

E-7233

M.Sc. (IIIrd Semester) Examination, 2021

ENVIRONMENTAL SCIENCE

(Environmental Microbiology and Toxicology)

Time Allowed : Three Hours

Maximum Marks : 70

SECTION - A

Note : Attempt any ten questions. Each question carries one mark. **1×10=10**

Q. 1. Fill in the blanks :

- (i) The disease caused by Bordetella pertussis is _____.
- (ii) The _____ medium is that in which the chemical constituents are partially known.
- (iii) The process pasteurization was named after _____.
- (iv) In prokaryotes β -oxidation is occur in _____.

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P.T.O.

(2)

- (v) Endotoxin (LPS) is an important constituent of _____ bacteria.

Multiple choice questions (any five) :

- (vi) A non directed physico chemical interaction between heavy metal ions and microbial surface is called :
 - (a) Biotransformation
 - (b) Bioconversion
 - (c) Biosorption
 - (d) Biomining
- (vii) Which of the following microbe is widely used in the removal of industrial wastes :
 - (a) Trichoderma sp
 - (b) Aspergillus niger
 - (c) Pseudomonas putida
 - (d) All of the above

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(3)

(viii) The gradual accumulation of substances, such as pesticides or other chemicals in an organism is called :

- (a) Bioremediation
- (b) Bioaccumulation
- (c) Biotransformation
- (d) Biomagnification

(ix) Which gas was leaked in Bhopal Gas Tragedy :

- (a) Formaldehyde
- (b) Hydrogen cyanide
- (c) Methyl isocyanate
- (d) Sulfuryl fluoride

(x) The only procedure based on staining technique which divide bacteria into two large group is :

(4)

(a) Negative staining

(b) Simple staining

(c) Differential staining

(d) Acid fast staining

(xi) Enzyme responsible for unwinding of double helix is :

- (a) Polymerase
- (b) Helicase
- (c) Ligase
- (d) Primase

(xii) The main symptom of staphylococcus food poisoning is :

- (a) Vomiting
- (b) Diarrhoea
- (c) Fever
- (d) Abdominal pains

(5)

(xiii) The undesirable change in a food that makes it unsafe for human consumption is referred as :

- (a) Food decay
- (b) Food spoilage
- (c) Food loss
- (d) All of the above

SECTION - B

Note : Attempt any five questions. Each question carries 2 marks. **2×5=10**

Q. 2. Very short answer :

- (i) What is the role of capsule in bacteria ?
- (ii) What is staining technique ?
- (iii) What is canning ?
- (iv) What is biotransformation ?
- (v) What is microbial toxins ?

(6)

- (vi) What is a dose ?
- (vii) Name few microorganisms and associated biodegradation process of pollutants.

SECTION - C

Note : Attempt any five questions. Each question carries 4 marks. **5×4=20**

Q. 3. Short answer :

- (i) Describe the replication of viral DNA.
- (ii) Explain serial dilution techniques.
- (iii) Describe microbial contamination of fresh food.
- (iv) What is the mechanism of heavy metal resistance in microbes ?
- (v) Describe immunotoxicity.
- (vi) Describe physical method of food preservation.
- (vii) Explain measurement of microbial growth (turbidity) by optical density method.

(7)

SECTION - D

Note : Attempt any three questions. Each question carries

10 marks.

$$3 \times 10 = 30$$

Q. 4. Essay Type Questions :

- (i) Explain structure of bacteria in detail.
- (ii) Explain various types of staining techniques.
- (iii) Write an essay on microbial contamination, preservation and spoilage of meat.
- (iv) Explain fundamental reactions of pesticide metabolism in detail.

