

This question paper contains **3** printed pages]

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S. No. of Question Paper : **5611**

Unique Paper Code : **6793010012**

Name of the Paper : **Developmental Biology**

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

Semester : **VI**

Duration : **2 Hours**

Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *four* questions in all.

All questions carry equal marks.

Question No. **1** is compulsory.

1. (a) Define the following (any *five*) :

5

(i) Bottle Cells

(ii) Dauer larva

(iii) Amnion

(iv) Archenteron

(v) Morphogen

(vi) Hensen's Node.

P.T.O.

(b) Differentiate between (any *two*) :

2×3=6

- (i) Subgerminal cavity and Blastocyst
- (ii) Koller's Sickle cells and Nieuwkoop centre
- (iii) Discoblastic cleavage and Superficial cleavage
- (iv) Fate map of frog and Fate map of chick.

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

- (i) Notochord
- (ii) Ovary
- (iii) Liver
- (iv) Lens.

2. Distinguish between any *three* of the following :

3×5=15

- (i) Autonomous specification and Syncytial specification
- (ii) Pair rule genes and Homeotic selector genes
- (iii) Primitive streak and Dorsal Blastoporal lip
- (iv) Heterochrony and Heterometry.

3. (a) Briefly explain the experiment conducted by Hans Spemann and Hilde Mangold to explain primary embryonic induction during amphibian gastrulation. Discuss its establishment at the molecular level. 8

(b) Define gastrulation. Enlist the various morphogenetic movements with specific examples of their occurrence in embryonic development of animals. 7

4. (a) What are maternal effect genes ? How do they contribute to the establishment of the anterior-posterior axis ? 8
- (b) Explain the process of neurulation and describe its types. How do abnormalities in neurulation impact the development of the nervous system ? 7
5. (a) Explain the process of epimorphic regeneration with a suitable example, highlighting the key stages involved. 8
- (b) Describe the extra-embryonic membranes in a chick embryo and explain their formation and functions. 7
6. Write short notes on any *three* of the following : 3×5=15
- (a) Types of placentae on the basis of histology
- (b) French Flag Model
- (c) Model Organism
- (d) Aging
- (e) Evo-Devo.