(b) Describe the various types of cleavage patterns in animal embryos based on the amount and distribution of yolk. Support your answer with suitable examples. (6)

5. (a) Describe the extra-embryonic membranes in a chick embryo and explain their formation and function. (8)

(b) Define gastrulation. Illustrate and describe the various morphogenetic movements involved in gastrulation, with specific examples from amphibian embryonic development. (7)

6. Write short notes on **any three** of the following : (3×5=15)

(a) French Flag Model

(b) Blocks to polyspermy

(c) Embryonic stem cells

(d) Teratogens

(e) Ageing

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5600 **J**

Unique Paper Code : 2232012402

Name of the Paper : DSC – Developmental Biology

Name of the Course : **B.Sc. (H) Zoology-UGCF**

Semester : IV – NEP

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 including Question No. **1** which is compulsory.
3. Draw well-labelled diagrams wherever necessary.

1. (a) Define the following : (4)

(i) Primary Organizer

(ii) Delamination

(iii) Spermateliosis

(iv) Gray crescent

(b) Distinguish between the following **(any two)** : (2×2=4)

(i) Autonomous and conditional specification

(ii) Hensen's Node and Nieuwkoop Center

(iii) Yolk Sac and Yolk Plug

(c) Match the following : (2)

(i) J.F. Gudematsch	a. Phocomelia
(ii) Thalidomide	b. Salamander regeneration
(iii) Spallanzani	c. Epigenesis
(iv) Caspar Friedrich Wolff	d. Amphibian metamorphosis

(d) Expand the following abbreviations : (3)

(i) AGE

(ii) DLHP

(iii) PTTH

(e) Name the germ layer from which each of the following is derived : (2)

(i) Notochord

(ii) Lungs

(iii) Adrenal Cortex

(iv) Lens

2. (a) Describe the process of metamorphosis in amphibians. Explain the role of hormones in regulating this transformation. (8)

(b) What is a fate map? Describe the different techniques used to construct fate maps. Draw a well-labelled fate map of the blastula stage of a frog. (7)

3. (a) Define regeneration. Explain the process of epimorphic regeneration with a suitable example, highlighting the key stages involved. (8)

(b) Discuss the process by which the spermatid transforms into spermatozoa. (7)

4. (a) Define placenta and describe its different types based on morphological and histological criteria with suitable examples. (9)