

[This question paper contains 2 printed pages.]

Sl. No. : 2137 GC -3 Your Roll No.
Unique paper code : 32533931
Name of the course : B.Sc. (Hons.) Microbiology – Skill Enhancement Course
Name of the paper : Microbial Quality control in Food and Pharmaceutical Industries
Semester : III
Duration : 2 hours
Maximum Marks : 50

Instructions for Candidates:

1. Write down your roll no. on top immediately on receipt of the question paper.
 2. Attempt any five questions. All questions carry equal marks.
 3. Attempt all parts of a question together
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1. a. Name the Biosafety level facility to be used while working with the following microorganisms. 1x3=3
 - i. *Lactobacillus casei*
 - ii. *Staphylococcus aureus*
 - iii. HIV
 - b. Which selective/ differential media would be used for detection of following organisms:- 2 x 3=6
 - i. *Escherichia coli*
 - ii. *Salmonella typhi*
 - iii. *Saccharomyces cerevisiae*
 - c. Which biosafety cabinet provides both personnel (handler) and person protection? 1
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2. a. Give two examples each of sterile and non sterile pharmaceutical products. 2
 - b. Name three pathogenic organisms encountered frequently in non-sterile pharmaceutical products. 3
 - c. What is the source of endotoxin in a water sample? How would you detect the presence of endotoxin in a pharmaceutical preparation? 5

P.T.O.

3. a. Name any two routes of entry of pathogens in the human body? 2
- b. Discuss the PCR based detection of pathogens in a given food sample giving a suitable example. 4
- c. What are the two main methods of disinfection of biohazardous wastes? Explain the principle of any one of the methods. 4
4. a. If 100 ml of a milk sample contains only five cells of *Salmonella* while the number of other bacterial contaminants is 10^6 , how will you test for the presence of the said pathogen in the milk sample? 2
- b. Write the principle of 10 minutes Resazurin assay for testing of milk quality 2
- c. Explain the safety equipment, practices and facilities required while carrying out experiments involving *Mycobacterium tuberculosis* in mice. 6
5. a. Expand TQM and HACCP. Explain the process of HACCP through a flow diagram. 5
- b. The microbiological quality of milk can be tested by Standard Plate count, Direct Microscopic Count or MBRT. Discuss any one method in detail with its merits and limitations. 5
6. a. Briefly describe the use of Radioimmunoassay for detection of toxins in food with a suitable example. 4
- b. A water sample is probably contaminated with *Escherichia coli*. Design an experiment to determine the number of *Escherichia coli*. 6