

B.Sc. 6th Semester (Honours) Examination, 2025 (CBCS)

Subject : Zoology

Course : CC-XIII

(Developmental Biology)

Time: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Group – A

1. Answer *any five* of the following questions: $2 \times 5 = 10$
- (a) What do you understand by embryology and development biology?
 - (b) What is competence in cell fate determination?
 - (c) What do you mean by mid-blastula transition?
 - (d) Differentiate between radial and spiral cleavage.
 - (e) Why is teratogen named so?
 - (f) Why acrosome and cortical granules are called homologus?
 - (g) What is zonary placenta? Give an example.
 - (h) Distinguish between epimorphosis and morphallaxis.

Group – B

2. Answer *any two* of the following questions: $5 \times 2 = 10$
- (a) Why the diplotene stage of oogenic meiosis is called dictyate resting stage? Mention the significance of this stage. Comment on spermiogenesis. $1+2+2$
 - (b) What is *in vitro* fertilization? Describe different steps of *in vitro* fertilization. $1+4$
 - (c) Why is the dorsal lip of blastopore of an amphibian embryo called organizer? State the role of grey crescent cytoplasm in imparting organizer functions to this structure. $1+4$
 - (d) Briefly discuss on implantation of human embryo. 5

Group – C

3. Answer *any two* of the following questions: $10 \times 2 = 20$
- (a) Justify that Inner Cell Mass (ICM) is a mass of pluripotent cells. Critically discuss the therapeutic potentiality of ICM. Add a note on amniocentesis. $2+5+3$

- (b) Elaborate the dynamics of retinal development of any vertebrate with labelled diagrams. Differentiate between homotypic exogenous induction and heterotypic exogenous induction in optic development. (5+3)+2
- (c) Define gastrulation. How is the primitive streak formed and take part in cellular movement during gastrulation of chick embryo? 2+4+4
- (d) What is polyspermy? Explain the mechanisms that prevent polyspermy in animals. 1+9
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