**Chapter 8 - Diseases**

**All Lectures Uploaded on YouTube:**

[**https://tinyurl.com/fkm10-biology**](https://tinyurl.com/fkm10-biology)

## 

**MCQs:**

1. B
2. A
3. B
4. C
5. B
6. C
7. D
8. B
9. C
10. C
11. D
12. C
13. B
14. D
15. A

## **Short Answer Questions**

**1. What are zoonotic diseases?** Zoonotic diseases are infections that are transmitted from animals to humans. They can spread through direct contact, bites, or consumption of contaminated food or water. Examples include rabies, bird flu, and COVID-19 (suspected animal origin).

**2. Enlist types of pathogens with examples.** The main types of pathogens are:

* **Bacteria** (e.g., Tuberculosis)
* **Viruses** (e.g., Influenza)
* **Fungi** (e.g., Athlete’s foot)
* **Protozoa** (e.g., Malaria)
* **Helminths** (e.g., Tapeworm infection)

**3. What are the different types of non-infectious diseases?** Non-infectious diseases include **genetic diseases** (e.g., Down syndrome), **lifestyle diseases** (e.g., obesity, diabetes), **deficiency diseases** (e.g., scurvy), and **degenerative diseases** (e.g., arthritis).

**4. What are the effects of diabetes on the human body?** Diabetes leads to high blood sugar levels, damaging blood vessels and nerves. It can cause kidney failure, vision problems, heart disease, and delayed wound healing if not managed properly.

**5. What are the different types of diabetes?** The main types are:

* **Type 1 Diabetes:** The body produces no insulin.
* **Type 2 Diabetes:** The body becomes resistant to insulin.
* **Gestational Diabetes:** Occurs during pregnancy due to hormonal changes which ends after delivery.

**6. How can diabetes be prevented and managed?** Diabetes can be prevented by maintaining a balanced diet, regular exercise, and a healthy weight. Management includes insulin therapy, oral medications, blood sugar monitoring, and avoiding processed sugar.

**7. How does cancer develop and spread in the body?** Cancer begins when normal cells grow uncontrollably due to genetic mutations. These abnormal cells form a tumour and may spread to other organs through the blood or lymph, a process called metastasis.

**8. How can cancer be treated?** Cancer is treated through **surgery**, **chemotherapy**, **radiation therapy**, or **immunotherapy**, depending on its type and stage. Early detection greatly increases the chances of successful treatment.

**9. Which systems of the body are affected by COVID-19?** COVID-19 mainly affects the **respiratory system**, but it can also impact the **nervous**, **circulatory**, and **digestive systems**. Severe cases can cause pneumonia, blood clots, and organ failure.

**10. What are the clinical stages of AIDS?** The stages are:

1. Stage 1: Asymptomatic (without any HIV symptoms). Short, flu-like symptoms occur within 1-6 weeks.
2. Stage 2: Mild Symptoms, which can continue up to 10 years.
3. Stage 3: Advanced symptoms. The immune system starts to deteriorate, and opportunistic infections start appearing
4. Stage 4: Severe Symptoms start appearing. The number of T cells rapidly declines. Severe infections and cancer may develop.

**11. What are the sources of antibiotics?** Antibiotics are mainly obtained from **microorganisms** like bacteria (e.g., *Streptomyces*), **fungi** (e.g., *Penicillium*), and sometimes synthesized chemically in laboratories.

**12. Which factors contribute to the resistance of antibiotics, and how can they be prevented?** Antibiotic resistance arises from **overuse**, **misuse**, and **incomplete antibiotic courses**. Prevention includes using antibiotics only when prescribed, completing the full dose, and avoiding self-medication.

**13. Write the differences between:**

**a. Disease and illness:**

* *Disease* is a biological disorder in body functions.
* *Illness* is the personal experience or feeling of being unwell.

**b. Infectious and non-infectious diseases:**

* *Pathogens cause infectious diseases* and can spread (e.g., flu).
* *Non-infectious diseases* are caused by genetics or lifestyle and cannot spread (e.g., diabetes).

**c. Vector and pathogen:**

* *A vector* is an organism that carries pathogens (e.g., a mosquito).
* *Pathogen* is the disease-causing microbe (e.g., Plasmodium).

**d. Acute and chronic diseases:**

* *Acute diseases* develop suddenly and last for a short time (e.g., flu or fever).
* *Chronic diseases* develop slowly and persist long-term (e.g., arthritis and diabetes).

## **Extensive Answer Questions**

**1. Describe infectious and non-infectious diseases and their types with examples.** Infectious diseases are caused by pathogens such as bacteria, viruses, fungi, or protozoa and can spread from one person to another, e.g., tuberculosis, influenza, and malaria. Non-infectious diseases are not caused by pathogens; they arise from genetics, environment, or lifestyle, e.g., diabetes, heart disease, and cancer. Infectious diseases are preventable through hygiene and vaccination, while non-infectious ones require lifestyle management and medical treatment.

**2. Describe diabetes and its subtypes. Explain the effects of diabetes on the human body.** Diabetes is a metabolic disorder in which the body cannot regulate blood sugar due to insulin deficiency or resistance. Its main types are Type 1, Type 2, and Gestational diabetes. Type 1 occurs when insulin production stops, and Type 2 develops when cells resist insulin. It causes fatigue, frequent urination, blurred vision, kidney failure, and nerve damage if untreated.

**3. Discuss cancer and its effects on the human body.** Cancer occurs when abnormal cells divide uncontrollably, forming tumors that invade nearby tissues. It may spread to other organs through metastasis. Cancer weakens the immune system, disrupts organ function, causes severe pain, and leads to weight loss and fatigue. Major causes include genetic mutations, smoking, and radiation exposure.

**4. Explain COVID-19 and its harmful effects on the human body.** COVID-19 is a viral disease caused by the SARS-CoV-2 virus. It primarily attacks the respiratory system, causing cough, fever, and breathing difficulty. Severe cases may result in pneumonia, lung damage, and death. It can also affect the brain, heart, and kidneys. Preventive measures include vaccination, mask-wearing, and social distancing.

**5. Discuss that HIV compromises the immune system and over time leads to the development of AIDS.** HIV (Human Immunodeficiency Virus) attacks and destroys CD4 T-cells, which are vital for immune defense. As the virus multiplies, the immune system weakens, making the body vulnerable to infections. Over time, untreated HIV develops into AIDS (Acquired Immune Deficiency Syndrome), where even minor infections become life-threatening. Proper medication (ART) can slow this progression.

**6. Explain plant diseases commonly present in Pakistan, in terms of their effect on plant health and yield and their treatment.** Common plant diseases in Pakistan include **cotton leaf curl virus**, **wheat rust**, and **rice blast**. These diseases reduce crop yield, weaken plant growth, and affect food supply. Farmers use resistant crop varieties, crop rotation, and fungicides to control their spread. Proper irrigation and pest control also help maintain plant health.

**7. Narrate the discovery of the first antibiotic.** The first antibiotic, **Penicillin**, was discovered by **Alexander Fleming** in 1928. He noticed that the fungus *Penicillium notatum* produced a substance that killed bacteria in his Petri dishes. This discovery revolutionized medicine by providing an effective treatment for bacterial infections and saved countless lives during World War II.

**8. Discuss antibiotics in detail.** Antibiotics are chemical substances that kill or inhibit bacterial growth. They work by targeting bacterial cell walls, protein synthesis, or DNA replication. Examples include penicillin, tetracycline, and erythromycin. While antibiotics cure bacterial infections, misuse can lead to resistance. They are not effective against viral diseases.

**9. Describe antibiotic resistance and its effects.** Antibiotic resistance occurs when bacteria evolve to survive exposure to antibiotics. This makes infections harder to treat and increases the risk of disease spread, severe illness, and death. Overuse and improper dosage of antibiotics contribute to resistance. To combat it, antibiotics should be used responsibly and only when prescribed.



