

December 2008 Cat I 123 (Embryology)

The answers are show in “bold”

1. Concerning the embryonic disc, choose the incorrect statement:

- a. Appearance of the primitive streak is the first sign of gastrulation.
- b. The ectoderm and endoderm are fused in the region of oropharyngeal and cloacal membranes.
- c. Notochord is developed from the cells of the primitive pit.
- d. Notochord gives rise to vertebral column.**
- e. The primitive streak usually degenerates by the end of the 4th week.

2. Regarding implantation, choose the correct statement:

- a. It normally occurs in the lower segment of the body of the uterus.
- b. It starts by the second day after fertilization.
- c. It is preceded by the degeneration of the zona pellucida.**
- d. It involves the whole thickness of the endometrium.
- e. It is completed by the 7th day.

3. Regarding ovulation, choose the incorrect statement:

- a. The ovum is extruded out of the mature ovarian follicle.
- b. It usually occurs on the 14th day of the ovarian cycle.
- c. It occurs in both ovaries at the same time.**
- d. It occurs due to high level of luteinizing hormone in the blood.
- e. It is generally associated with a slight rise in the body temperature.

4. Regarding the corpus luteum, choose the incorrect statement:

- a. It is the remnant of the ruptured ovarian follicle.
- b. It secretes progesterone and some estrogen.
- c. If fertilization does not occur, it degenerates within 10 - 12 days.
- d. It is the main source of progesterone in the first 4 months of pregnancy.
- e. It is responsible for the proliferative phase of the uterine cycle.**

5. Regarding oogenesis, choose the incorrect statement:

- a. Maturation process of oogonia starts before birth.
- b. No oogonia are found in the ovary after birth.
- c. The female gametes contain 46 chromosomes.**
- d. Primary oocyte is surrounded by a glycoprotein layer called zona pellucida.
- e. Second maturation division is only completed if fertilization does occur.

6. One primary spermatocyte will give rise to:

- a. 2 spermatids.
- b. 3 sperm.
- c. One sperm.
- d. 4 sperms.**
- e. 2 sperms and 2 spermatids.

7. Regarding fertilization, choose the false statement:

- a. **It normally occurs in the body of the uterus near the fundus.**
- b. It results in the formation of a diploid cell.
- c. It has to occur within 24 hours after ovulation.
- d. It initiates the division (cleavage) of the zygote.
- e. Fusion of oocyte with Y bearing sperm produces a male zygote.

8. In the bilaminar germ disc:

- a. Epiblast is a layer of small cuboidal cells.
- b. Hypoblast lies in the floor of the amniotic cavity.
- c. **The prechordal plate is a localized thickening of the hypoblast.**
- d. Epiblast lies in the roof of the yolk sac.
- e. Epiblast is continuous with the exocoelomic membrane.

9. Sacrococcygeal teratoma arises from the remnants of:

- a. **Primitive streak.**
- b. Prechordal plate.
- c. Cloacal membrane.
- d. Notochord.
- e. Primitive node.

10. Regarding the notochord, choose the false statement:

- a. It develops from the cells in the primitive node and pit.
- b. It extends from the primitive node to the prechordal plate.
- c. **It gives rise to the neural tube.**
- d. It gives rise to the nucleus pulposus of the intervertebral disc.
- e. Its remnants may give rise to chordomas.

11. The following are the derivatives of the ectoderm, EXCEPT:

- a. Epidermis of the skin.
- b. Nails.
- c. Central nervous system.
- d. Retina of the eye.
- e. **Blood cells.**

12. All of the following mesodermal derivatives, EXCEPT:

- a. Bones.
- b. Kidneys.
- c. Skeletal muscles.
- d. **Enamel of teeth.**
- e. Spleen.

13. The primitive streak:

- a. It is formed by the proliferation of the hypoblastic cells.
- b. It lies cranial to the primitive node.
- c. It indicates the future site of the notochord.
- d. It is the source of intraembryonic mesoderm.**
- e. It gives rise to the vertebral column.

14. All of the following are derivative of the neural crest cells, EXCEPT:

- a. Sensory ganglia.
- b. Autonomic ganglia.
- c. Schwann cells.
- d. Cells of suprarenal cortex.**
- e. Meninges of the brain.

15. Regarding the development of the neural tube, choose the incorrect statement:

- a. Neural plate formation is induced by the developing notochord.
- b. Neurulation is completed by the end of the fourth week.
- c. The neural crest cells migrate ventral to the neural tube.**
- d. The cranial neuropore closes before the caudal neuropore.
- e. Neural tube defects are among the most common congenital abnormalities.

16. Regarding the intraembryonic mesoderm, choose the incorrect statement:

- a. It is derived from the cells of the deep surface of the primitive streak.
- b. It fills the gap between the epiblast and the hypoblast.
- c. It is lacking in the region of the cloacal membrane.
- d. It continues with the extraembryonic mesoderm at the margin of the disc.
- e. It forms the lining of the intraembryonic coelom.**

17. Regarding the intraembryonic coelom, choose the incorrect statement:

- a. It develops within the lateral mesoderm.
- b. It communicates with the extraembryonic coelom.
- c. It gives rise to the pleural cavities.
- d. It gives rise to the cranial cavity.**
- e. It gives the pericardial cavity.

18. The connecting stalk is formed of:

- a. Cytotrophoblast.
- b. Syncytiotrophoblast.
- c. Extraembryonic mesoderm.**
- d. Intraembryonic mesoderm.
- e. Amnion.

19. Regarding angiogenesis & vasculogenesis, choose the incorrect statement:

- a. Occurs in the mesodermal cells.
- b. Begins in the intraembryonic mesoderm.**
- c. Results in the formation of endothelium of the blood vessels.
- d. Results in the formation of blood cells.
- e. Hematogenesis does not begin in the embryo until the fifth week.

20. Regarding the zygote, choose the incorrect statement:

- a. It is a diploid cell.
- b. May have XX or XY sex chromosomes.
- c. It is usually formed in the lateral part of the fallopian tube.
- d. It is metabolically an inactive cell.**
- e. Enters into a series of mitotic divisions immediately after its formation.

21. Regarding the sperms, choose the incorrect statement:

- a. They are formed in the seminiferous tubules of the testis.
- b. They are stored in the epididymis.
- c. They are actively motile cells.
- d. They are haploid cells.
- e. They contain massive amount of cytoplasm.**

22. Second meiotic division of the secondary oocyte which was arrested at metaphase will be completed at:

- a. Ovulation.
- b. Before ovulation.
- c. Fertilization.**
- d. Puberty.
- e. Next menstrual cycle

23. Regarding the placenta:

- a. It is usually formed in the lower segment of the uterus
- b. Its fetal surface is covered by amniotic membrane.**
- c. The umbilical cord is attached to the center of its maternal surface.
- d. It is totally formed from maternal tissue
- e. It secretes progesterone by the end of the second month of pregnancy.

24. Which of the following plays the most active role in invading the endometrium during blastocyst implantation:

- a. Syncytiotrophoblast.**
- b. Hypoblast.
- c. Extraembryonic somatic mesoderm.
- d. Extraembryonic visceral mesoderm.
- e. Epiblast.

25. Which hormone can detect pregnancy in the mother's urine by the second week?
- Progesterone.
 - Both estrogen and progesterone.
 - Early pregnancy factor.
 - Chorionic gonadotrophin.**
 - Estrogen
26. The intervillous space of the placenta contains:
- Maternal blood.**
 - Fetal blood.
 - Maternal and fetal blood.
 - Amniotic fluid.
 - Maternal blood and amniotic fluid.
27. The maternal and fetal components of the placenta are:
- Decidua basalis and secondary chorionic villi.
 - Decidua capsularis and secondary chorionic villi.
 - Decidua parietalis and tertiary villi.
 - Decidua capsularis and villous Chorion.
 - Decidua basalis and villous Chorion.**
28. The early placental membrane is formed by the following layers, EXCEPT:
- Syncytiotrophoblast.
 - Cytotrophoblast.
 - Endothelium of the fetal capillaries.
 - Intraembryonic mesoderm.**
 - Extraembryonic mesoderm.
29. Somites may differentiate into all of the following EXCEPT:
- Bone.
 - Cartilage.
 - Epidermis of the skin.**
 - Dermis of the skin.
 - Muscles.
30. The lateral mesoderm is divided into two distinct layers by the formation of:
- Extraembryonic coelom
 - Cardiogenic region.
 - Yolk sac.
 - Intraembryonic coelom.**
 - Notochord.

