Dr. “Ready for Spring” Adams

BIOLOGY 2213 – EXAM #1

Name: ________________________

Spring 2006

Multiple Choice:

1. A rise in the blood levels of FSH at the beginning of the ovarian cycle is responsible for
   a. estrogen release from the ovary
   b. menstruation
   c. ovulation
   d. progesterone release from the ovary
   e. sperm production

2. The following are some of the tubules of the male reproductive tract.
   1. seminiferous tubules
   2. urethra
   3. epididymis

List the structures in the order of activity of the sperm, from least active to most active.
   a. 3, 2, 1
   b. 1, 2, 3
   c. 2, 1, 3
   d. 1, 3, 2
   e. 3, 1, 2

3. The surge in LH that occurs during the middle of the ovarian cycle triggers
   a. follicle maturation
   b. menstruation
   c. ovulation
   d. menopause
   e. hot flashes

4. Menstruation is triggered directly by a drop in the level of
   a. FSH
   b. LH
   c. GnRH
   d. progesterone
   e. human chorionic gonadotropin

5. The hormone, released only when pregnant, that helps stimulate release of prolactin from the
   mother’s anterior pituitary is
   a. oxytocin
   b. prostaglandins
   c. prolactin
   d. human placental lactogen
   e. progesterone

6. A boy who has not passed through puberty sustains an injury to his anterior pituitary such
   that FSH is not longer released, but ICSH (LH) is normal. After the individual grows to
   maturity, one would expect that he would
   a. not develop secondary sex characteristics
   b. be sterile (unable to produce sperm)
   c. be impotent (unable to achieve and maintain erection)
   d. have impaired function of the interstitial cells
   e. be unable to regulate LH levels in the blood
7. When females are born, the egg cell lines are already at what stage of development?
   a. undifferentiated gamete stem cells  d. ova
   b. primary oocytes  e. any of the above are possible
   c. secondary oocytes

8. The sustentacular cells of the seminiferous tubules
   a. maintain the blood-testis barrier  d. secrete androgen-binding protein
   b. help streamline the sperm  e. all of the above
   c. produce testicular fluid

9. Separation of the inner cell mass from the trophoblast represents the initial formation of the
   a. chorionic villi  d. chorion
   b. lacunae  e. allantois
   c. amniotic cavity

10. The first haploid cell in the sperm cell line is the
    a. spermatogonium  d. secondary spermatocyte
    b. spermatid  e. spermatozoon
    c. primary spermatocyte

11. If a sperm cell lacked sufficient quantities of acrosomal enzymes, it would not be able to
    a. move its flagellum
    b. penetrate the zona pellucida around the secondary oocyte
    c. metabolize nutrients (glucose, fructose)
    d. survive the environment of the female reproductive tract
    e. pass through the mucus plug in the cervix

12. The process by which sperm cells become able to penetrate the egg cell as they swim through
    the female reproductive tract is call
    a. polyspermy  d. fertilization
    b. capacitation  e. gastrulation
    c. potentiation

13. The corpus luteum is formed at the site of
    a. fertilization  d. implantation
    b. ovulation  e. capacitation
    c. menstruation

14. Implantation involves:
    a. fusion of egg and sperm
    b. embedding of the blastocyst in the uterine wall
    c. formation of primary tissue layers
    d. completion of the development of the placenta
    e. all of the above are correct
15. Which of the following occur as a result of fertilization?
   a. Meiosis II is completed.
   b. the resulting zygote is diploid
   c. the ovaries produce progesterone
   d. a & b
   e. a & c

16. Which of the following appropriately represents the effects of hCG?
   a. targets endometrial cells to maintain their secretory activity
   b. stimulates the anterior pituitary to continue LH release
   c. replaces LH, to maintain progesterone secretion by the corpus luteum
   d. replaces FSH, which helps initiate the next follicular development
   e. stimulates implantation of the blastocyst

17. Which of the following is correctly matched?
   a. ectoderm – nervous system
d. endoderm – kidney
   b. ectoderm – dermis of the skin
e. endoderm – skeleton
   c. endoderm – gonads

18. The fetal membrane that forms the basis of the umbilical cord is the
   a. inner cell mass
d. yolk sac
   b. amnion
e. allantois
   c. chorion

19. The function of the pampiniform plexus is to
   a. provide the nerve supply to the testicles
   b. stimulate erection
c. stimulate ejaculation
d. stimulate reverse peristalsis in the uterus and vagina
   e. act as a countercurrent heat exchanger to keep the testicles cool

20. The first noticeable structure to form during the embryonic stage of development is
   a. neural tube
d. somite
   b. chorion
e. notochord
c. muscle

21. Which of the following does not come from the yolk sac and attached endoderm?
   a. a little nutrition
d. lining of portions of the gut
   b. the earliest blood cells
e. the gamete stem cell lines
   c. the earliest digestive enzymes

22. A decrease in sensitivity of the hypothalamus to the sex steroids occurs at/during
   a. birth
d. menopause
   b. age 5
e. male mid-life crisis
c. puberty
TRUE - FALSE:

23. Gastrulation is the end event of the embryonic stage of conceptus development.
24. The part of the trophoblast that invades the endometrium during implantation is the syncytiotrophoblast.
25. The maternal and fetal blood can exchange materials, but do not mix in the lacunae surrounding the chorionic villi.
26. The most widespread bacterial sexually transmitted disease is herpes.
27. The interstitial cells, since they are outside the seminiferous tubules, play a role in forming the blood-testis barrier.
28. The correct order of development proceeds from blastocyst to morula to gastrula to neurula.
29. At puberty, both increasing levels of testosterone and increasing levels of estrogen promote hair growth in certain areas.
30. Males are born with sperm stem cells that have not yet committed to going through meiosis.
31. The second meiotic division is the reduction division

MATCHING: As always, answer may be used more than once or not at all.

**Mesoderm** - Match the structures mentioned with the sections of mesoderm they come from.

32. Limb buds & muscles of the back
33. Vertebrae
34. Parietal serosae
35. Muscles in intestinal wall
36. Heart
37. Kidneys

A. Sclerotome of somite
B. Myotome of somite
C. Dermatome of somite
D. Somatic portion of lateral mesoderm
E. Splanchnic portion of lateral mes.
A. Intermediate mesoderm
(38-41) For each of the following mark "A" if the left hand item is greater, "C" if the right hand item is greater, "B" if the two items are equal, or "D" if not enough information is given.

A. Left is greater  
B. Items are equal  
C. Right is greater  
D. Not enough information given

38. Amount of body originating from lateral mesoderm - Amount of body originating from intermediate mesoderm

39. Progesterone production by placenta during first trimester - Progesterone production by placenta during last two trimesters

40. Parasympathetic stimulation of vessels to clitoris during excitement - Parasympathetic stimulation of vessels to clitoris during relaxation

41. Oxytocin sensitivity of myometrium during the first trimester - Oxytocin sensitivity of myometrium during labor

MORE MULTIPLE CHOICE (Yahooooo!!)

42. The important aspect of labor controlled by the high levels of estrogen produced by the placenta near full term pregnancy is
   a. the estrogen directly stimulate the myometrium to contract
   b. the estrogen stimulates oxytocin release by the fetus
   c. the estrogen stimulates myometrial cells to produce oxytocin receptors
   d. the estrogen causes the placenta to produce prostaglandins
   e. the estrogen causes disruption of blood flow to the placenta

43. Which of the following is appropriately matched?
   a. bulbourethral glands – produce 10% of volume of semen
   b. seminal vesicles – produce acidic, glucose containing secretions
   c. seminiferous tubules – produce testosterone
   d. prostate gland – produce sperm-activating enzymes
   e. anterior pituitary gland – produce a majority of testosterone in females

44. A rise in the blood levels of FSH at the beginning of the ovarian cycle is responsible for
   a. estrogen release from the ovary
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   d. progesterone release from the ovary
   e. sperm production
45. Which of these processes or phases in the monthly reproductive cycle of the human female occur at the same time?
   a. maximal LH secretion and early follicular development
   b. early follicular development and the proliferative phase in the uterus
   c. corpus luteum deterioration and increase in ovarian progesterone secretion
   d. ovulation and menstruation
   e. proliferation stage of uterus and progesterone production by ovary

46. Select the correct statement about gametes:
   a. Both spermatozoa and the ovulated secondary oocyte remain viable for about 72 hours in the female reproductive tract.
   b. Millions of sperm cells die as soon as they are deposited in the vagina.
   c. Once inside the uterus, most sperm cells are protected and remain viable.
   d. The acrosome reaction must occur before sperm can be capacitated.
   e. All of the above are true.

FILL-IN-THE-BLANK:

47. The non-functional cells produced during meiosis in females are called ________________ .

48. The ________________ arteries are the arteries that supply the thickened endometrial lining (stratum functionalis), and their spasms cause the lining to be shed during menstruation.

49. The placental/chorionic hormone responsible for increasing the metabolic rate of the mother during pregnancy is human chorionic/placental ________________ .

50. The vaginal wall is held directly to surrounding internal structures by an ________________ .

SHORT ANSWER: Answer any three (3) of the following.

A. Explain why having intercourse, with ejaculation, at full term gestation may actually help "jump start" labor. (2 pts.)

B. How many extra calories per day at a minimum are typically necessary to support normal development of the embryo/fetus? (1 pt.)
C. Describe basic physiological effects on two **non-reproductive** maternal systems due to pregnancy. (2 pts.)

D. Describe two benefits **besides nutrition** of nursing (to either mother or baby). (2 pts.)

E. Define/describe the following: meconium, cleavage (2 pts.)

F. Discuss the virtual **last** step that must occur during fetal development to allow the infant to survive outside of mom without any medical intervention. (2 pts.)

G. In reference to mammary glands, define/describe: alveoli, lactiferous sinuse (2 pts.)

H. Explain why there are initial coagulating factors in the semen, effective when first deposited in the vagina, and then subsequent liquefying fibrinolysin to thin the semen out. (2 pts.)