

- N.B. :** (1) All question are compulsory.
(2) All questions carry equal marks.
(3) Draw diagrams wherever necessary.

1. Do as directed (any fifteen) :

15

Define :

1. Disinfectant
2. Decimal reduction time
3. Generation time
4. Exponential phase
5. Distortion

Give one example of :

6. Acidic stain
7. Mordant
8. Detergent
9. Aldehydes used as anti-microbial agent

Name the following :

10. A chemical group which imparts colour to dyes
11. An organism that obtains energy by oxidizing chemical compounds
12. Small organic molecules added to microbial medium as enzyme cofactors
13. Any one method for enumeration of micro-organisms
14. The measure for resolving power of an objective
15. Microbial growth medium that supports growth of all bacteria
16. An organism that uses light energy as the source of electrons
17. A process for disposing contaminated biological material using high temperature
18. A disinfectant of iodine with surface active carrier and solubilizer

Fill in the blanks :

19. _____ phase shows decline in the growth of microbes.
20. _____ condenser is most commonly used due to its suitability for lower magnification objects.

2. (a) Explain : 'Simple' and 'compound' microscope and their applications. 8
(b) Discuss 'Different types of biological stains' with two examples from any three classes. 7

OR

- (c) Describe the difference between 'Light microscope' and 'dark field microscope'. 8
(d) Elaborate the principle of 'Gram Staining' & state the functions of staining solutions used for Gram staining. 7

3. (a) Describe any two methods based on use of heat for destruction of micro-organisms. 8
(b) Discuss properties of an ideal chemical anti-microbial agent. 7

OR

- (c) 'Filtration' can be used selectively for control of micro organisms for various applications. Illustrate with examples. 8
(d) Explain applications of heavy metals and dyes as anti-microbial agents with examples. 7

4. (a) Define culture medium. Classify the culture media on the basis of composition and state any one use of each. 8
(b) How would you cultivate micro-organisms by chemostat and turbidostat. 7

OR

- (c) Write a detailed account on measurement of growth of microbes. 8
(d) How would you isolate pure culture by spread plate and streak plate techniques. 7

5. Write Short Notes on **any three** of the following : 15
(a) Use of halogens for microbial population control
(b) FDA method for evaluation of water soluble chemical disinfectant
(c) Ziehl-Neelsen staining
(d) Arithmetic growth
(e) Phase contrast microscope
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