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The Assam Royal Global University, Guwahati
Royal School of Life Sciences
M. Sc Zoology, 2nd Semester
Semester End Examination, June 2023
Course Title: Developmental Biology
Course Code: ZOO144C202

Time: 3 Hours

Maximum Marks: 70

Note: Attempt all questions as per instructions given.

The figures in the right-hand margin indicate marks.

Section – A

1. Attempt **all** questions. (Maximum word limit 50) **2 x 8**
- a. What are cytoplasmic determinants?
 - b. Define a morphogen and also define morphogenic gradient?
 - c. What is double fertilization?
 - d. With proper labeling draw the structure of a typical sperm.
 - e. What is meant by pattern formation?
 - f. Define genic balance theory?
 - g. What is MOET?
 - h. Define contraception. What is IUCD.

Section – B

2. Attempt **any two** of the following: **6 x 2**
- a. Explain with the help of ray diagram that how a zygote forms various cell lineages in *C. elegans*.
 - b. Write a note on induction and competence.
 - c. Differentiate between the embryonic stem cell and adult stem cells. Give examples.
3. Attempt **any two** of the following: **7 x 2**
- a. Write a note on vitellogenesis in animals.
 - b. State the different cell surface molecules in sperm-egg interaction in animals.
 - c. Describe the process of sperm formation in animal with suitable diagrams.
4. Attempt **any two** of the following: **7 x 2**
- a. Explain with the diagrams the process of dorsal-ventral axis formation in *Drosophila*.
 - b. Describe the process of eye lens development in vertebrates with suitable diagrams.
 - c. Describe the process of pattern formation in Chick development.
5. Attempt **any two** of the following: **7 x 2**
- a. Discuss the process of surgical and hormonal contraceptive methods.
 - b. Explain the process of ICSI.
 - c. Discuss the process of immunocontraception.