

## B.Sc. 4th Semester (New Scheme)

Examination, May-2016

## BIOTECHNOLOGY

Paper-BT-403

## Animal Developmental Biology

*Time allowed : 3 hours]**[Maximum marks : 40*

*Note : Question No. 1 is compulsory. Attempt four questions from Question No. 2 to 9 i.e. one from each unit.*

1. (i) Who is considered as the father of modern embryology ? What is his contribution ? 2
- (ii) Enumerate various methods used in developmental biology. 2
- (iii) Differentiate between the blastulation in microlecithal and mesolecithal eggs. 2
- (iv) Write briefly about the genetic basis of neural induction. 2
- (v) On the basis of distribution of chorionic villi, how many types of placenta can be differentiated ? 2

## Unit-I

2. (i) Describe the structure of a mature spermatozoan in detail and add a note on the types of sperms. 2½
- (ii) Give a detailed account of the development of mature Oocyte. How oogenesis differs from spermatogenesis. 5

3. (i) Write a note on scope and historical perspective of development biology. 2½
- (ii) What are different types of fertilization ? Describe the different biochemical, cytoplasmic and nuclear changes occurring during fertilization. 5

### Unit-II

4. (i) Define cleavage. What is the mechanism, types and patterns of cleavage ? 5
- (ii) Write a note on formation and differentiation of primary germ layers. 2½
5. (i) Describe different types of morphogenetic movements in gastrulation. 2½
- (ii) Define fate map. Which techniques are used for determining the fate map ? 5

### Unit-III

6. (i) Discuss the process of neural induction in detail. What is Spina bifida ? 5
- (ii) Describe the epigenetic landscape involved in cell commitment and determination. 2½
7. (i) Describe different types of embryonic induction. 4
- (ii) Describe the induction of vertebrate lens. 3½

**Unit-IV**

8. (i) What is the function of placenta in mammals ?  
Enumerate the role of different extraembryonic  
membranes. 2½
- (ii) Write a note on development of behaviour. 5
9. (i) Discuss the fate of different primary germ layers. 5
- (ii) Write short notes on neurulation and notogenesis. 2½