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3(Sem-6/CBCS)ZOO HC 1

2025

ZOOLOGY

(Honours Core)

Paper : ZOO-HC-6016

(Developmental Biology)

Full Marks : 60

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

1. Choose the correct option : $1 \times 7 = 7$
- (a) Which of the following cells are capable of asymmetric cell division ?
- (i) Hepatocytes
 - (ii) Epithelial cells
 - (iii) Stem cells
 - (iv) Neurons
- (b) Which of the following helps in the penetration of the egg by the sperm ?
- (i) Fertilization membrane

- (ii) Antifertilizin
- (iii) Sperm lysin
- (iv) Fertilizin
- (c) The notochord develops from which of the following embryonic germ layers ?
 - (i) Endoderm
 - (ii) Ectoderm
 - (iii) Neuroectoderm
 - (iv) Mesoderm
- (d) Regeneration of a limb or tail is an example of :
 - (i) Epimorphosis
 - (ii) Autonomy
 - (iii) Morphallaxis
 - (iv) Compensatory hypertrophy
- (e) The motile germ cell is called a/an :
 - (i) Isogamete
 - (ii) Female gamete
 - (iii) Male gamete
 - (iv) Spermatocyte
- (f) Fate map of embryo is prepared at-
 - (i) Morula stage
 - (ii) Blastula stage

- (iii) Gastrula stage
- (iv) Neurula stage
- (g) Which of the following are potential effects of a teratogen on a foetus ?
 - (i) Death
 - (ii) Low birth weight
 - (iii) Neural defects
 - (iv) All of the above

2. Write short notes on : 2×4=8

- (a) Pattern formation in developmental process
- (b) Holoblastic cleavage
- (c) Teratogens
- (d) Functions of amnion

3. Answer **any three** of the following : 5×3=15

- (a) What is epithelial-mesenchymal interaction ? Describe its properties with examples.
- (b) Describe the fate map of a typical chordate blastula.
- (c) Describe the mechanism of "block to polyspermy" in mammalian species.
- (d) Describe the structure of human placenta.

(e) What is teratogenesis ? Write a brief account on *any two* environmental factors responsible for teratogenesis. $1+4=5$

4. Describe asymmetric regulation of cellular determinants. Mention its importance. $7+3=10$

Or

What is cell-cell interaction ? Describe stable cell interaction with labelled diagram. $1+7+2=10$

5. What is gastrulation ? Describe the process of gastrulation in frog embryo. $2+8=10$

Or

What are the extra embryonic membranes ? Describe the extra embryonic membranes in birds with labelled diagrams. $1+7+2=10$

6. What are the different modes of regeneration ? Describe the epimorphic regeneration found in salamander's limb. $3+7=10$

Or

What do you mean by Oogenesis ? Describe the process with suitable labelled diagrams. $2+8=10$
