

①

QP 66767

SET III

Q1A. Define

05

- 1) Toxigenicity
is the pathogen's ability to produce toxins, chemical substance that damage the host and produce disease.
- 2) Infectious disease
is any change from a state of health in which part or all of the host body is not capable of carrying on its normal functions due to the presence of parasite or its products.
- 3) Absorbance
A measure of the capacity of a substance to absorb light of a specified wavelength. It is equal to the logarithm of the reciprocal of the transmittance.
- 4) Endophytes
microbes that colonize the internal plant tissues.
- 5) Doderlein's bacillus-
Lactobacillus acidophilus is referred to as Doderlein's bacillus. They ferment glycogen produced by vaginal epithelium forming lactic acid.

Q1B. State whether the given statement is true or false:

05

- 1) The disease which persists for a short period is called acute disease. TRUE
- 2) The acidic pH scale is from 7 to 14. FALSE
- 3) Scintillation is a phenomenon observed in SEM. FALSE
- 4) *Achromobacter* is a plant growth promoting bacteria found in the rhizosphere. TRUE
- 5) The rumen bacteria produce oxygen gas in cows. FALSE

Q1C. Give one example of each of following:

05

- 1) Cytolytic toxin: hemolysin, Lecithinase Phospholipase
- 2) Bacteria causing soft rot in plants: *Erwinia chrysanthemi*, *Xanthomonas*
- 3) Filter used in Fluorescence microscope: Excitation filter, barrier filter
- 4) Chemical solution used in combined electrode: AgCl OR KCl
- 5) Normal flora of vagina : *Lactobacilli*, *S.aureus*

Q1D. Select the correct alternative and rewrite:

05

- 1) The preferred portal of entry for *Salmonella typhi* is _____ (ingestion, injection, nasal mucosa)
- 2) Urea is present in _____. (urine, saliva, gastric juice)
- 3) _____ is part of colorimeter. (condenser, photocell, electrode)
- 4) Organism used for validation of autoclave is _____. (*Bacillus sterothermophilus*, *Bacillus aquaticus*, *Staphylococcus aureus*)
- 5) _____ fixes nitrogen in non-leguminous plants. (*Azotobacter*, *Rhizobium*, *Frankia*)

2

Frankia)

Q2 Answer briefly any two of the following:

20

- 1) Give two points of similarity and eight points of difference between TEM and SEM.
Prescott and Harley 7th Edn.; pg nos 28-31
- 2) What are major adherence factors used to facilitate attachment of microbial pathogens to tissue?
(Tortora 9th edition 784)
Glycocalyx/capsule/slime layer-3M
Adherence protein- 2M
Lipotechoic acid 2M
Pili 3M
- 3) Discuss the microbiota native to different regions of the body.
Prescott and Harley Pg Nos. 735-739

Q3A. Answer briefly any three of the following:

18

- 1) Describe the microbial associations in the phyllosphere and rhizosphere regions of the plants. **Prescott and Harley: pg no 696**
- 2) Differentiate between arbuscular mycorrhizae and ectomycorrhizae (any four points). State the significance of mycorrhizae.
Prescott and Harley: pg nos 697-700
- 3) Justify: Parasitism is a complex microbial interaction.
Prescott and Harley: pg nos 730, 731
- 4) Differentiate between mutualism and commensalism (any four points). Why is *Bdellovibrio* called as the predator bacteria? **Prescott and Harley: pg nos 718, 719, 723, 729**
- 5) Discuss amensalism as a relation between two organisms.
Prescott and Harley: pg no 732
- 6) Explain the term- Gnotobiotic animals. Why is there a need to study the normal flora of human body?
Prescott and Harley: pg no 734, 735

Q3B. Do as directed any two of the following:

02

- 1) Why does the respiratory tract not have a normal microbiota?
Micro-organisms are removed by 3 ways: secretion of mucus, presence of alveolar macrophages, action of ciliated epithelial cells. (any 1 can be discussed)
- 2) Which disease is caused by *Agrobacterium tumefaciens* in plants? **Crown Gall**
- 3) State the role of leghemoglobin. **Plays a role in protecting nitrogenase enzyme. It binds to oxygen and helps to maintain anaerobic conditions.**
- 4) Name the giant tube worm found living near the hydrothermal vents. **Raftia**

Q4A. Answer any three of the following.

18

- 1) Differentiate between exotoxin and endotoxin. **(Pelczar 5th edition)**

2) Elaborate on – Species resistance, racial resistance and individual resistances. (Pelczar 5th edition, 705)

3) What are different chemical factors of skin and mucous membrane responsible for developing resistance? (Tortora 9th edition 453)

4) Write a short note on colonization and growth of pathogen inside the host (Tortora 9th edition 786)

5) Explain diagrammatically the process of inflammation (Prescott 7th edition 756)

6) Discuss the relation between normal flora and innate immunity (Tortora 9th edition 453)

Q4B. Do as directed any two of the following. 02

- 1) Bacteremia: Define :presence of bacteria in blood
- 2) Non-specific defense mechanism

Examples of nonspecific defenses include physical barriers, protein defenses, cellular defenses, inflammation... (they do not target specific pathogens)

- 3) Give the full form of LD50: lethal dose 50
- 4) Give significance of incubation period.

It is a time period in which organisms grow. Eg. After the incubation period of pathogen is over symptoms develop

Q5A Answer any three of the following: 18

- 1) Draw a ray diagram to explain working of a fluorescent microscope.
Prescott and Harley 7th Edn. Pg no.23.
- 2) Explain with the help of neat labelled diagram instrumentation of a photoelectric colorimeter.
Wilson and Walker, 6th Edn. Pg no.558-560

3) Explain the principle and working of pH meter
Wilson and Walker, 6th Edn. Pg no.20-22

4) Discuss the features of a walk-in incubator.
As given in notes
Definition 1M Features 5M

5) Give principle and importance of confocal microscopy
Prescott and Harley 7th Edn. Pg no.31,35

6) Describe one method in detail used for enhancing the contrast of specimen for electron microscope.
Prescott and Harley 7th Edn. Pg no. 29

Q5B Do as directed any two of the following: 02

- 1) Use of cold room
To work with temperature sensitive molecules, large scales storage of enzymes, proteins, to work with enzymes and proteins, purification etc.

9

2) What is the formula for Transmittance

$$T = I/I_0$$

3) State one use of hot air oven

To sterilize glassware

4) Give function of electron gun

To generate beam of electrons