**Biology 12 – Chapter 39-4 Fertilization and Development ASSIGNMENT**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ January 15, 2017 DUE DATE: January 17, 2017**

**PART A – Fill in the blanks – Value 20**

1. The process of a sperm joining an egg is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. Gametes (sperm/egg) are referred to as this type of cell or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (N) cells.

3. The result of gastrulation is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. The main function of the placenta is the provide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the developing fetus.

5. A characteristic of infancy include the appearance of \_\_\_\_\_\_\_\_\_\_\_\_\_\_,

6. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the organ in which gastrulation occurs.

7. The endoderm forms the lining and many organs of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ system

8. The placenta connects the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the mother’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the stage of the human life cycle which occurs first.

10. A problem with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can disrupt an embryo’s respiration, nourishment, and excretion.

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11. The outer layer of the egg is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. Four days after fertilization, the embryo is a solid ball of about 64 cells called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

13. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ layer of the germ layer produces the body’s internal tissues and organs.

14. After eight weeks (or at nine week mark), the embryo is referred to as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

15. The average pregnancy last approximately \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ months or 40 weeks or 266 days.

16. During the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ trimester the developing fetus grows from 500 g to 3500 g and over 50 cm.

17. This hormone called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ brings on the contractions of labour.

18. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ develops into a fluid-filled amniotic sac, which cushions and protects the developing embryo within the uterus.

19. Within a few hours after birth, the pituitary hormone \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stimulates the production of milk in the breast tissues of the mother.

**PART B – TRUE OR FALSE – Value 20**

1. ( TRUE / FALSE ) A haploid cell contains a set of chromosomes from each parent cell.
2. ( TRUE / FALSE ) If an egg is fertilized, a zygote forms and begins to undergo cell division or meiosis as it travels to the uterus.
3. ( TRUE / FALSE ) During gastrulation, three cell layers are formed which then give rise to a fourth layer.
4. ( TRUE / FALSE ) A zygote is a solid ball of about 64 cells.
5. ( TRUE / FALSE ) During the fourth, fifth, and sixth month after fertilization the tissues of the fetus become more complex, specialized and begin to function, the fetal heart becomes large enough to be heard (with a stethoscope), and bones continues to replace cartilage that form the early skeleton.
6. ( TRUE / FALSE ) The blood of the mother and that of the embryo flow past each other, but they do not mix.

1. ( TRUE / FALSE ) Small, fingerlike projections called chorionic villi form on the outer surface of the chorion and extend into the uterine lining.
2. ( TRUE / FALSE ) The placenta allows the embryo to make use of the mother’s organ systems while its own are developing.

1. ( TRUE / FALSE ) The umbilical cord is the connection between the mother and the developing embryo or fetus.
2. ( TRUE / FALSE ) The aging process can be slowed by keeping one’s mind active and challenged.
3. ( TRUE / FALSE ) The placenta is made of two layers, chorionic villi (fetal portion) and the uterine lining (maternal portion).
4. ( TRUE / FALSE ) The placenta prevents harmful substances from crossing and harming the developing embryo or fetus.
5. ( TRUE / FALSE ) Differentiation is a specialized process responsible for the development of the various tissue in the body.
6. ( TRUE / FALSE ) A cluster of cells, known as the inner cell mass, develops within the inner cavity of the morula.
7. ( TRUE / FALSE ) As the notochord develops, the neural groove changes shape, producing a pair of ridges, or neural folds which move together to create the neural tube (from which the spinal cord and the brain develop).
8. ( TRUE / FALSE ) During infancy language is acquired, motor coordination is perfected, and the long bones of the skeletal system reaches 80 percent of his/her adult length.
9. ( TRUE / FALSE ) The stages of human development, in the correct order, is infancy, childhood, adolescence, and adulthood.
10. ( TRUE / FALSE ) The process of fertilization is when a sperm attaches to a binding site on the egg and a sac in the sperm head releases enzymes that attack the egg’s protective layer, then the nuclei of the sperm merges with the eggs nuclei once it enters the egg.
11. ( TRUE / FALSE ) The ectoderm forms the lining of the digestive system and many digestive organs (liver, pancreas, digestive and respiratory tract).
12. ( TRUE / FALSE ) The endoderm will develop into the skin and central nervous system (hair, teeth, brain, peripheral nerves, eye, and ear components).

**PART C – FILL IN THE BLANKS – Value 30**

1. The development of a zygote from fertilization through implantation begins when the cell undergoes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or the process of cell division as it passes through the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tube from a \_\_\_\_\_\_\_\_\_ celled embryo on day \_\_\_\_\_to a solid \_\_\_\_\_\_\_\_ cell called a \_\_\_\_\_\_\_\_\_\_\_ on day \_\_\_\_\_\_. As the embryo grows, a fluid filled cavity forms in the center, transforming into a hollow \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in which about \_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_ days after fertilization, it implants into the wall of the uterus (implantation). **(10 pts.)**
2. Many sperm will take the same path toward fertilizing an egg. What prevents more than one sperm from fertilizing an egg is that the cell contains a series of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ just \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ its outer surface. When a \_\_\_\_\_\_\_\_\_\_\_\_ sperm enters the egg, the egg reacts by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the contents of these granules outside the cell coating the surface of the egg, forming a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that prevents other sperm from attaching to and entering the egg **(5 pts.)**
3. During the last three months of fetal development the fetus \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in mass, and the lungs and other organs undergo changes to prepare them for life outside the uterus. **(1 pt.)**
4. Adults reach their highest levels of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ strength and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between the ages of 25 and 35. **(2 pts.)**
5. The first signs of physiological aging appear in most individuals in their \_\_\_\_\_\_\_\_\_. **(1 pt.)**
6. Reasoning skills are not developed until \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. **(1 pt.)**
7. If two eggs are released and fertilized by two different sperm, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ twins result. **(1 pt.)**
8. If a single zygote splits apart to produce two embryos, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_twins result. **(1 pt.)**
9. Indicate to which of the four stages of the human life cycle or development (**A** - infancy, **B** - childhood, **C** - adolescence, and **D** - adulthood) **USING THE LETTERS PROVIDED** for each of the following occurs in. **(8 pts.)**
10. \_\_\_\_\_\_\_\_\_\_ Elongated bones of the arms and legs eventually stops growing.
11. \_\_\_\_\_\_\_\_\_\_ Permanent teeth begin to appear, key elements of personality and human social skills are developed, and reasoning skills are developed to a high level.
12. \_\_\_\_\_\_\_\_\_\_ Individual will first crawl then begin to walk, and is considered a period of rapid growth and development.
13. \_\_\_\_\_\_\_\_\_\_ Individual reaches their highest level of physical strength and development.
14. \_\_\_\_\_\_\_\_\_\_ First signs of physiological aging occurs.
15. \_\_\_\_\_\_\_\_\_\_ Menopause for women occurs during this stage of development.
16. \_\_\_\_\_\_\_\_\_\_ Use of language, first teeth appear, growth of skeletal and muscular systems is rapid.
17. \_\_\_\_\_\_\_\_\_\_ Usually lasts from infancy until the onset of puberty (typically between the age of 12 or 13), individual becomes more active and independent, language is acquired, and motor coordination is perfected.

**TOTAL VALUE 70**