

This question paper contains 3 printed pages]

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S. No. of Question Paper : 1395

Unique Paper Code : 2231504

F-7

Name of the Paper : Developmental Biology

Name of the Course : B.Sc. (Hons.) Zoology-Erstwhile FYUP

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 terms :

5

- (i) Vitellogenesis
- (ii) Epigenesis
- (iii) Competence
- (iv) Amphimixis
- (v) Differential gene expression.

(b) Distinguish between the following :

8

- (i) Splanchnopleure and somatopleure
- (ii) Invagination and involution
- (iii) Allograft and xenograft
- (iv) Fertilizin and antifertilizin.

P.T.O.

- (c) Indicate the exact location of each of the following : 4
- (i) Corona radiata
 - (ii) Manchette
 - (iii) Koller's sickle
 - (iv) Nucleus of Pander.
- (d) Give the scientific contribution of each of the following : 4
- (i) Ernst Haeckel
 - (ii) F.R. Lillie
 - (iii) Abraham Tremblay
 - (iv) W. Lenz.
- (e) Expand the following : 4
- (i) ART
 - (ii) GVBD
 - (iii) TGF
 - (iv) ICM.
- (f) Name the germ layer from which each of the following are derived : 2
- (i) Tooth enamel
 - (ii) Lens of the eye
 - (iii) Lungs
 - (iv) Adrenal cortex.
2. (a) Discuss the formation and regression of primitive streak in avian development. Illustrate your answer with the help of diagrams. What is the significance of primitive streak ? 7
- (b) Write a note on methods of construction and significance of fate maps. Draw a well-labelled diagram of fate map of frog. 5

3. (a) Describe the structure of a mature mammalian sperm. How is it formed from a spermatogonial cell ? 8
- (b) How does a mammalian egg safeguard itself from polyspermy ? 4
4. Describe the different types of placenta on the basis of morphology and histology. Add a note on functions of placenta. 12
5. (a) List the various changes involved in transformation of a tadpole into an adult frog. 7
- (b) How is epimorphosis different from morphallaxis ? Explain the mechanism of regeneration of limb in salamander. 5
6. (a) What is progeria ? How are different organisms used as models to study ageing ? Discuss any *three*. 7
- (b) Differentiate between embryonic and adult stem cells. Write a note on culture of stem cells. 5
7. Write short notes on any *three* of the following : 4,4,4
- (a) Tertiary egg membranes
- (b) Amniocentesis
- (c) Primary organizer
- (d) Significance of extra-embryonic membranes
- (e) Teratogens.