Chapter 29: Development Study Guide

1. Development begins with **fertilization** (Conception). Define fertilization/conception.

   The fusion of a secondary oocyte (ovum) and a spermatozoon (sperm)

2. What are the characteristics of fertilization? What is a zygote?
   - Male and female gametes (sperm and egg) unite to form single-cell zygote
   - Occurs in uterine tube 12-24 hours after ovulation
   - A zygote is a fertilized egg

3. What is development?
   - Begins with fertilization
   - Is the gradual modification from fertilization to maturity of anatomical structures and physiological characteristics

4. What are the characteristics of amphimixis?
   - Fusion of male and female pronuclei
   - Moment of conception
   - Cell becomes zygote
   - Fertilization complete

5. A zygote has **46** chromosomes

6. What are the stages within prenatal development? Describe each.
   - **Embryological development**
     - Occurs during first 2 months after fertilization
     - Organs are established
   - **Fetal development**
     - Begins at 9th week and continues to birth
     - Organs develop

7. Another term for newborn is **neonate**.

8. **Matching**: Match the word with the phrase that best describes it.
   - E. Amphimixis  F. Postnatal  G. Fetal dev.  H. Fertilization

   - **F** Fusion of male and female pronuclei
   - **B** Before birth
   - **G** Organs develop
   - **H** Conception
   - **A** The gradual modification from fertilization to maturity
   - **F** After birth
   - **D** Organs established
   - **C** Neonate
9. List the characteristics of gestation.
   - Time spent in prenatal development
   - Consists of 3 trimesters; each 3 months long

10. What takes place during the first trimester?
    - Cell cleavage and blastocyst formation
    - Blastocyst implantation
    - Placentation
    - Embryogenesis

11. Define Blastocyst implantation.
    - Implantation/burrowing into the uterine wall

12. Define placentation.
    - Formation of the placenta

13. What are the characteristics of the placenta?
    - Temporary structure in uterine wall
    - Permits diffusion between fetal and maternal circulatory systems

14. Embryogenesis is when all **organ systems** begin to be established but are nonfunctional.

15. The most dangerous period in prenatal life is the **first trimester**.

16. Only **40%** of conceptions produce embryos that survive past the **first trimester**.

17. What supports the fetus during the second and third trimester?
    - The placenta

18. What happens to the placenta after birth?
    - It stops functioning and is ejected from the uterus

19. What is produced during the first trimester? What produces it?
    - hCG (Human Chorionic Gonadotropin)
    - Produced by placenta

20. What are the characteristics of hCG?
    - Produced by placenta
    - Appears in maternal blood stream soon after implantation
    - Used in pregnancy tests/kits
    - Maintains CL for 3-4 months

21. The fetal stage occurs during which trimesters?
    - Second and third

22. Organogenesis is the development of all **organ systems**.
23. What occurs during the second trimester?
   - fetal stage-development of all organ systems
   - rapid growth of fetus
   - body proportions change
   - progesterone levels increase

24. What occurs during the third trimester?
   - Organ systems fully functional
   - fetal growth rate slows
   - largest weight gain

25. What hormones are present during the third trimester and what do they produce?
   1. P - Progesterone (placental); “calms” myometrium so no contractions
   2. E - Estrogen (placental); Increases myometrial contractions and sensitizes uterus to oxytocin (Maternal and fetal) which increase prostaglandins (PGs). Also initiates labor
   3. hPL (Human Placental Lactogen); helps prepare mammary glands for milk production. The effects on other tissues comparable to that of GH
   4. Prolactin; helps convert mammary glands to active status
   5. Relaxin; increases flexibility of pubic symphisis, pelvis expands, dialation of uterine cervix so fetus can enter vagina

26. Matching: Match the trimester with the phrase that best describes it.
   A. First trimester   B. Second trimester   C. Third trimester

   C  Largest weight gain
   B  Rapid growth of fetus
   A  Most dangerous period in prenatal life
   A  Placentation Occurs
   B  Progesterone levels increase
   C  Organ systems fully functional

27. Matching: Match the hormone with the function that best describes it.
   A. P (placental)   B. E (placental)   C. hPL   D. Prolactin
   E. hCG   F. Relaxin

   F  Increased flexibility of pubic symphisis
   E  Appears in maternal bloodstream after implantation
   B  Sensitizes uterus to oxytocin
   D  Helps convert mammary glands to active status
   A  “Calms” myometrium to prevent contractions
   C  Helps prepare mammary glands for milk production

28. What are the three types of labor?
   - False
   - True
   - Premature
29. Describe false labor.
   - Occasional spasms in uterine musculature
   - Contractions not regular or persistent

30. True labor results from biochemical and mechanical factors.

31. What causes continuation of labor?
   - Positive feedback

32. Describe premature labor.
   - When labor begins before fetal development is complete. Survival related to BW

33. The goal of labor is parturition which is the forcible expulsion of the fetus.

34. List the hormones associated with parturition and the effect of each.
   1. Oxytocin – increased levels of oxytocin increases the force and frequency of uterine contractions
   2. Relaxin – increases flexibility of pubic symphysis allowing the pelvis to expand
      - causes dilation of the uterine cervix so fetus can enter vagina
   3. Prostaglandins – estrogen and oxytocin stimulate production of prostaglandins in endometrium
      - further stimulate smooth muscle contractions

35. List the stages of labor and delivery.
   - Dilation
   - Expulsion
   - Placental

36. The dilation stage begins with the onset of true labor.

37. What happens during the dilation stage?
   - Cervix dilates
   - Fetus moves toward cervical canal
   - Frequency of contractions increases
   - Amniochorionic membrane ruptures ("water breaks")

38. Describe the expulsion stage.
   - Cervix completely dilated
   - Maximum intensity contractions
   - Continues until fetus emerges from vagina (delivery or birth)
39. What are the characteristics of the placental stage?
   - uterine contractions tear connections between endometrial and placenta
   - placenta (after birth) ejected
   - Accompanied by loss of blood, usually tolerated without difficulty

40. Matching: Match the stage of labor and delivery with the phrase that best describes it.
   A. Dilation      B. Expulsion      C. Placental
   
   C  Placenta ejected
   B  Maximum intensity of contractions
   C  Uterine contractions tear connections between endometrium and placenta
   A  Fetus moves towards cervical canal
   A  Amniochorionic membrane ruptures
   B  Cervix completely dialated

41. What are the stages of the Milk Let-Down reflex?

1. Mammary gland secretion is triggered by suckling infant on nipple
2. Impulses propagated to spinal cord (Stimulation of tactile receptors in nipple leads to…)
3. Stimulation of hypothalamic nuclei (stimulation of secretory neurons in the paraventricular nucleus of mother’s hypothalamus)
4. Secretory neurons release Oxytocin at neurohypophysis
5. Milk ejected (When circulating oxytocin reaches the mammary gland, it causes the contraction of the myoepithelial cells, contractile cells, cells in the walls of the lactiferous ducts and sinuses resulting in milk ejection/milk let-down)