

THE OPEN UNIVERSITY OF SRI LANKA

B. Sc. DEGREE PROGRAMME – LEVEL 04

ZLU2182 – ANIMAL DEVELOPMENT
CAT 1 (NO BOOK TEST)



DATE: 17th September 2011

Time: 11.00 a.m. – 12.00 noon

REGISTRATION NUMBER:

Answer all questions.

This paper consists of two parts, Part A & B.

Part A - Q 1 contains 20 multiple choice questions. Tick the correct answers for these questions on the answer sheet provided below.

Part B has one question, Q 2. Answers for this question should be written on the space provided.

Answer Sheet for Part A - Q 1

	(a)	(b)	(c)	(d)
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8				
1.9				
1.10				

	(a)	(b)	(c)	(d)
1.11				
1.12				
1.13				
1.14				
1.15				
1.16				
1.17				
1.18				
1.19				
1.20				

Registration No:

Part B

Q.2. This question is based on reproduction of sea urchin, which is an echinodermate animal living in marine habitats.

- (i) (a) Where do the eggs of sea urchin fertilize?
.....
- (b) Give a rough estimate about the number of eggs that a female produce at a time.
.....
- (c) Give the term that describe the amount of yolk in them.
- (d) Give the term that describe the yolk distribution in them
- (ii) The sperms of sea urchin get attracted to eggs by chemotaxis.
- (a) Name the chemical attractant involved in attracting sperms towards ova.
.....
- (b) Explain the way by which the sperms get attracted to ova.
.....
.....
.....
.....
- (iii) After sperms get attracted towards eggs, they attached on to the surface of the egg. Then, the acrosomal reaction that occurs in sperm helps it to penetrate the egg membrane.
- (a) Explain how the acrosomal reaction is triggered.
.....
.....
.....
- (b) How is the egg membrane penetrated by the sperm during acrosomal reaction?
.....
.....

(c) How is the acrosomal filament formed?

.....

(d) Figure 1 shows how the acrosomal filament attaches on to the surface of the sea urchin egg. Label P, Q, R and S.

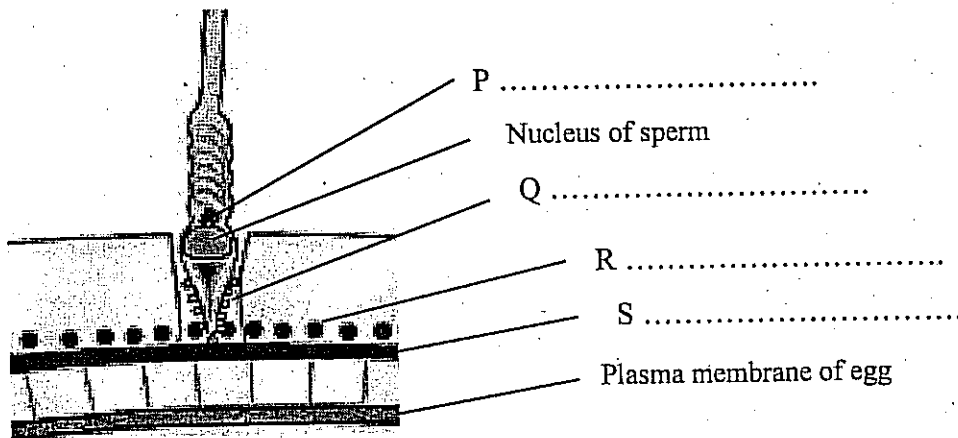


Figure 1

(e) Give a specific character of Q and R and mention the importance of it.

.....

(iv) The digestion of the S membrane shown in the Figure 1 leads to the direct contact of sperm head with the plasma membrane of egg and fusion of their plasma membranes. This activates the egg to embark on its developmental process.

(a) Mention three important events that occur due to activation of egg.

- 1.....
- 2.....
- 3.....

(b) Of the three activities mentioned in (iv) (a) part, which is the one that causes changes in plasma membrane or vitelline membrane of egg?

.....

(c) What is the importance of the process mentioned in (iv) (b)?

.....

(d) How is the quick change to the plasma membrane caused?

.....

.....

(e) How is the permanent change to the vitelline membrane caused?

.....

.....

.....

(f) Mention three changes that occurs in vitelline membrane due to the process mentioned in (iv) (b).

1.....

2.....

3.....

(v) Figure 2 shows some stages of gastrulation of sea urchin.

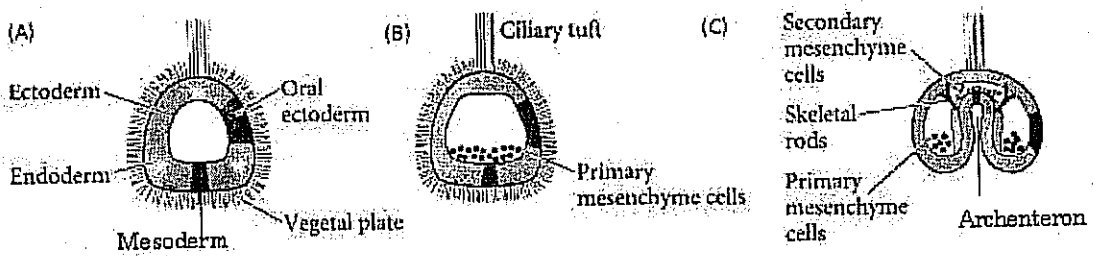


Figure 2

(a) According to the Figure 2 (c), what is the cell movement process involved in archenteron formation?

(b) The mesoderm of the gastrula move into the cavity after separating individual cells from the surface layer. What is the name given for this cell movement process?

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