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3 (Sem-6/CBCS) ZOO HC 1

2023

ZOOLOGY

(Honours Core)

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 :
1×7=7

(a) In humans, fertilization occurs in

- (i) vagina
- (ii) ovary
- (iii) fallopian tube
- (iv) uterus

Contd.

- (b) Meroblastic cleavage is also known as
- (i) partial
 - (ii) unequal holoblastic
 - (iii) equal holoblastic
 - (iv) superficial
- (c) Mesoderm gives rise to all the structures except
- (i) gonads
 - (ii) circulatory system
 - (iii) nervous system
 - (iv) muscular system
- (d) In mammalian development, the embryo will form from
- (i) the blastocyst
 - (ii) the inner cell mass
 - (iii) the trophectoderm
 - (iv) the blastocoel
- (e) The process by which extracellular messages translate into intracellular changes is termed as
- (i) cell signalling
 - (ii) cell adhesion
 - (iii) signal transduction
 - (iv) cell transformation

- (f) In mammalian sperm, spirally arranged mitochondria are present in
- (i) head portion
 - (ii) end piece of the tail
 - (iii) middle piece
 - (iv) principal piece of the tail
- (g) In mammalian gonads, germ cells are produced by
- (i) only mitosis
 - (ii) only meiosis
 - (iii) Both mitosis and meiosis
 - (iv) Without mitosis and meiosis

2. Write short notes on : 2×4=8
- (a) Pluripotent cells
 - (b) Amphiblastula
 - (c) Radial cleavage
 - (d) Importance of fate map
3. Answer **any three** of the following : 5×3=15
- (a) Describe the process of pattern formation.
 - (b) Application of Amniocentesis
 - (c) Describe the regional specificity of induction.
 - (d) Describe the process of construction of fate map by natural marking.

(e) Classify stem cells based on differentiation potential.

4. (a) What is cell-cell interaction ? Describe stable cell interactions with labelled diagram. $1+9=10$

Or

(b) What is the importance of asymmetric segregation of cellular determinants ? Describe the process with diagram.

$2+8=10$

5. (a) Describe the process of gastrulation in chick embryo development with diagram. $6+4=10$

Or

(b) Describe the process of complete metamorphosis in insect. Write the role of hormone involved in insect metamorphosis. $5+5=10$

6. (a) Describe the structure of human placenta with diagram. Mention the functions of placenta. $6+4=10$

Or

(b) Describe the process of Morphallactic regeneration in Hydra with diagram.

$8+2=10$