

Seat No. : _____

AH-137

April-2022

B.Sc., Sem.-VI

307 : Biotechnology

(Health Biotechnology)

(New Course)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :** (1) Draw figures wherever necessary.
(2) Write question number against each answer.
(3) Answer any **three** out of initial eight main questions. Question **9** is compulsory.

SECTION – I

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|----|---|---|
| 1 | (A) Explain Koch postulates and its limitations. | 7 |
| | (B) Write about bacterial exotoxin and endotoxins with examples. | 7 |
| 2. | (A) Give a brief account of different modes of transmission of disease. | 7 |
| | (B) Discuss briefly epidemiology. | 7 |
| 3. | (A) Explain different methods used in molecular diagnostics. | 7 |
| | (B) Write a short note on techniques of stem cell therapy. | 7 |
| 4. | (A) Discuss steps involved in monoclonal antibody production. | 7 |
| | (B) Write about diagnosis of human cancer using molecular genetics. | 7 |
| 5. | (A) Describe enzyme replacement theory. | 7 |
| | (B) Write about therapeutic uses of growth hormone and erythropoietin. | 7 |
| 6. | (A) Explain in brief about protein based subunit vaccines. | 7 |
| | (B) Outline recent trends in cancer treatment. | 7 |

7. (A) Describe structure and pathogenesis of Covid 19. 7
(B) Explain briefly pathogenesis of cystic fibrosis. 7
8. (A) Write about pathogenesis of sickle cell anaemia. 7
(B) Explain categories of bioweapons with examples. 7
9. Answer any **eight** of the following : 8
- (1) Define “epidemics”.
 - (2) Write names of two vector borne diseases.
 - (3) What is diagnosis ?
 - (4) What is virulence?
 - (5) What is cytotoxin ? Give example.
 - (6) What are applications of PCR ?
 - (7) Write principle of western blot.
 - (8) What is HLA typing ?
 - (9) What is tissue engineering ?
 - (10) Differentiate between xenogenic and isogenic cells.
 - (11) Write uses of streptokinase.
 - (12) What is the use of HAT medium ?
 - (13) Give an example of viral vector vaccine.
 - (14) What is mRNA vaccine ?
 - (15) Expand GCSF.
 - (16) Give an example of mosquito borne viral emerging disease.
 - (17) What is causative organism of AIDS ?
 - (18) Write about CDC.
 - (19) Differentiate thalassemia major and minor conditions.
 - (20) Which biological samples can be used in DNA fingerprinting ?
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SECTION – I

1. (A) Describe molecular mechanism of pathogenesis citing suitable examples. 7
(B) Define epidemiology and explain its role in Prevention and Control of disease. 7
2. (A) Explain Koch's postulates and write significance in studying infectious disease. 7
(B) Describe strategies used to prevent transmission of air-borne infections. 7
3. (A) Describe the principle of ELISA and its applications. 7
(B) Discuss medicinal importance of therapeutic proteins with suitable examples. 7
4. (A) Write a note on Western-blotting and give its applications in disease diagnosis. 7
(B) How Bioinformatics and Molecular genetics help diagnosing human cancer ? 7
5. (A) What are stem cells ? Describe its types, sources and therapeutic applications in detail. 7
(B) Explain principles of Recombinant and DNA vaccines. 7
6. (A) Explain principle of enzyme replacement therapy with relevant example. 7
(B) Define monoclonal antibody and give its medicinal importance. 7

7. (A) Define Bioterrorism. Explain human pathogens misused for Bioterrorism and global threats giving examples. 7
(B) Describe pathogenesis of AIDS virus and challenges posed in its control. 7
8. (A) Discuss causes and symptoms of Cystic fibrosis. 7
(B) Write short note on pathogenesis of cancer. 7
9. Answer the questions : (Any **Eight**) 8
- (1) Diphtheria toxin is an example of
(A) Neurotoxin (B) Exotoxin
(C) Cytotoxin (D) None of the above
- (2) Which of the following is a superantigen causing toxic shock syndrome ?
(A) Streptococcus toxins (B) Staphylococcus toxin
(C) Botulin toxin (D) Anthrax toxin
- (3) Which of the following disease does not spread by infectious droplets ?
(A) Rubella (B) Typhoid
(C) Covid-19 (D) Influenza
- (4) 14 Spanish Flu (1918) was caused by
(A) H1N1 influenza A virus (B) SARS coronavirus 2
(C) Influenza C virus (D) Simian virus 5
- (5) Perinatal transmission is
(A) Bird to human (B) Bats to human
(C) Mother to infant (D) Cow to human
- (6) Separation of charged molecules in presence of electric current is known as
(A) Electrophoresis (B) Colony hybridization
(C) In situ hybridization (D) ELISA

- (7) In sandwich ELISA technique microtiter plate is coated with
- (A) Nonspecific antibodies (B) Monoclonal Antibodies
(C) Monoclonal Antigen (D) Polyclonal Antibodies
- (8) Western Blotting is used for
- (A) Detection of specific DNA (B) Detection of specific RNA
(C) Detection of specific protein (D) Detection of specific ribosome
- (9) In Humans Major histocompatibility complex is known as
- (A) Humanized MHC (B) Homo MHC
(C) HLA (D) MHC
- (10) RFLP is used for
- (A) Identify single gene disease (B) Construct QTL maps
(C) Construct linkage maps (D) All of the above
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