

**B.Sc. BIOTECHNOLOGY
SECOND SEMESTER (REPEAT)
DEVELOPMENTAL BIOLOGY
BBT-204**

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

- Middle piece of mammalian sperm possesses:
 - Mitochondria and centriole
 - Mitochondria only
 - Centriole only
 - Nucleus and mitochondria
- In developmental biology, what is meant by concept of "growth"?
 - Cell increase in size
 - Cell number increase by division
 - Cell death
 - All of the above
- In early developmental stage, the sperm entry in egg takes place in:
 - Animal hemisphere
 - Vegetal hemisphere
 - Bipolar region
 - Grey crescent
- In embryogenesis, which germ layer gives rise to the reproductive system?
 - Ectoderm
 - Mesoderm
 - Endoderm
 - Blastoderm
- Double fertilization is characteristics of:
 - Gymnosperms
 - Angiosperms
 - Monocots
 - Bryophytes
- Monosporic eight nucleated female gametophyte is found in:
 - Adoxa
 - Onion
 - Fritillaria
 - Polygonum
- In flowering plants meiosis occurs at the time of:
 - Germination of seed
 - Formation of buds
 - Formation of root primordial
 - Formation of pollen grains
- Cleavage starts after fertilization in:
 - Fallopian tube
 - Uterus
 - Vestibule
 - Clitoris
- In oogamy, fertilization involves:
 - A small non-motile female gamete and a large motile male gamete
 - A large non-motile female gamete and a small motile male gamete
 - A large non-motile female gamete and a small non-motile male gamete
 - A large motile female gamete and a small non-motile male gamete
- The process in which a cell changes from one cell type to another is:
 - Cell lineage
 - Cellular apoptosis
 - Cellular differentiation
 - Cell division

11. During development, if a cell has committed to a particular fate, it is said to be:
- a. Pluripotent
 - b. Totipotent
 - c. Determined
 - d. Differentiated
12. The germ layers are derived from:
- a. Trophoblast
 - b. Inner cell mass
 - c. Formative cells
 - d. Follicle cells
13. Which of the following cells would be considered differentiated?
- a. Stem cell
 - b. Blastomere
 - c. Spemann organizer
 - d. Muscle cell
14. Which among the following cell form the dorsal lip?
- a. Hypoblast
 - b. Epiblast
 - c. Guide cell
 - d. Archenteron
15. In terms of the cellular polarity, the entry of sperm in the animal hemisphere is considered as:
- a. Dorsal
 - b. Proximal
 - c. Ventral
 - d. Distal
16. Conversion of spermatids into sperms is:
- a. Spermiogenesis
 - b. Spermatogenesis
 - c. Gametogenesis
 - d. Metamorphosis
17. In flowering plants, the free nuclear divisions takes place during:
- a. Gamete formation
 - b. Flower formation
 - c. Endosperm formation
 - d. Embryo formation
18. The fluid cavity in the blastulation stage is known as:
- a. Amniotic cavity
 - b. Epiblast
 - c. Blastula
 - d. Hypoblast
19. Archenteron is known as:
- a. Primitive gut
 - b. Blastocoel
 - c. Coelom
 - d. Alimentary canal
20. Immediate after ovulation, the mammalian egg is covered by a layer which get disrupted later by sperm is:
- a. Chorion
 - b. Zona pelucida
 - c. Corona radiata
 - d. Vitelline membrane

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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. a) What do you mean by double fertilization? Explain in terms of its polygonum state. 6+4=10
b) Explain the terminology:
 - i) 8- nucleated cells
 - ii) Nucellus
 - iii) Integument
 - iv) Endosperm
2. Elaborate briefly with suitable diagrams the development of male gametophyte with pollen tube formation. 10
3. a) Explain the formation of mesodermal layer. 3+7=10
b) Explain briefly Spermatogenesis and Oogenesis.
4. a) Who is known as father of experimental embryology? 2+8=10
b) Explain their contribution in terms of early experimental embryology.
5. Discuss various types of sperm and elaborate the structure of a matured mammalian sperm with a suitable diagram. 10
6. a) What do you mean by Polyspermy? 2+8=10
b) Explain different methods to prevent Polyspermy.
7. a) Explain briefly the term morphogenesis in relevant to bicoid protein. 6+4=10
b) Briefly discuss the terminology:
 - a) Oligopotency
 - b) Totipotency
 - c) Syntial specification
 - d) Determination
8. What is fertilization? What is the role of the following in fertilization: 10
 - a) Acrosome
 - b) Egg
 - c) Zona of pellucida
 - d) Vitelline membrane

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