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RAJARATA UNIVERSITY OF SRI LANKA

FACULTY OF APPLIED SCIENCES

B.Sc. (Special) Degree in Applied Biology

Fourth Year Semester I Examination – Oct. / Nov. 2015

MIB 3205 – ADVANCED FOOD MICROBIOLOGY

Time: Two (02) hours

Answer **ALL** questions.

1. In making sausages from meat or fish, two objectives are achieved; food processing and preservation. The other ingredients required in the process are glucose, lactic acid bacteria, $NaNO_2$ and natural or synthetic skin.

   a) List the steps that you would follow in making sausages.
   b) Write what happens in each step in order to reach the final outcomes, explaining the underlying principles.
   c) Instead of $NaNO_2$, $NaNO_3$ with a *Staphylococcus* stain can be used for the same purpose. Explain what is expected by this combination and how this is possible.
   d) What would be the outcome if excess $NaNO_3$ had been used?

2. a) Is spoiled food always unhealthy? Give reasons for your answer. Use "spoilage Detection Level" and "predominant microorganisms" in your answer.

   b) How would you use the factors affecting the growth of predominant microorganisms in control of microbial spoilage of food? Assume that predominant microorganisms are the spoilage microorganisms.

3. a) Microbial products contaminating fluids that are given to humans intravenously can cause toxicity. Dead cells release these toxins. Using your knowledge on characteristics of bacterial toxins, propose a method (giving reasons) to avoid this risk.

   b) Give an outline (i) a culture based and (ii) PCR based process of detecting fecal contamination of a food.

4. Explain what a critical control point in HACCP is.

   Describe how *Bacillus cereus* and *Staphylococcus aureus* become the common bacteria associated with spoilage of pasteurized milk.