

THE OPEN UNIVERSITY OF SRI LANKA

B. Sc. DEGREE PROGRAMME – LEVEL 04

ZYU4302 – ANIMAL DEVELOPMENT  
CAT 2 (NO BOOK TEST)



DATE: 24<sup>th</sup> July 2018

Time: 4.15 p.m. – 5.15 p.m.

REGISTRATION NUMBER: .....

**Answer all questions**  
**Answers should be written in the space provided**

Q1. Figure X shows the results of two experiments (Experiment A and Experiment B) carried out by Hans Spemann in 1918.

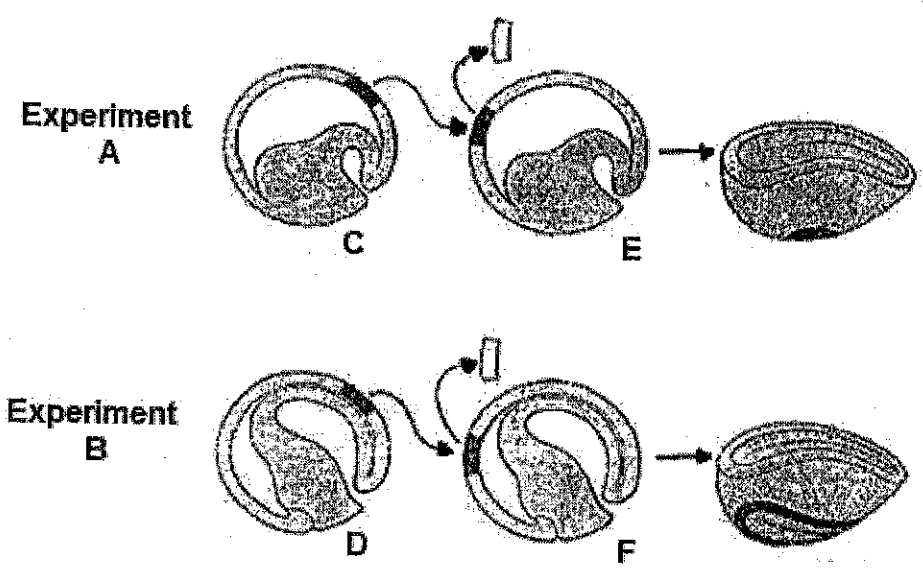


Figure X

1.1 What is the animal group to which these embryos belong to? (3 marks)

.....

1.2 State the stage of development of specimens C & E in the Experiment A. (3 marks)

.....

1.3 State the stage of development of the specimens D & F in the Experiment B. (3 marks)

.....

1.4 In both experiments A & B, name the prospective region from which the tissue grafts were taken. (3 marks)

.....

1.5 In both experiments A & B, name the prospective region to which the tissue grafts were transplanted. (3 marks)

.....

1.6 Mention the common name used to an organism from which a tissue transplant is taken. (3 marks)

.....

1.7 Mention the common name used to an organism receiving a tissue graft? (3 marks)

.....

1.8 What is the developmental fate of the tissue transplant in Experiment A? (3 marks)

.....

1.9 What is the developmental fate of the tissue transplant in Experiment B? (3 marks)

.....

1.10 Give the reason for the difference of the results in Experiment A and Experiment B? (3 marks)

.....

1.11 What caused this difference in the Experiment B? (6 marks)

.....

.....

1.12 Embryos of two closely related species were used for each of these experiments. What was the need for this? (4 marks)

.....

Q2 This question is based on cell determination and differentiation.

2.1 What is cell determination? (6 marks)

.....

.....

.....

.....

2.2 What is cell differentiation?

(4 marks)

.....  
 .....

Figure Y given below shows the derivation of blood cells from stem cells through successive cell generations.

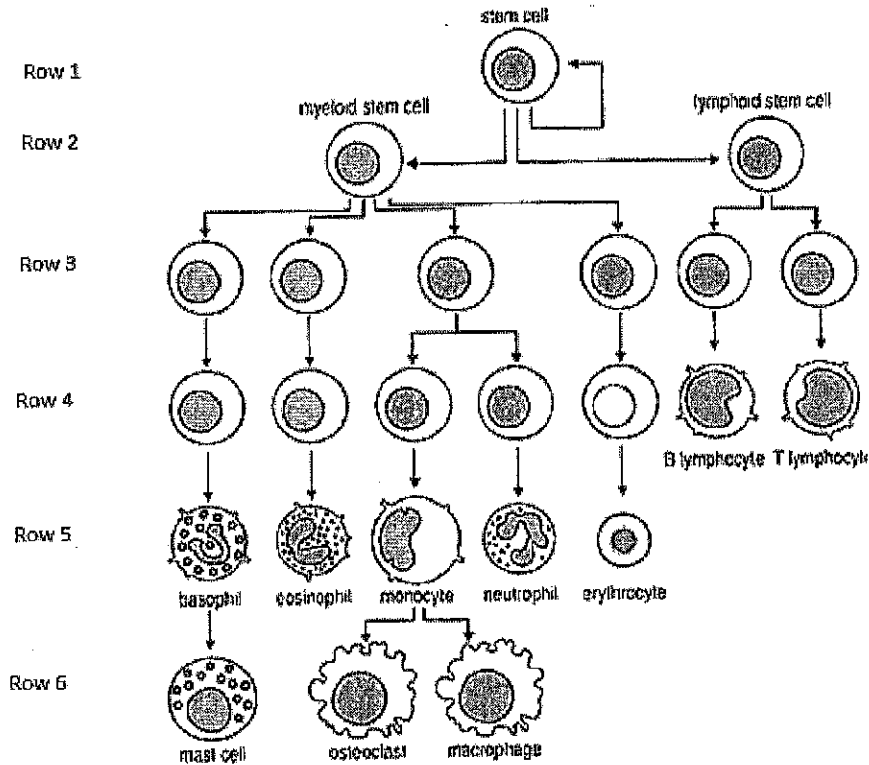


Figure Y

2.3 Where does the blood cell derivation (origin) occur in an embryo?

(3 marks)

.....

2.4 What are stem cells?

(3 marks)

.....

2.4 In which row/s of the Figure Y, determined cells are present?

(4 marks)

.....

2.5 State two differences between the determined cells and differentiated cells.

(4 marks)

(i) .....

(ii) .....

2.6 In differentiating cells, cell division is most evident before the terminal stage of cell differentiation. What is the reason for this? (3 marks)

.....  
.....

2.7 When differentiating cells give rise the next generation of cells, do the structural changes in them pass on to the cells of new generation? (3 marks)

.....

Q3 This question is based on the cloning of animals.

3.1 What is a clone? (3 marks)

.....

3.2 Give two examples to show that cloning occurs naturally. (4 marks)

.....

Figure Z gives a schematic diagram for artificial cloning.

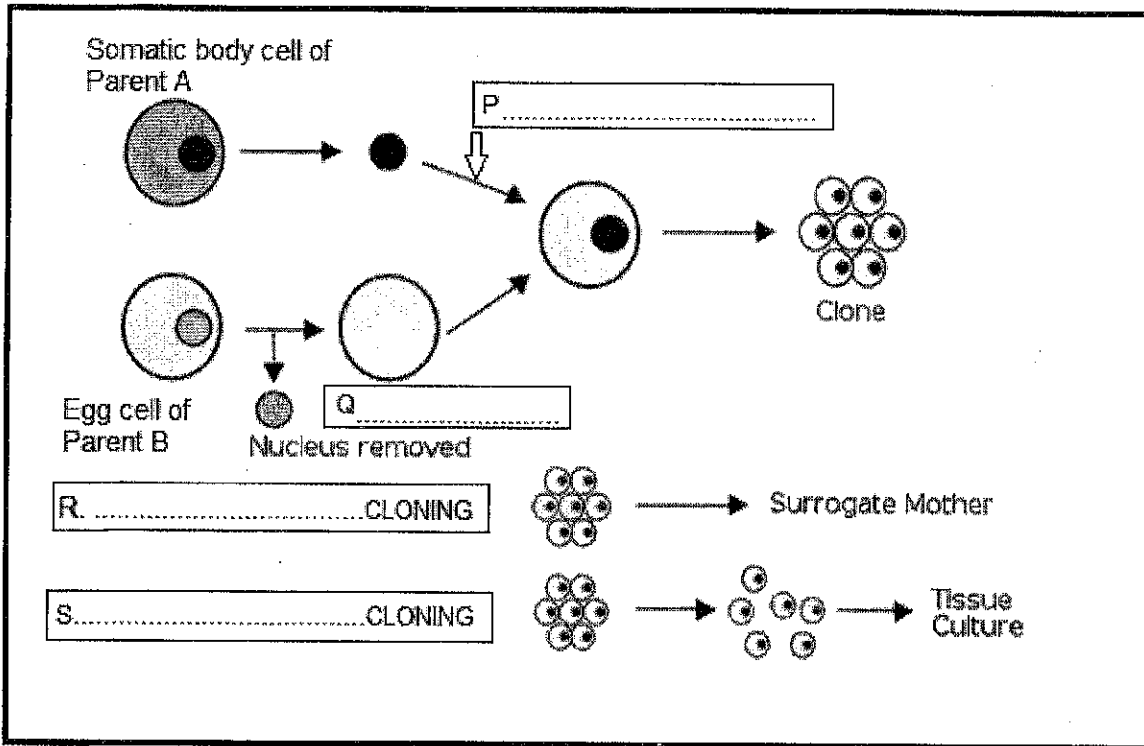


Figure Z

3.3 Give a specific name for the nucleus removed egg cell in Fig. Z. (3 marks)

.....

3.4 What is the specific name given for the process P? (3 marks)

.....

3.5 Which parent is similar to the clone? (3 marks)

.....

3.6. Why is it essential to use an unfertilized egg to receive nuclear material of the parent animal to be cloned? (6 marks)

.....

.....

3.7 Name R and S given in Fig. Z. (2 marks)

R. ....

S. ....

3.8 For the type of cloning denoted by 'S', the somatic body cell should be obtained by a specific person. Who is this person? (6 marks)

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