



EMBU UNIVERSITY COLLEGE
(A Constituent College of the University of Nairobi)

2015/2016 ACADEMIC YEAR

SECOND SEMESTER EXAMINATION

THIRD YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE
(BIOLOGY)

SZL 304B: DEVELOPMENTAL BIOLOGY

DATE: APRIL 12, 2015

TIME: 11:00-1:00

INSTRUCTIONS: Answer any ten (10) questions (7 marks each)

1. List the primary germ layers from which the following tissues/organs are derived.
 - a) Brain
 - b) Urethra lining
 - c) Adrenal cortex
 - d) Liver
 - e) Tooth enamel
 - f) Thyroid gland
 - g) Dermis of the skin
2. You have been selected as a group leader for a research group interested in observing embryo development.
 - a) Identify a suitable model organism for this study. (1 Mark)
 - b) Justify your answer in (a) above. (3 Marks)
 - c) State whether it would be appropriate to use human subjects in this case. (3 Marks).
3. Explain briefly primordial germ cell migration in *Drosophila melanogaster*.
4. Discuss the process of gametogenesis in human.

5. a) Describe fertilization in Sea urchin. (4 Marks)
- b) Explain how it differs from fertilization in mammals. (3 Marks)
6. Explain the significance of extra- embryonic membranes in chick.
7. Discuss the importance of cellular differentiation during embryonic development.
8. Explain sex determination in mammals.
9. Give an account of the vulval development in *Caenorhabditis elegans*.
10. Explain how genes involved in pattern formation are identified in *Drosophila*.
11. Explain why the localization of cytoplasmic determinants is a vital mechanism in cell fate determination during morphogenesis.
12. Describe the vertebrate limb development in mouse model.

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