BRAINWARE UNIVERSITY

Term End Examination 2018 - 19

Programme – Bachelor of Science (Honours) in Biotechnology
Course Name – Developmental Biology (Generic Elective – Zoology1)
Course Code – BBTH010501

(Semester – 1)

Time allotted: 3 Hours **Full Marks: 70**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question) 10 x 1 = 10

1. *Choose the correct alternative from the following*

(i) Which of the following act as teratogen?

a) Aminopterin. b) Alcohol at high level.

c) Methotrexate. d) All of the above.

(ii) The experiments of Spemann and Mangold first defined what feature of amphibian embryos?

a) The zygote. b) The neural tube.

c) The blastopore. d) The organizer.

(iii) Epimorphosis is regeneration through;

a) Repatterning of existing cells, as occurs in Hydra.

b) The reinitiation of division in existing cells, followed by patterning, as occurs in Hydra.

c) The formation of blastema, followed by patterning, as occurs in amphibians.

d) Repatterning of existing cells, as occurs in amphibians.

(iv) Which of the following is the derivative of endodermal germ layer?

a) Heart. b) Pancreas.

c) Muscle. d) Kidney.

(v) Which structure of the amphibian embryo is intimately related to the Spemann Organizer?

a) Dorsal lip of blastoporl
b) Archenteron
c) Ventral lip.
d) None of these

(vi) Aves generally bear egg of which kind?

a) Alecithal.
b) Mesolecithal.
c) Microlecithal.
d) Macrolecithal.

(vii) Which of the following hormone(s) is(are) secreted from placenta?

a. Estrogen.
b. Progesterone.
c. Human Chorionic gonadotrophin (hCG).
d. All of the above.

(viii) Which of the followings is used as a vertebrate model organism in developmental biology study?

a) Drosophila.
b) Starfish.
c) Arabidopsis.
d) Zebrafish.

(ix) Which one of the followings is the example of a juxtacrine signaling?

e) Notch signaling.
f) Hedgehog signaling.
g) FGF signaling.
h) Wnt signaling.

(x) Which of the following is NOT a characteristic of stem cells?

a) They are different types, depending on their location.
a) They differentiate into different cell types.
b) All of your adult cells are stem cells.
c) They go through a process of self-renewal.

Group – B

(Short Answer Type Questions) 3 x 5 = 15

Answer any *three* from the following

2. Describe the process of gastrulation in frog with a diagram. 4+1
3. With Diagram explain acrosomal reaction in Sea Urchin. 5
4. State the differences between- teratogen and carcinogen with 1 example of each. 3+2
5. What do you mean by organizer? What are the differences between Primary, Secondary and Tertiary Organizer? 2+3
6. What are the various components of signal transduction process? Explain with an appropriate example. 3+2

Group – C

(Long Answer Type Questions) 3 x 15 = 45

Answer any *three* from the following

7. (a) What is spermiogenesis? 2
   (b) Compare and contrast both spermatogenesis and oogenesis. 6
   (c) With labeled diagram give an account of the structure of a sperm. 4+2
   (d) What is acrosome? 1
8. (a) i) State the differences between – Radial and spiral cleavage.
   ii) What is the role of yolk in cleavage? 3+5
   (b) i) How prevention of polyspermy occurs?
   ii) Name a dye used in construction of fate map. 5+2
9. (a) i) State the differences between- Epiboly and emboly.
   ii) State the role of morphogenetic movements occurs in gastrulation of frog. 2+5
   (b) i) What is Hensen's node?
   ii) Add a note on- pre-gastrulatory event in chick gastrulation. 2+6
10. (a) What is meant by morphallactic regeneration? 3
    (b) Describe the process of regeneration in Hydra with proper diagram. 10
    (c) Define blastema. 2
11. (a) i) What are the significances of in-vitro fertilization (IVF)?
    ii) Describe the steps of IVF. 2+4
    (b) What do you mean by specification and determination? 2
    (c) What is amniocentesis? 2
    (d) Write down the characteristic of stem cells. 3+2
