

G-3/343/21

Roll No.....

III Semester Examination, April-2021

M.Sc.

ZOOLOGY

Paper I

(Developmental Biology)

Time : 3 Hours]

[Maximum Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 sections. **Section A** is objective type/Multiple Choice questions with no internal choice. **Section B** is short answer type with internal choice. **Section C** is long answer type with internal choice.*

SECTION 'A'

1×8=8

(Multiple Type Questions)

Choose the correct answer :

1. The experiments of Spemann and Mangold first defined what features of amphibian embryos :
 - (a) Zygote
 - (b) The blastopore
 - (c) The organizer
 - (d) The neural tube

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2. Write the process of acrosome reaction with suitable diagrams.

Or

Draw the fate map of Ascidian and Amphioxus.

3. Write a note on primary organizer.

Or

Discuss briefly the 'multiple ovulation'.

4. Write various methods of transfection.

Or

Write a note on knockout experiments.

SECTION 'C'

12×4=48

(Long Answer Type Questions)

Note : Answer the following questions in 500 words.

1. Discuss biology of Sex-determination in detail.

Or

Describe the process of oogenesis with suitable diagram.

2. Define the term 'cleavage'. Discuss its pattern and mechanism.

Or

Write an essay on formative movements.

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6. In human, the number of ovas and sperms that would be produced from 100 secondary oocytes and 100 secondary spermatocytes during gametogenesis is :

- (a) 50 ova and 100 sperm
- (b) 100 ova and 200 sperm
- (c) 100 ova and 100 sperm
- (d) 200 ova and 200 sperm

7. Egg development without fertilization is known as :

- (a) Gametogenesis
- (b) Metagenesis
- (c) Parthenogenesis
- (d) Oogenesis

8. If a gene is inactivated by gene targeting, then it is called as :

- (a) Knock-in gene
- (b) Knock-out gene
- (c) Gene disruption
- (d) Insertional inactivation

SECTION 'B'

4×6=24

(Short Answer Type Questions)

Note : Answer the following questions in 250 words.

1. Describe the process of spermeogenesis.

Or

Discuss in brief the ovum transport in mammals.

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2. The type of blastula formed in birds is :
- (a) Discoblastula (b) Stereoblastula
(c) Teloblastula (d) Holoblastula
3. This phase in the development of sperm has no counterpart in ovum development :
- (a) Phase of multiplication
(b) Phase of growth
(c) Polar body formation
(d) Spermeogenesis
4. Sperm lysin, the enzymatic substances produced by sperms in mammals is known as :
- (a) Gyanogamous (b) Hyaluronic acid
(c) Anderogamous (d) Hyaluronidase
5. What is stem cells ?
- (a) A cell only found in the stem of plants
(b) An unspecialized cell with the ability to create specialized cells
(c) A specialized cell who can only generate cells of the same type.
(d) All of the above

[5]

3. Write a detail note on 'stem cell'.

Or

Discuss briefly invitro embryo transfer and invitro fertilization.

4. Discuss nucleocytoplasmic interaction with suitable examples.

Or

Write notes on :

- (a) Haploid Parthenogenesis,
(b) Application and production of transgenic sheep.

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