

2021

BIOCHEMISTRY — HONOURS

Paper : DSE-A-2

(Molecular Basis of Infectious Diseases)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

1. Answer *any five* questions :

2×5

- (a) Why should we choose a narrow spectrum antibiotic over a broad spectrum one?
- (b) Differentiate between endotoxin and exotoxin.
- (c) What is meant by pathogenicity and virulence?
- (d) What is meant by portal of entry of microorganisms?
- (e) What is vasodilation?
- (f) What is immunotoxin?
- (g) What are pathogenicity islands?
- (h) Distinguish between active and passive immunization.
- (i) What is DTap vaccine?
- (j) AIDS patients often develop opportunistic infections. Explain.

2. Answer *any two* questions :

- (a) Name the micro-organism responsible for causing chikungunya. How does the disease spread? What is meant by reservoir of infection? (1+2)+2
- (b) Describe briefly the mode of action of tetanus toxin. Which group of micro-organism causes Leishmaniasis? Write down the scientific name of the organism. Mention the scientific name of the vector of the disease. 2+(1+1+1)
- (c) How does influenza virus undergo antigenic shift? What is the basis of antigenic drift? 3+2
- (d) Why booster dose of vaccines are sometimes necessary? What are intracellular pathogens? Cite one example. How can you get rid of that pathogen? 1+(1+1+2)

3. Answer *any three* questions :

- (a) What is herd immunity?
- (b) What is aspergillosis? How is the disease treated?
- (c) What are epidemic and pandemic diseases?

Please Turn Over

(d) What are amastigotes?

(e) Mention the various modes of transmission of infectious diseases.

2+(1+2)+2+1+2

Or,

4. (a) Name one protozoal and one viral disease transmitted by mosquito.

(b) Differentiate between vertical and horizontal transmission of pathogens.

(c) What are mycotoxins? Give example.

(d) What is meant by latent TB and active TB?

(e) What do you mean by bacteremia?

(1+1)+2+2+2+2

5. (a) Name one virus that can affect the central nervous system (CNS) and can lead to paralysis. How can we prevent the disease caused by that virus?

(b) Which vaccine is primarily used against tuberculosis? Name the organism from which the vaccine has been developed.

(c) What is IC_{50} value? How can you use an IC_{50} value to determine drug efficacy?

(d) Briefly describe Battimore classification system of viruses.

(1+2)+(1+1)+(1+1)+3

Or,

6. (a) What is convalescence period of infection?

(b) What is the difference between a definitive host and an intermediate host?

(c) Malaria infection develops via two phases in the human host. Explain.

(d) Name one virus that affects the immune system of its host. Briefly give an account of the immunity damage caused by the virus. How can the infection of the virus be prevented?

2+2+3+($\frac{1}{2}$ +1+1 $\frac{1}{2}$)

7. (a) Gram negative bacteria are more pathogenic than the Gram positive ones. Explain.

(b) Name the drug that is primarily used to treat malarial infection. Briefly describe how the malarial parasite has become resistant to the drug.

(c) What is the causative agent of amoebiasis? How can you treat this disease?

(d) Briefly describe the various stages of infectious disease.

2+(1+2)+2+3

Or,

8. (a) What is viral hepatitis? Which hepatitis virus is spread through body fluid?

(b) Briefly describe how diphtheria toxin affects translation in human.

(c) Name two mosquito borne viral diseases. Mention the possible ways by which you can restrict the spread of those diseases.

(d) Name the causative agent of typhoid. Briefly mention the signs and symptoms of the disease.

(1+1)+3+(1+1)+(1+2)
