

N.B:

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labeled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculators** is **allowed**.
5. For **Q 2, Q 3 and Q 4** attempt A and B **OR** C and D.

Q 1 Do as directed (Any fifteen)

15

1. _____ use reduced inorganic substances as their electron source.
(Lithotrophs, Phototrophs, auxotrophs)
2. _____ is the study of bacteria.
(Bacteriology, mycology, parasitology)
3. Define growth factor.
4. Give any one example of bacterium that is visible without a microscope.
5. The chemical composition of a synthetic medium is _____.
(unknown, known, invisible)
6. Give any one example of synthetic medium used for culturing microorganisms.
7. The standard temperature-pressure combination for an autoclave is _____.
(100°C and 4 psi, 131°C and 9 psi, 121°C and 15 psi)
8. Give any one example of a phenolic compound which is used for controlling microorganisms.
9. Define antiseptic.
10. Alcohols are _____. (heavy metals, denaturing agents, detergents)
11. A chemical with sporicidal properties is _____.
(phenol, alcohol, glutaraldehyde)
12. Agent which inhibits the growth of viruses is called as _____ agent.
(bacteriostatic, fungistatic, viristatic)
13. Although all ionizing radiations can penetrate liquids and most solid materials, _____ rays are most penetrating. (gamma, alpha, beta)
14. Hexylresorcinol, a derivative of _____, is marketed in a solution of glycerin and water. (phenol, alcohol, aldehyde)
15. Condenser is absent in the _____ microscope. (Simple, Compound, Electron)
16. What is numerical aperture?
17. Calculate a working distance of an uncovered object for which a fine adjustment knob took 3.6 turns to bring it in sharp focus.
18. _____ aberration is a cause of color fringing.
(Chromatic, Spherical, lateral color)

19. What is the difference between a dye and a stain?
20. Name a stain which turns in leuco form upon gain of electrons.
- Q 2 A** Give a brief account on different experiments related to spontaneous generation theory. 08
- Q 2 B** A mixed sample of bacteria is given to you. Give a brief account on methods which can be used for isolation of pure cultures 07
- OR**
- Q 2 C** Describe different energy, electron and carbon sources related to nutrition of microorganisms 08
- Q 2 D** Give a brief account on groups of microorganisms and applied areas of microbiology. 07
- Q 3 A** Heat is an agent which can be used to control microorganisms. Justify 08
- Q 3 B** Discuss the properties desirable in a disinfectant. 07
- OR**
- Q 3 C** Describe in brief about ionizing and nonionizing radiations with respect to their use as to agents control microorganisms and differentiate between them 08
- Q 3 D** Describe in brief about the mode of action and practical applications of alcohols and aldehydes as antimicrobial agents 07
- Q 4 A** Describe the optics of phase contrast microscope. 08
- Q 4 B** Define differential staining. Explain any one type of differential staining in detail. 07
- OR**
- Q 4 C** Explain the parts of the transmission electron microscope. 08
- Q 4 D** Describe the optics of dark field microscopy. 07
- Q 5** Write short note on any three of the following 15
- a Distribution of microorganisms in nature.
 - b Selective and differential medium for culturing microorganisms.
 - c UV radiations as a agent to control microbial growth
 - d Advantages and limitations of scanning electron microscopy
 - e Positive monochrome staining