



RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

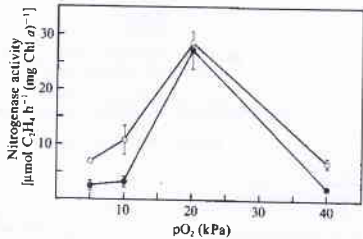
B.Sc. (Special) Degree in Applied Biology
Fourth-Year Semester I Examination – January/February 2021

MJB 4207 – MICROBIAL GENETICS

Time: Two (02) hours

Answer ALL questions.

1. a) Discuss why horizontal gene transfer (HGT) may give certain bacteria a competitive edge over the other competing bacteria in a complex bacterial community. (40 marks)
b) Describe the currently accepted models of horizontal gene transfer in bacteria. (60 marks)
2. a) Discuss briefly, the current taxonomic classification of archaea. (60 marks)
b) Describe the key biochemical and morphological characteristics that set archaea apart from other microorganisms. (40 marks)
3. Write an account on the transposable genetic elements of bacteria. (100 marks)
4. a) Describe the importance, development and differentiation of the specialized cellular form heterocysts found in cyanobacterium *Anabaena* sp. (60 marks)



- b) The figure above was taken from a study conducted by Kangatharalingam *et al* (1992) on heterocysts of two *Anabaena* spp.
- Comment on the phenomenon depicted in the figure. (25 marks)
 - List three (03) adaptations that specialized *Anabaena* cells possess in order to guard against the observed phenomenon. (15 marks)

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