking up blood to prevent its clotting. (c) Ascariasis – Transmitted through water, vegetables, fruits etc. contaminated with the eggs of the parasites. (d) Pneumonia – Spreads by cough & sneezes, by sharing drinking glass & eating utensils with an infected person.
16.	(a) Superiority of Breast Milk: The yellowish initial milk secreted by the mother during the early days of lactation is called colostrum . It is highly enriched with ready-made IgA antibodies . When a newborn ingests colostrum, these molecules line the digestive and respiratory tracts, directly shielding the vulnerable infant from bacterial and viral infections. Bottle-fed formulations lack these vital protective proteins. (b) Classification of Immunity: Vaccination: This represents Artificial Active Immunity. It introduces weakened or dead pathogens, forcing the child's own body to actively generate specific antibodies and long-lived memory cells. Mother's Milk (Colostrum): This represents Natural Passive Immunity. The infant does not spend energy to make antibodies; it receives ready-made protective proteins straight from the mother's body.
IV	CASE STUDY BASED QUESTIONS (4M)

17.	A. Because the matching proteins (HLA markers) on the transplanted kidney cells did not perfectly match his own, causing his immune system to recognize the organ as "non-self" (foreign). B. • His active T-lymphocytes would immediately launch an aggressive attack against the transplanted kidney cells. • This cell-mediated attack would damage the tissue, lead to complete organ failure (graft rejection), and endanger his life. C. • Her immune system encountered an allergen (dust) and produced high amounts of IgE antibodies. • These antibodies triggered her mast cells to quickly release inflammatory chemicals like histamine, which directly caused the sudden physical symptoms. D. The two medications injected were antihistamines and adrenaline.
V	LONG ANSWER TYPE QUESTIONS (5M)
18.	Harmful effects caused by alcohol abuse are – (i) Alcohol generates more energy mostly in the form of heat, but at the same time, it dilates the blood vessels. Consequently the ‘heat generated is rapidly lost. Due to constant dilation, the arterial walls soon become brittle & rigid. Such a change in the property of blood vessels & deposition of alcoholic fat affect the working of heart. (ii) Alcoholism leads to gastric ulcers & gastritis. (iii) In chronic alcoholism, the axon of the nerve inflame thus causing neuritis. (iv) Permanent damage to liver cells occur due to deposition of fats. The liver dries up & harden (cirrhosis). Harmful effects caused by drug abuse are – (i) Excessive doses of drugs may lead to coma & death due to respiratory failure, heart failure & cerebral haemorrhage. (ii) Lack of interest in personal hygiene, withdrawal, isolation, depression, fatigue aggressive & rebellious behaviour etc. (iii) Acquire serious infections like AIDS & hepatitis B, who take drugs intravenously. (iv) The adverse effects of drugs are manifested in the form of reckless behaviour, vandalism & violence.
19.	HIV critically injures the immune system by infecting and eventually killing T-cells. Once the virus has infected a T cell, HIV copies its RNA into a double-stranded DNA copy using the viral enzyme reverse transcriptase. This process is called reverse transcription because it violates the usual way in which genetic information is transcribed. Because reverse transcriptase lacks the proofreading function that most DNA-synthesizing enzymes have, many mutations arise as the virus replicates, further hindering the immune system's ability to combat the virus. These mutations allow the virus to evolve rapidly, resulting in the loss of vital cells. As a result of progressive destruction of its T-cells, the body is easily ravaged by several common infectious agents. In many instances, these infections would have caused little injury if there were functional T-cell clones available. Death ultimately results from the relentless attack of opportunistic pathogens or from the body's inability to fight off malignancies. virus. These mutations allow the virus to evolve rapidly, resulting in the loss of vital cells. As a result of progressive destruction of its T-cells, the body is easily ravaged by several common infectious agents. In many instances, these infections would have caused little injury if there

	were functional T-cell clones available. Death ultimately results from the relentless attack of opportunistic pathogens or from the body's inability to fight off malignancies.
VI	BOARD QUESTIONS
20.	AIDS (Acquired Immuno Deficiency Syndrome). Causative Entity: HIV (Human Immunodeficiency Virus).
21.	(a) When the malarial parasite multiplies inside the Red Blood Cells (RBCs) , it causes them to rupture. This rupture releases a toxic substance called hemozoin , which triggers severe chilling and recurring high fever. (b) The pathogen responsible for malignant malaria is <i>Plasmodium falciparum</i> .

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