

TM242601B

Reg. No :

Name :

MASTER'S DEGREE (C.S.S) EXAMINATION, MARCH 2024

2023 ADMISSIONS REGULAR

SEMESTER II - CORE COURSE ZOOLOGY

ZO2C06TM20 - Developmental Biology

Time : 3 Hours

Maximum Weight : 30

Part A

I. Answer any Eight questions. Each question carries 1 weight

(8x1=8)

1. Infer the significance of leydig cells.
2. Describe the characteristic features of morphogens. Quote examples.
3. Contrast between gap genes and hox genes.
4. Emphasize on realisor genes in Drosophila.
5. Discuss on any one transcription factor activated in the organizer.
6. Make a brief note on nieuwkoop centre.
7. Expand on metaplasia in regeneration.
8. Depict the cell – death pathway in mammals.
9. Define teratogens. Discuss the adverse effects of any one teratogen.
10. Explain teratogenesis with the help of examples.



Part B

II. Answer any Six questions. Each question carries 2 weight

(6x2=12)

11. Summarize the early development and axis specification in Caenorhabditis elegans.
12. Provide a brief account on potency of embryonic cells.
13. Briefly describe metamorphosis in insects.
14. Compose a brief note on hedgehog. Classify and infer its functions.
15. Demonstrate the mechanism by which the disheveled protein stabilizes β -catenin in the dorsal portion of the amphibian egg.
16. Enumerate the posteriorizing molecules that specify the trunk and tail tissues of the amphibian embryo.
17. A hierarchy of genes establish anterior – posterior polarity and divide a Drosophila embryo into a specific number of segments. Justify this statement.
18. Comment on pleiotrophy.

Part C

III. Answer any Two questions. Each question carries 5 weight

(2x5=10)

19. Elaborate on the development and maturation of a functional ovum.
20. Give a detailed account on the early development and axis specification in Drosophila.
21. Recall the molecular mechanisms of amphibian axis formation.
22. Signal transduction occur when specific proteins secreted by inducer cells bind to cell membrane receptors in competent responding cells. Substantiate this statement.