Chapter 3
Microbiology

1. Protozoa are
(A) unicellular. **(B)** multicellular.
(C) eukaryotic. **(D)** prokaryotic.

2. N and N_0 represent the number of viable cells at time 't' during sterilization and at the start of sterilization ($t = 0$), respectively. Assuming that cell death follows first order kinetics and that k is the death rate constant, which of the following relationship(s) is/are correct?
(A) $N = N_0\, e^{kt}$ **(B)** $-\ln (N/N_0) = kt$
(C) $N = N_0 kt^2$ **(D)** $N - N_0 = kt$

3. The superoxide ion, O_2^-, is produced by the reaction $K+O_2 \rightarrow KO_2$. The correct statement(s) pertaining to oxygen and superoxide ion is (are):
(A) oxygen is paramagnetic and has two unpaired electrons.
(B) the bond order in oxygen is 2.
(C) the bond order in superoxide is 1.5.
(D) the superoxide ion is not paramagnetic.

4. A bacterial culture growing at 20°C was shifted to 45°C. Incorporation of which of the following fatty acids in the membrane will be beneficial for its survival?
(A) Long chain fatty acids **(B)** Short chain fatty acids
(C) Unsaturated fatty acids **(D)** Saturated fatty acids

5. Diarrhoea is caused by
(A) *Shigella dysenteriae*. **(B)** *Streptococcus pyogenes.*
(C) *Clostridium difficile*. **(D)** *Salmonella enteriditis.*

6. Which microorganism(s) among the following perform photosynthesis by utilizing light?
(A) *Nostocales* **(B)** *Oscillatoriales*
(C) *Yersinia* **(D)** *Gloeobacter*

7. Two organisms which are very closely related to each other have which of the following property?
(A) Heteroduplexes are formed **(B)** Different mol% G+C values
(C) Similar mol% G+C values **(D)** Heteroduplexes are not formed

8. Enzyme involved in nitrogen fixation
(A) nitrogenase. **(B)** hexokinase.
(C) hydrogenase. **(D)** denitrogenase.

9. Which of the following are bacterial diseases?
(A) Leprosy **(B)** Diphtheria
(C) Mumps **(D)** Plague

10. Which of the following characteristics of the microorganism help in causing infectious disease?

(1) Must enter the host
(2) Must metabolize in the host tissue
(3) Must resist host defenses
(4) Must not damage the host

11. Exponential phase of growth curve of bacteria is of limited duration because of
(1) rise in cell density.
(2) accumulation of toxic metabolites.
(3) exhaustion of nutrients.
(4) decrease in cell density.

12. Microaerophilic bacteria are those which require
(1) 21 % oxygen for growth.
(2) low levels of oxygen for growth (lesser than O_2 present in atmosphere).
(3) oxygen for activation of enzymes.
(4) carbon dioxide 8–10%.

13. Which of the following viruses have an envelope?
(A) Reovirus **(B)** Herpesvirus
(C) Togaviruses **(D)** Flaviviruses

14. What makes the retrovirus different?
(A) It inserts its genetic material to the host's material.
(B) It contains RNA-directed DNA polymerase
(C) It is successfully used in silencing of a gene to provide a therapeutic outcome
(D) It can easily replicate on their own because of the presence of genes of reproduction

15. Which of the following are characteristics of archaebacterial similar to eubacteria?
(A) Lack of nucleus **(B)** Single celled
(C) Cell walls of peptidoglycan **(D)** Tolerate extreme environment

Answer Key
1. (A), (C)
2. (B)
3. (A), (B), (C)
4. (A), (D)
5. (A), (C), (D)
6. (A), (B), (D)
7. (A), (C)
8. (A), (C)
9. (A), (B), (D)
10. (A), (B), (C)
11. (A), (B), (C)
12. (B), (D)
13. (B), (C), (D)

14. (A), (B), (C)
15. (A), (B)