Bago University
Department of Zoology
First Semester Examination, March 2019

Fourth Year BSc **Zool. 4105**
(Zoology Specialization) **Embryology I**
Answer ALL questions **Time Allowed: (3) Hours**

I. State TRUE or FALSE to the following statements. **(10 marks)**

1. Events during the metaphase stage of mitosis can be divided into three phases.
2. Primary oocytes do not complete the prophase of the second meiotic division.
3. In domestic carnivores it may take up to six days for oocytes to reach the uterus.
4. The blastomeres at the animal pole divide more quickly than those at the vegetal pole.
5. In mammals, the blastocyst cavity is the equivalent of an empty yolk sac cavity.
6. Methylation occurs in imprinting control regions in one of the parental alleles.
7. Rodents are only mammals from which true pluripotent stem cells have been derived.
8. Tyrosine kinase is an enzyme which has the ability to phosphory late target proteins.
9. At the end of gastrulation, the embryonic mesoderm consists of two regions.
10. Cell migration is a complex process exhibited by numerous cell types.

II. Complete the following statements with appropriate words. **(10 marks)**

1. The first stage of mitosis is -------.
2. The nuclei of somatic cells of each mammalian species have a defined number of ------.
3. Two forms of congenital diaphragmatic herniation occur in ----- animals.
4. The Karyotype is ----- for somatic cells of individuals within a species.
5. The zona pellucida located between the vitelline membrane of the oocyte and the ----- cells.
6. The efficiency of defence mechanisms against ------ differs among domestic species.
7. In Drosophila, the ------ genes are well characterized in this insect.
8. Two types of chromatin are heterochromatin and -------.
9. All cells in the adult mammalian body derived from the --------.
10. Progenitor cells belong to a category of cells related to ------ cells.

III. Answer ALL questions **(10 marks)**

1. Write a short note on anaphase in the stage of mitosis.
2. Describe briefly on karyotype.
3. State the consenquences of cell signaling.
4. Describe about the steroid receptor family.
5. State the establishment of the basic body plan.

IV. Answer ALL questions **(20 marks)**

1. Explain precisely on anaphase I during the first meiotic division.
2. Describe in detail division of the fertilized oocyte.
3. Write an interesting account on endocrine signaling with an illustration.
4. Describe the stem cells in domestic animals.

V. Answer ANY THREE questions **(30 marks)**

1. Discuss precisely on consequence of non-disfunction of chromosomes during meiosis.
2. Write an account on the zona reaction with appropriate diagram.
3. Explain the pattern of gastrulation in in *Amphioxus*.
4. Give an explanation on the signal regulation during development.
5. Explain the stem cells in adult mammals.
6. Write an essay on the peritoneal cavity.

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