

2022

**MICROBIOLOGY — HONOURS**

**Paper : SEC-A-1**

**(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 nos. 1 and 2** are compulsory and answer **any four** questions from the rest. ✓

1. Answer **any ten** questions :

2×10

- (a) Which medium is used for the cultivation of molds?
- (b) Why vegetative cells are much more sensitive to heat than spores?
- (c) What is phenol coefficient?
- (d) Give two applications of a biosensor.
- (e) What is BIS?
- (f) What role is played by deoxycholate in XLD medium?
- (g) Which indicator is used in MSA medium? How does the indicator change its colour upon the growth of *Staphylococcus aureus*?
- (h) For working with COVID-19 virus which biosafety level would you prefer and why?
- (i) What do you mean by critical control point in HACCP analysis?
- (j) Upon growth in EMB medium what type of colonies are formed by *Klebsiella pneumoniae*?
- (k) Why thermostable polymerase is an important requirement for a PCR reaction?
- (l) What is the difference between sterilization and disinfection?
- (m) What medium is used for isolation of *Salmonella* sp. in food samples and why?
- (n) What is HEPA filter? Why is it used?
- (o) Which types of microorganisms grow best in sabouraud agar?
- (p) Why is MBRT called reduction test?

2. Write short notes on (**any four**) :

5×4

- (a) Limitation of HACCP
- (b) ELISA for detection of pathogens

**Please Turn Over**

- (c) Good microbiological practices  
 (d) Detection of fecal coliforms  
 (e) Principle of autoclaving  
 (f) Enrichment culture technique.
3. (a) Briefly describe the MPN method.  
 (b) Can you use MPN method for food samples? Justify.  
 (c) What are the advantages and disadvantages of MPN method? 3+3+(2+2)
4. (a) What are the common requirements in a BSL-3 laboratory?  
 (b) What is COB test of milk? How is it performed?  
 (c) Discuss the principle of Tyndallization. 3+(1+3)+3
5. (a) What is incineration? Where is it used and why?  
 (b) What are the three important criteria in HACCP plan for a food establishment?  
 (c) Write down the purpose of IMViC test.  
 (d) How does osmolarity affect bacterial cell? (1+2)+3+2+2
6. (a) What is meant by Flash Pasteurization?  
 (b) Who developed MacConkey Agar? Why do we use MacConkey medium so extensively?  
 (c) What is FISH? Why is it used?  
 (d) How does a Fibre optics work? 2+(1+2)+(2+1)+2
7. (a) What is PPE?  
 (b) What are food safety objectives?  
 (c) What is meant by HACCP plan?  
 (d) What is verification of HACCP plan?  
 (e) How is HACCP plan validated? 2+2+2+2+2
8. Distinguish between the following : 2½×4
- (a) XLD agar and *Salmonella-Shigella* agar.  
 (b) ISI and FSSAI.  
 (c) Ionising and Non-ionising radiation.  
 (d) Dry heat and Moist heat.
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