

**M. Sc. DEGREE END SEMESTER EXAMINATION : MARCH 2023****SEMESTER 2 : ZOOLOGY****COURSE : 21PZZOOT07 : DEVELOPMENTAL BIOLOGY***(For Regular - 2022 Admission and Supplementary - 2021 Admission)*

Duration : Three Hours

Max. Weights: 30

**PART A****Answer any 8 questions****Weight: 1**

1. Write a short note on  
a) umbilical stem cell b) neural stem cell (U)
  2. What happens if the bicoid gene in *Drosophila* is mutated? (An, CO 2)
  3. When did the initial axis specification in *Drosophila* happen? (U, CO 2)
  4. Comment on the different types of cleavage. (An, CO 1)
  5. Brief on different types of insect metamorphosis with examples. (An)
  6. What is Imaginal disc? (An, CO 5)
  7. Mention the role of Vitamin A as a teratogen. (An, CO 6)
  8. Discuss the ethical issues associated with ART. (E, CO 7)
  9. Recognize the role of BMP4 as a ventralizing factor. (A, CO 3)
  10. Define Spemann's organizer (R, CO 3)
- (1 x 8 = 8)**

**PART B****Answer any 6 questions****Weights: 2**

11. Write a short note on ethical issues associated with stem cells. (U, CO 8)
  12. Evaluate the advantages of *C. elegance* as a model organism. (E, CO 3)
  13. Reflect the role of P – granules in the development of *C. elegance*. (E, CO 3)
  14. Describe the biochemical processes involved in egg activation. (U, CO 1)
  15. Role of thyroid gland in Amphibian development (An)
  16. Explain how alcohol, drugs and chemicals act as teratogens. (An)
  17. Describe infertility in humans. (An, CO 7)
  18. What is grey crescent? Reflect on the role of grey crescent in developmental studies (A, CO 5)
- (2 x 6 = 12)**

**PART C****Answer any 2 questions****Weights: 5**

19. Elucidate the significance of *C.elegans* in developmental studies? (An, CO 1)
  20. Explain the process of gametogenesis highlighting the changes involved at molecular level. (An, CO 1)
  21. Elaborate on metamorphosis in amphibians. (An, CO 5)
  22. What is embryonic induction? Discuss the molecular mechanism behind the action of embryonic induction. (A, CO 3)
- (5 x 2 = 10)**

## OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1		An	4, 14, 19, 20	13
CO 2		An	2, 3	2
CO 3		U	9, 10, 12, 13, 22	11
CO 5		U	6, 18, 21	8
CO 6		An	7	1
CO 7		A	8, 17	3
CO 8		A	11	2

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;