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3 (Sem-6/CBCS) ZOO HC 1

2022

ZOOLOGY

(Honours)

Paper : ZOO-HC-6016

(**Developmental Biology**)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer of the following :
(any seven) 1×7=7

(a) Rolling of sheet of cells over other cells during gastrulation is called as :

- (i) Involution
- (ii) Ingression
- (iii) Epiboly
- (iv) Invagination

Contd.

- (b) Embryonic stem cells are derived from
- (i) Undifferentiated inner mass of cells of embryo
 - (ii) Differentiated inner mass of cells of embryo
 - (iii) Undifferentiated trophoblast cells
 - (iv) Differentiated trophoblast cells
- (c) The only cell that can give rise to a complete new organism is
- (i) Pluripotent
 - (ii) Multipotent
 - (iii) Totipotent
 - (iv) Corticopotent
- (d) In case of chick development, primary organizer is called
- (i) Hensen's node
 - (ii) Dorsal lip of blastopore
 - (iii) Nieuwkoop centre
 - (iv) Primitive groove

- (e) The type of regeneration found in hydra is
- (i) Morphallaxis
 - (ii) Epimorphosis
 - (iii) Regeneration
 - (iv) Healing
- (f) In developmental biology, morula is _____ cell stage
- (i) 8 cell
 - (ii) 16 cell
 - (iii) 32 cell
 - (iv) Mass of cells
- (g) In frog, cleavage is
- (i) Holoblastic and equal
 - (ii) Holoblastic and unequal
 - (iii) Meroblastic and unequal
 - (iv) Meroblastic and discoidal

(h) The incubation period in chick tastes for about

(i) 11 days

(ii) 21 days

(iii) 24 days

(iv) 31 days

(i) The type of cleavage found in insect is

(i) Meroblastic

(ii) Discoidal

(iii) Superficial

(iv) Holoblastic

(j) The process in which the three germ layers form is called

(i) Cleavage

(ii) Gastrulation

(iii) Organogenesis

(iv) Metamorphosis

2. Write short notes on **any four** of the following: $2 \times 4 = 8$

(a) Stable cell interaction

(b) Homolecithal eggs

(c) Disco blastula

(d) Zonary placenta

(e) Frozen embryo

(f) Totipotent stem cells

(g) Meridional plane of cleavage

(h) Primary egg membrane

3. Answer **any three** of the following : $5 \times 3 = 15$

(a) Describe briefly the differential gene expression.

(b) Describe the process of spermatogenesis.

(c) Describe different types of egg with example.

(d) What are the fate of germ layers ?

(e) Types of placenta.

(f) Describe the metamorphic changes found in amphibians.

(g) Teratogenic agents.

(h) Biological theories of Aging.

4. Answer **any three** of the following :

10×3=30

(i) What is pattern formation ? Describe the process of patterning along the anterior-posterior axis of *Drosophila* embryo.

2+8=10

(ii) What is cytoplasmic determinant ? Describe the process of asymmetric segregation of cellular determinants.

2+8=10

(iii) Describe the mechanism of fertilization with labelled diagram.

7+3=10

(iv) Describe the process of early development of chick up to gastrulation.

10

(v) What is fate map ? Describe the fate map of a typical chordate blastula.

3+7=10

(vi) Describe the process of implantation of human embryo. 10

(vii) What is regeneration ? Describe the morphallactic regeneration found in *Hydra*. 2+8=10

(viii) What is IVF ? Describe the technique used in IVF. 2+8=10
