



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2016/2017**

**THIRD YEAR FIRST SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF SCIENCE AND BACHELOR OF  
EDUCATION SCIENCE WITH INFORMATION TECHNOLOGY**

**MAIN CAMPUS**

**SZL 301: DEVELOPMENTAL BIOLOGY**

Date: 28<sup>th</sup> November, 2016

Time: 12.00 - 3.00 pm

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**INSTRUCTIONS:**

- Answer ALL questions in SECTION A and any TWO in SECTION B.



**Illustrate your answers with labelled diagrams where appropriate**

**SECTION A (40 Marks): Answer all questions in this section**

**Answer ALL questions in this section**

- Q1.** Explain how egg polarity and axes are designated
- Q2.** Describe briefly how the germinal cavity is formed in the chick
- Q3.** Explain the functional role of the mammalian periblast
- Q4.** Describe the formation of the Gray Crescent in the frog
- Q5.** List five common characteristics of cleavage
- Q6.** Name the primary egg membranes formed during egg development and give one animal example in which each is found
- Q7.** Give an illustration (diagram) of the frog blastula just before gastrulation to show the arrangement of the different blastomeres
- Q8.** Explain briefly the different functional roles of the trophoblast and the inner cell mass.
- Q9.** Give a sequential outline of the events of acrosomal reaction in the sea urchin from the first sperm contact with the egg jelly coat to the entry of **one** sperm nucleus into the egg
- Q10.** Briefly explain how the amnion and the chorion are formed in mammals

**SECTION B (60 Marks)**

**Answer any TWO questions in this section**

- Q9.** Describe the process of spermiogenesis in mammals starting with the spermatid.
- Q10.** Discuss the activities of the homologous chromosomes during first meiosis with respect to chromatin state and movements of the chromosomes.
- Q11.** Describe the process of acrosomal reaction in mammals (mouse)
- Q12.** Describe the process of cleavage in the sea urchin, taking note of the special features
- Q13.** With examples, give an account of the classification of eggs based on yolk

**END**