

**M.Sc. ZOOLOGY**  
**SECOND SEMESTER**  
**DEVELOPMENTAL & REPRODUCTIVE BIOLOGY**  
**MSZ – 201**

( Use Separate Answer Scripts for Objective & Descriptive )

Duration: 3 hrs.

Full Marks: 70

[ PART-A: Objective ]

Time: 20 min.

Marks: 20

*Choose the correct answer from the following:*

*1X20=20*

- As soon as the embryo get embedded into the endometrium, then endometrium is called
  - Decidua
  - Placenta
  - Stratum functionalis
  - Stratum basalis
- The stage in which Blastocyst get release from Zona pellucida is called-
  - Hatching
  - Adplantation
  - Adhesion
  - Invasion
- Which one of the following foetal membranes establishes contact between maternal part and foetal part of placenta?
  - Amnion
  - Allantois
  - Chorion
  - All of the above
- Before formation of placenta, who secretes progesterone?
  - Anterior pituitary
  - Posterior pituitary
  - Decidua
  - Corpus luteum
- Lactation is inhibited before child birth due to the increased level of -
  - Estrogen
  - Progesterone
  - Oxytocin
  - Prolactin
- The inductor causes induction by liberating a chemical substance called
  - Inductor
  - Evocator
  - Modulator
  - None of the above
- In amphibian embryos , the dorsal ectodermal cells in the mid -longitudinal region differentiate to form a neural plate, only when the chorda mesoderm is
  - Below it
  - Above it
  - Laterally dorsal to it
  - Dorsal to it
- Fertilization of the egg by the sperm is the first step in the process of
  - Oogenesis
  - Blastogenesis
  - Embryogenesis
  - None of the above
- Process of removal of nucleus from cell is
  - Translocation
  - Enucleation
  - Degranulation
  - Hybridization

10. In rare cases fertility drugs may cause ovarian hyperstimulation syndrome (OHSS). This builds up fluid in
- |                      |           |
|----------------------|-----------|
| a. Abdomen and chest | b. Kidney |
| c. Heart             | d. Liver  |
11. Fertilizin is a chemical substance produced from
- |                 |                          |
|-----------------|--------------------------|
| a. Mature eggs  | b. Acrosome              |
| c. Polar bodies | d. Middle piece of sperm |
12. For GIFT to be suitable woman must have
- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| a. At least one normal fallopian tube | b. A Uterus and three fallopian tube |
| c. Epididymis                         | d. All of the above                  |
13. In vitro fertilization differs from natural fertilization in a way that
- |   |                                      |
|---|--------------------------------------|
| a. In IVF sperm and egg unite outside the body    | b. In IVF the egg is already fertile |
| c. In IVF a single sperm fertilizes multiple eggs | d. It is similar to cloning          |
14. Thyroid cells are derived from embryonic-----
- |             |                |
|-------------|----------------|
| a. Ectoderm | b. Mesoderm    |
| c. Endoderm | d. Archenteron |
15. Which one of the following is not a morphogen?
- |                  |                   |
|------------------|-------------------|
| a. Calmodulin    | b. Wnt            |
| c. Retinoic acid | d. Sonic hedgehog |
16. The protein which is displaced by the signaling effect of Wnt to express Wnt responsive gene in DNA is -----
- |                        |           |
|------------------------|-----------|
| a. Dishevelled protein | b. GROCHO |
| c. GSK-3               | d. Axin   |
17. Number of small units in Extracellular domain of a cadherin molecule is
- |      |      |
|------|------|
| a. 3 | b. 4 |
| c. 5 | d. 6 |
18. Which ions are essential for binding of EC-domains of two cadherin molecule -
- |                     |                     |
|---------------------|---------------------|
| a. Na <sup>+</sup>  | b. K <sup>+</sup>   |
| c. Mg <sup>++</sup> | d. Ca <sup>++</sup> |
19. Select the protein which is not related to axes formation in drosophila
- |           |             |
|-----------|-------------|
| a. Dorsal | b. Pipe     |
| c. Cactus | d. Frizzled |
20. Select the energy source for nuclear import process
- |        |        |
|--------|--------|
| a. ATP | b. GTP |
| c. CTP | d. TTP |

**( PART-B : Descriptive )**

Time : 2 hrs. 40 min.

Marks : 50

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

1. Describe the process of vulva formation in *Caenorhabditis elegans* 10
2. In the light of the modern concept discuss the process of In vitro Fertilization (IVF) 10
3. Discuss the salient features of Intra Cytoplasmic Sperm Injection (ICSI) 10
4. In the light of the modern concept discuss the process of In vitro Fertilization (IVF). 10
5. Discuss briefly the GIFT process with suitable examples 10
6. Write about the placental hormones with their functions. 10
7. Describe the structure and development of endometrium. 5+5=10
8. Mention the maternal and zygotic and zygotic genes which are involved in pattern and compartment formation in *Drosophila*. Explain the role of zygotic genes in pattern formation process. 3+7=10

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