[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1949 **L**

Unique Paper Code : 6793010012

Name of the Paper : Developmental biology

Name of the Course : **B.Sc. (H) Biological Science**

Semester : VI

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any four questions.
3. **All** questions carry equal marks.
4 Q.No. 1 is Compulsory.

Q1. (a) Define the following **(any five)**: 5

i. Yolk Plug
ii. Nieuwkoop centre
iii. Allantois
iv. Archenteron
v. Morphogen
vi. Hensen's Node

(b) Differentiate between: (2x3=6)

i. Area Opaca and Area Pellucida
ii. Koller's Sickle cells and Grey Crescent
iii. Radial and Spiral cleavage

(c) Name the germ layer from which each of the following is derived: 4

i. Skin
ii. Testis
iii. Liver
iv. Notochord

Q2. Distinguish between **any three** of the following: 3x5=15

i. Autonomous Specification and Conditional Specification
ii. Pair rule genes and GAP genes
iii. Dorsal blatoporal lip and Primitive node
iv. Heterotopy and Heterometry

P.T.O.

Q3. **(a)** How did the experiments of Hans Spemann and Hilde Mangold establish the concept of primary embryonic induction? Discuss the underlying molecular mechanisms involved. 8

(b) Explain the process of gastrulation and discuss the various morphogenetic movements associated with it, giving specific examples from different animals. 7

Q4. **(a)** Define placenta and describe its different types based on morphological and histological criteria, with suitable examples. 8

(b) How does gastrulation occur in the chick embryo? Discuss the role of the primitive streak and cell movements involved. 7

Q5. **(a)** Describe the function of pair-rule genes in establishing the segmented body plan in *Drosophila*, citing key gene examples. 8

(b) Describe the relationship between yolk content and cleavage type in animal embryos, with examples. 7

Q6. Write short notes on **any three** of the following: (3x5=15)

(a) Extra embryonic membranes in birds
(b) French Flag Model
(c) *Xenopus laevis* as a Model Organism
(d) Maternal effect genes
(e) Techniques used in fate mapping