

**2021**

**MICROBIOLOGY — GENERAL**

**Paper : SEC-A-2**

**(Microbial Quality Control in Food and Pharmaceutical Industries)**

**Full Marks : 80**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

**Question no. 1** is compulsory and answer **any six** questions from the rest.

1. Answer **any ten** from the following : 2×10
- (a) Why 70% ethanol is more effective than absolute ethanol as disinfectant?
  - (b) Define antiseptic.
  - (c) Write down the role of Taq polymerase in PCR.
  - (d) What is IMViC test?
  - (e) How does a culture medium containing 4% agar-agar affect the growth of microorganisms?
  - (f) What are commensals?
  - (g) Why moist heat is more effective than dry heat in killing microbes?
  - (h) Name two food-borne pathogens.
  - (i) What is limit of resolution of a microscope?
  - (j) How do you sterilize the following items :
    - (i) vitamin
    - (ii) test tube
  - (k) Which microbes are ranked as BSL-3?
  - (l) Define differential media with an example.
2. (a) What is thermal death time?  
(b) Write down the principle and procedure of citrate test.  
(c) Name one indole positive and one indole negative microbe. 2+3+2+3  
(d) Briefly describe indirect method of counting of cells.
3. (a) Write down the principle of phosphatase test of milk.  
(b) Differentiate between BSL-1, BSL-2 and BSL-3.  
(c) Why BIS certification is required for drinking water? 3+4+3

**Please Turn Over**

4. (a) What is meant by resolving power of a microscope?  
(b) What is the role of condenser in a microscope?  
(c) How does oil immersion increase resolution power at 100X magnification?  
(d) Write down the working principle of SEM. 2½+2½+2½+2½
5. (a) Why prevention of aerosol formation is an important aspect in microbiology laboratory?  
(b) What are the uses of following culture media–  
(i) Mannitol salt agar (ii) Sabouraud agar  
(c) How would you ascertain the quality of milk based on MBRT result? 4+(1½+1½)+3
6. (a) What are pure culture and why are they important?  
(b) Name the selective agents in MacConkey agar and its mode of action. (2+2)+(2+4)
7. (a) Describe the principle of autoclave in brief.  
(b) How can you neutralize the liquid hazardous waste?  
(c) What are the differences between food-borne infection and food intoxication? 4+3+3
8. Write short notes on *any four* : 2½×4
- (a) Standard plate count  
(b) Dry heat sterilization  
(c) Biosensors  
(d) Nucleic acid probe  
(e) Litmus lysate test  
(f) XLD agar.
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