Roll No: | | | | | | | | | |

# The Assam Royal Global University, Guwahati

**Royal School of Biosciences**
**BSc Biotechnology 6th Semester**
**Semester End Examination, June 2023**
**Course Title: Developmental Biology**
**Course Code : BTC152D602**

**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. Define cellular fate? What do you mean by inducer and responder?
   b. What do you mean by cytoplasmic determinants?
   c. Define gray crescent.
   d. What do you mean by cleavage? Give example of organisms undergoing holoblastic cleavage.
   e. Mention any two roles of placenta in a developing embryo.
   f. Write the name of two structures in a developing embryo the fate of which is decided by the mesoderm.
   g. Define morphollaxis with examples.
   h. What do you mean by amniocentensis?

## Section – B

2. Attempt **any two** of the following: **6x 2**

   a. Briefly explain the Wnt signalling with the help of a schematic diagram.
   b. Explain the mechanism of regional specificity of epithelial-mesenchymal interaction with a chick development as an example.
   a. Classify stem cells and mention proper examples? Illustrate the process of induction.

3. Attempt **any two** of the following: **7 x 2**

   a. With the help of a flowchart explain the process of oogenesis.
   b. Discuss the mechanism of block to polyspermy in mammals. Why is this process necessary?
   c. Elucidate on fate mapping with respect to amphibian embryo development.

4. Attempt **any two** of the following: **7 x 2**

   a. Write a brief note on implantation in humans.
   b. Classify placenta based on its structure with the help of proper diagrams.
   c. Briefly explain the extra embryonic membranes found in aves and also mention their significance.

5. Attempt **any one** of the following: **14 x 1**

   a. What is metamorphosis? Elucidate how metamorphosis occurs in insects.
   b. Elaborate the various modes of regeneration with suitable examples.