



SNS COLLEGE OF ENGINEERING

(An Autonomous Institution)

Coimbatore – 641 107



19BY701 – Biology for Engineers

Internal Assessment - III Question Bank

Part A

Unit 4

1. What is diabetes?

Diabetes is a disease that occurs when your blood glucose, also called blood sugar, is too high. Blood glucose is the main source of energy and comes from the food that we eat. Insulin, a hormone made by the pancreas, helps glucose from food get into cells to be used for energy. Sometimes body doesn't make enough—or any—insulin or doesn't use insulin well. Glucose then stays in the blood and doesn't reach the cells.

2. List the Causes of cancer

Many factors are attributed to causing cancer. The most probable factors include:

- Physical factors – Ionizing radiation, such as X-rays and gamma rays
- Chemical factors – Such as tobacco and smoke
- Biological factors – Viral oncogenes, proto-oncogenes and cellular oncogenes

3. Give the symptoms of hypertension

- Chest pain and irregular heartbeat
- Blood in the urine
- Difficulty breathing
- Severe headaches
- Tightness in the head
- Nosebleed
- Fatigue or confusion
- Vision problems
- Pounding in your ears, chest or neck

4. List the methods to prevent the spread of influenza?

- Prevention
- Get vaccinated
- Wash your hands regularly
- Avoid touching your eyes, nose and mouth
- Avoid being around sick people

5. How AIDS diagnosis is done?

- Blood test: Low CD4 count is an indication of HIV infection.
- Viral load: A blood test to measure the amount of HIV.
- Drug resistance test: This test is done to check if the infected virus is resistant to certain drugs.
- Laboratory examination: To check for tuberculosis, hepatitis, toxoplasmosis, sexually transmitted infections, liver or kidney damage, urinary tract infection.
- Nucleic acid amplification test: To detect the genetic material of the causative virus.



6. How to treat Hepatitis?

Hepatitis A

Hepatitis A is a short-term illness and may not require treatment. However, if symptoms cause a great deal of discomfort, bed rest may be necessary. In addition, if you experience vomiting or diarrhea, your doctor may recommend a dietary program to maintain your hydration and nutrition.

Hepatitis B

There is no specific treatment program for acute hepatitis B.

Treatment for chronic hepatitis B requires regular medical evaluations and monitoring to determine if the virus is responding to treatment.

Hepatitis C

Antiviral medications can treat both acute and chronic forms of hepatitis C.

Hepatitis D

The WHO lists pegylated interferon alpha as a treatment for hepatitis D. However, this medication can have severe side effects. As a result, it's not recommended for people with cirrhosis liver damage, those with psychiatric conditions, and people with autoimmune diseases.

Hepatitis E

Currently, no specific medical therapies are available to treat hepatitis E. Because the infection is often acute, it typically resolves on its own.

Unit 5

1. How Tissue Engineering works and What is Scaffolds?

The process of tissue engineering involves forming a 3D functional tissue to help repair, replace, and regenerate a tissue or an organ in the body. To do this, cells and biomolecules are combined with scaffolds.

Scaffolds are artificial or natural structures that mimic real organs (such as the kidney or liver). The tissue grows on these scaffolds to mimic the biological process or structure that needs to be replaced. When these are constructed together, new tissue is engineered to replicate the old tissue's state when it wasn't damaged or diseased.

2. Differentiate DNA and Recombinant Vaccines

DNA Vaccine	Recombinant Vaccine
Description	
DNA vaccines are prepared by inserting a DNA sequence (that codes for the antigen) into a plasmid and transfected to the host cell.	Recombinant vaccines are protein or DNA recombinants that are inserted into the host cell to trigger immune response.
DNA/Protein	
DNA-based.	Both DNA and protein-based.
Incorporation	



SNS COLLEGE OF ENGINEERING

(An Autonomous Institution)

Coimbatore – 641 107



The DNA sequence gets incorporated into the host genome.

A gene of interest is incorporated into a vector which in turn is included in the host genome.

Approval

ZyCoV-D is a DNA vaccine approved for humans.

Hepatitis B and HPV vaccines have been approved and are readily used.

3. List the Advantages of Bioremediation

The advantages of bioremediation are as follows:

- This method is eco-friendly. It occurs naturally and causes less or no damage to the environment as much of its processes to occur underground.
- Contaminants are converted into water and harmless gases.
- It is cost-effective as extensive equipment and labor are not needed.
- It is a permanent solution as the degraded material cannot revert back to the previous one.
- It is a recommended method for removing oil stains.

4. Classify Bio-Control Agents

Biological control can be categorized into two types:

Classical biocontrol (Importation): It uses the natural enemy of the pest as a biocontrol agent. This method adopts natural predators of the invasive plant but sometimes the introduced species can become serious pests, if not chosen wisely.

Inductive biocontrol (Augmentation): A large number of natural enemies are released to kill the target weed. Nematodes are most commonly used in the inundative release.

5. What are the advantages of biofertilizers over chemical fertilizers?

- Biofertilizers are cost-effective.
- They reduce the risk of plant diseases.
- The health of the people consuming the vegetables grown by the addition of chemical fertilizers is more at risk.
- Biofertilizers do not cause any type of pollution.

Part B – Unit 4

1. Explain about Hepatitis, its causes, symptoms, diagnosis, treatment and methods to prevent.

2. What is Cancer? List its types, causes, symptoms, diagnosis, treatment and preventive measures

<https://byjus.com/biology/cancer/>

<https://www.homage.sg/health/cancer/>

3. Why does hypertension occur? Explain its causes, symptoms, diagnosis, treatment and methods to prevent.

<https://ecosh.com/high-blood-pressure-hypertension-diagnosis-symptoms-hypertension-diet-and-12-supplements-to-help-treat-hypertension-naturally/>



SNS COLLEGE OF ENGINEERING

(An Autonomous Institution)

Coimbatore – 641 107



4. AIDS is a deadly disease. Justify. Also Explain its complications.

Part C – Unit 4

1. The first official cases of COVID-19 were recorded on the 31st of December, 2019, when the World Health Organization (WHO) was informed of cases in Wuhan, China, with no known cause. Compare the COVID'19 with Influenza in terms of its symptoms, spread, cause, diagnosis, treatment and prevention

<https://www.cdc.gov/flu/symptoms/flu-vs-covid19.htm>

2. A person notices frequent urination, weight fluctuations, higher level of blood sugar. What is the kind of disease the person might suffer from? Explain about its causes, diagnosis and treatments

<https://conceptophile.blogspot.com/2020/08/diabetes-mellitus-causes-symptoms-and.html>

Part B – Unit 5

1. Explain about Bioremediation its types, Advantages and disadvantage

<https://www.embibe.com/exams/bioremediation/#Conditions-Required-for-Bioremediation-Process>

2. With its applications, explain the Biosensors with principle, working and its types

<https://www.electronicshub.org/types-of-biosensors/>

3. Now a days many researchers prefer Biofertilizers, justify how it is better than chemical fertilizer with biofertilizer components and types

<https://byjus.com/biology/biofertilizers/>

4. Explain the types of Biochip with its applications

<https://www.geeksforgeeks.org/introduction-of-biochip/>

<https://www.elprocus.com/what-is-a-biochip-and-types-of-biochips/>

Part – C – Unit 5

1. Now a days, we hear about the increased milk production by cows, tomato has a longer shelf life, What do you think is the reason behind this? Explain.

<https://www.vedantu.com/biology/transgenic-animals>

<https://byjus.com/biology/transgenic-plants/>

2. Fitness trackers stands one among the top selling in the commercial market and it is mostly a wrist worn device. Explain the working principle of such kind of devices or instruments along with the generis component list.

<https://madhavuniversity.edu.in/biomedical-instrumentation.html>

https://www.eecs.umich.edu/courses/bme458/download/bme458_notes1.pdf