

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 8638

C

Roll No.....

Unique Paper Code : 223505

Name of the Paper : ZOHT-509 : Developmental Biology

Name of the Course : B.Sc. (Hons.) Zoology, Part – III

Semester : V

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper)

Attempt **Five** questions in all.

Question No 1 is compulsory.

1. a) Define the following:

- i) Blastocyst
- ii) Heteromorphosis
- iii) Area vasculosa
- iv) Capacitation
- v) Cleidoic egg

5

b) Distinguish between the following:

- i) Holometabolous and hemimetabolous insects
- ii) Epimorphic and morpholactic regeneration
- iii) Life span and life expectancy

6

c) State whether the following statements are true or false:

- i) In the male, meiosis follows sex cell differentiation.
- ii) Acrosomal tubule is formed by conversion of F- actins into G- actins.
- iii) Yolk is distributed in the amphibian oocyte asymmetrically with most of the yolk located in animal hemisphere.
- iv) Ecdysone hormone is released by prothoracic gland.
- v) Failure of closure of anterior region of neural tube results in anencephaly.

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d) Expand the following abbreviations:

- i) SOR
- ii) OHSS
- iii) DLHP
- iv) FAS
- v) HCG

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P.T.O.

- e) Match the following:
- | | | |
|----------------------------|--------------------------|---|
| i) Experimental embryology | a) Spemann and Mangold | |
| ii) Discoblastula | b) Programmed cell death | |
| iii) Neural induction | c) Hans Driesch | |
| iv) Death genes | d) Chick | |
| v) Regeneration in hydra | e) Walter Vogt | |
| vi) Fate map | f) Trembley | 3 |
- f) Name the germ layers from which the following are derived:
- | | |
|---------------------|---|
| i) Adrenal cortex | |
| ii) Liver | |
| iii) Stomodaeum | |
| iv) Urinary bladder | |
| v) Mesenteries | |
| vi) Hypophysis | 3 |
2. a) Discuss in detail oogenesis in mammals. 6
 b) Draw a neat labelled diagram of V.S. of hen's egg. 2
 c) Briefly describe the formation of neural tube in vertebrates 4
3. a) Explain the mechanisms employed by the oocyte to prevent polyspermy. 6
 b) Describe the hormonal control of amphibian metamorphosis. 6
4. a) Enumerate the characteristic features of chick gastrulation. Explain the migration of endodermal and mesodermal cells through the primitive streak. 6
 b) Why are extra embryonic membranes considered as adaptations to terrestrial mode of life? 2
 c) Draw a well labelled diagram of extra embryonic membranes in chick. Add a note on the composition of each of these membranes. 4
5. a) Describe the placenta of eutherian mammals based on the number of layers between maternal and fetal vascular system. 6
 b) With the help of suitable diagrams, explain regeneration of salamander limb. 6
6. a) Discuss the effect of chemicals and drugs on embryonic development. 6
 b) Explain the role of blastopore cells in embryonic induction. 4
 c) Differentiate between primary and secondary organizer. 2
7. Write short notes on any three of the following:
- | | |
|---|--------|
| a) Spermiogenesis | |
| b) Amniocentesis | |
| c) Fate maps | |
| d) Free radical and caloric restriction theories of aging | |
| e) <i>In vitro</i> fertilization | 4,4,4. |