

THE OPEN UNIVERSITY OF SRI LANKA

B. Sc. DEGREE PROGRAMME – 2015/16

ZLU2182 – ANIMAL DEVELOPMENT
CAT 1 (NO BOOK TEST)



DATE: 27th March 2016

Time: 2.30 p.m. – 3.30 p.m.

REGISTRATION NUMBER:

Answer all questions.

Answers for the questions should be written on the space provided.

Q 1 This question is based on the process of gametogenesis of vertebrates.

1.1 Name the two phases of the spermatogenesis taking place within testes and explain the processes occurring in these phases.

Phase 1:

.....
.....

Phase 2:

.....
.....
.....

1.2 State the four differences between the process of spermatogenesis and that of oogenesis in vertebrates.

1.
.....

2.
.....

3.
.....

4.
.....

1.3 Figure 1 illustrates a cross section of a mammalian ovary. Identify the follicle types A, B, C and D marked in the figure.

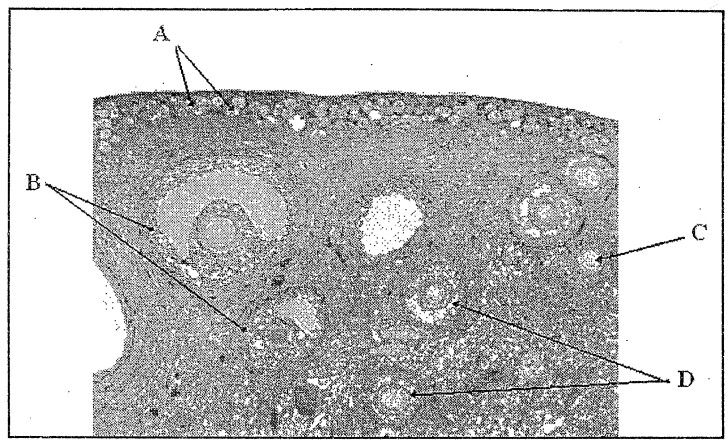


Figure 1

A: B:
C: D:

1.4 What is the stage of development of eggs within these follicles?
.....

Q 2 This question is based on cleavage of animal eggs.

2.1 State **three** ways by which cleavage cell divisions differ from normal cell divisions.

1.
.....

2.
.....

3.

2.2 What are the two basic patterns of cleavage developed during the evolutionary history of coelomic animals? State the two animal groups showing these two patterns with one example.

<u>Cleavage pattern</u>	<u>Animal group</u>	<u>Example</u>
1.
2.

2.3 Name the basic cleavage pattern undergone by the 8 cell stage illustrated in Figure 2. What is the clue helped you to find the answer.

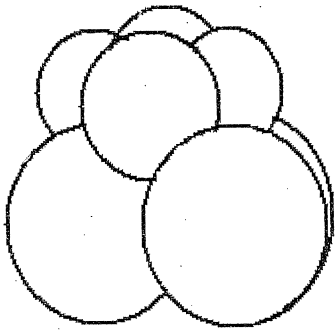


Figure 2

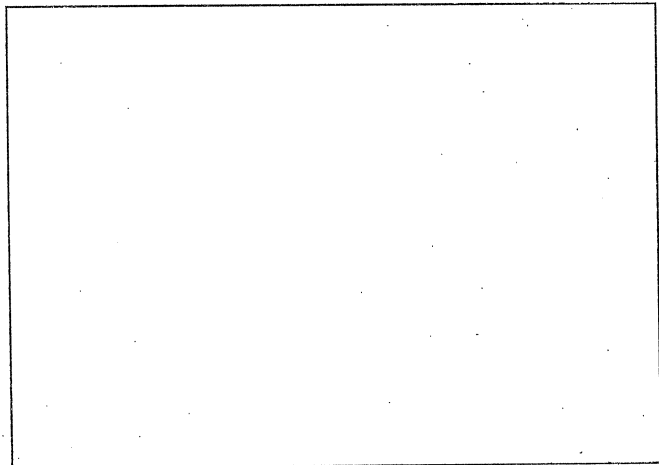


Figure 3

Cleavage pattern:

Clue:

2.4 Draw a diagram in the box labeled as Figure 3 to show the 16 cell stage resulting from the next cleavage division of the blastula in Figure 2. Mark the positions of mitotic spindle formation needed for this cleavage division. (4)

2.5 Giving examples for animals having different quantities of yolk in eggs, briefly explain how the cleavage pattern has changed due to the amount of yolk in eggs.

<u>Technical term to describe yolk amount in egg</u>	<u>Example</u>	<u>Explanation on the deviation of pattern from the basic one</u>
Microlecithal egg
Mesolecithal egg
Megalecithal egg

Q3 This question is based on the eye development of chick.

3.1 How does the neural plate/tube in a chick embryo get induced to form optic vesicle?

.....

3.2 Which part of the brain forms the optic vesicles?

.....

3.3 Draw a series of labeled diagrams to explain the formation of optic cup and the lens of the eye.—

3.4 What are the two tissues in the eye that have mesodermal origin?

.....

3.5 During the development of eye, inductions occur repeatedly. Give one example for each primary, secondary and tertiary induction that occurs during eye development.

Primary induction:

Secondary induction:

Tertiary induction:
