

B.Sc. BIOTECHNOLOGY
Third Semester
DEVELOPMENTAL BIOLOGY
(BBT - 13)

Duration: 3Hrs.

Full Marks: 70

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

Answer any *five* of the following questions

1. Describe the process of spermatogenesis. (10)
2. Describe the process of fertilization. (10)
3. What do you mean by blastulation? Write about the blastulation in different types of eggs on the basis of amount of yolk. (10)
4. Describe the process of megasporogenesis along with a neat diagram. (10)
5. Describe the process of germination of pollen and course of pollen tube. How the fertilization occurs after that, write briefly. (10)
6. What do you understand by germination of seeds? What are the factor(s) that affect in germination of seeds? (10)
7. What is parthenogenesis? Describe briefly about different types of natural parthenogenesis. (10)
8. Describe molecular basis of cell differentiation. (10)

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Duration: 20 minutes

Marks – 20

(PART A - Objective Type)

I. Choose the correct answer:

1×10=10

- i. Formation of sperms is known as:
(a) oogenesis (b) spermatogenesis
(c) spermatophytes (d) oogonia
- ii. Which of the following is secreted by egg?
(a) Fertilizin (b) Antifertilizin
(c) Auxin (d) None of the above
- iii. Which of the following is a phase of oogenesis?
(a) Multiplication phase (b) Growth phase
(c) Maturation phase (d) All of the above
- iv. Amphimixis is:
(a) the fusion of male and female pronuclei.
(b) movement sperm towards the egg.
(c) secretion of fertilizin by sperm.
(d) secretion of antifertilizin by egg.
- v. When more than one sperm fertilizes the ovum then it is known as:
(a) polygamy (b) polyclonal
(c) polyspermy (d) none of the above
- vi. Zonapellucida is a membrane of the *Colisha fasciatus*:
(a) egg (b) sperm
(c) zygote (d) none of the above
- vii. Zonapellucida is a membrane of the *Colisha fasciatus*:
(a) zygote-embryo-morula-blastula-gastrula.
(b) embryo-zygote-morula-blastula-gastrula.
(c) embryo-zygote-morula-gastrula-blastula.
(d) zygote-embryo-blastula-morula-gastrula.
- viii. Honeybees show:
(a) haploid parthenogenesis (b) diploid parthenogenesis
(c) artificial parthenogenesis (d) none of the above

ix. Micromere is present in _____ half of the zygote.

- (a) animal (b) vegetal
(c) both a & b (d) none of the above

x. Nervous system is formed from:

- (a) ectoderm (b) mesoderm
(c) endoderm (d) none of the above

II. Match the following:

1×5=5

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|--------------------|------------------|
| 1) parthenogenesis | a) plants |
| 2) apomixis | b) mitosis |
| 3) antifertilizin | c) ectoderm |
| 4) cleavage | d) honeybee |
| 5) ectoderm | e) female gamete |

III. State true or false:

1×5=5

- a) Primarily endosperm nucleus is triploid.
b) Sperms and eggs are diploid.
c) During seed germination seed coat becomes permeable to gases like oxygen and carbon dioxide.
d) Excretory system is formed from mesoderm.
e) Hypogeal type of germination is seen in mango.
