



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**Bachelor of Science in Applied Sciences
Second Year - Semester II Examination – January/February 2023**

ZOO 2205 - EMBRYOLOGY AND DEVELOPMENTAL BIOLOGY

Time: Two (02) hours

Answer any FOUR (04) questions.

1. "The regulatory molecules made in nurse cells and deposited in the developing oocyte, initially direct the development of *Drosophila*." Discuss this statement explaining the appropriate role of genes in the early development of *Drosophila*. (100 marks)

2. a) Explain why the sea urchin is used as a model organism in developmental biology. (20 marks)
 b) Describe the fate map of the sea urchin embryos. (80 marks)

3. a) Elucidate the formation of the grey crescent in frog embryos. (30 marks)
 b) What is the importance of the grey crescent in the development of frog embryos? (10 marks)
 c) "Morphogenetic cell movements are important in gastrulation." Discuss this statement using amphibian embryos. (60 marks)

4. a) Write a concise account of the role of pH and gravity in the formation of embryonic axis in the chick embryo. (40 marks)
 b) Explain the generation of left and right asymmetry in the chick embryo, with special reference to the specific genes involved. (60 marks)

5. Write short notes on the following.
 - a) Patterns of embryonic cleavage.
 - b) Classification of stem cells based on their potential to differentiate.
 - c) Protein-coding gene.
 - d) Signaling function of cadherins. (25 marks each)

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