EXAM NUMBER Key

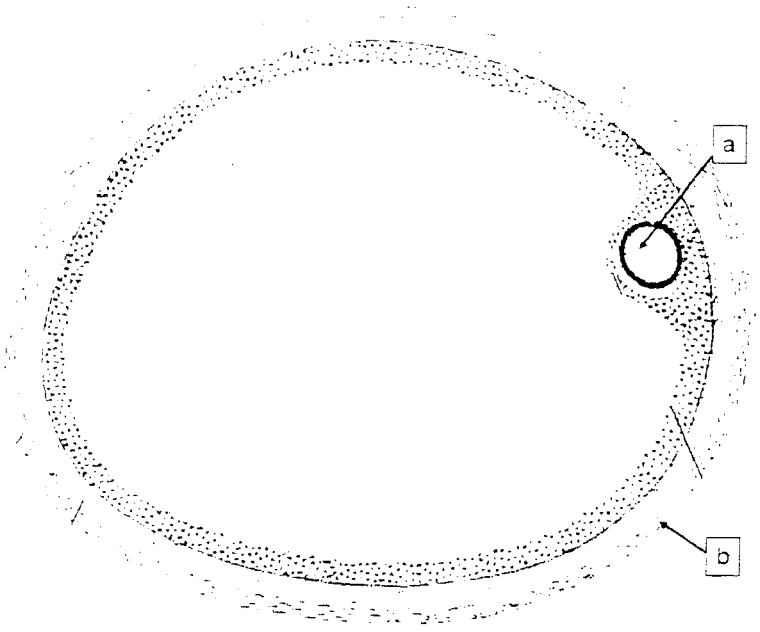
STRUCTURAL BASIS OF MEDICAL PRACTICE

EXAMINATION 9A

August 31, 2006

PART I. General Embryology (20 points)

Instructions: Circle the correct answer.

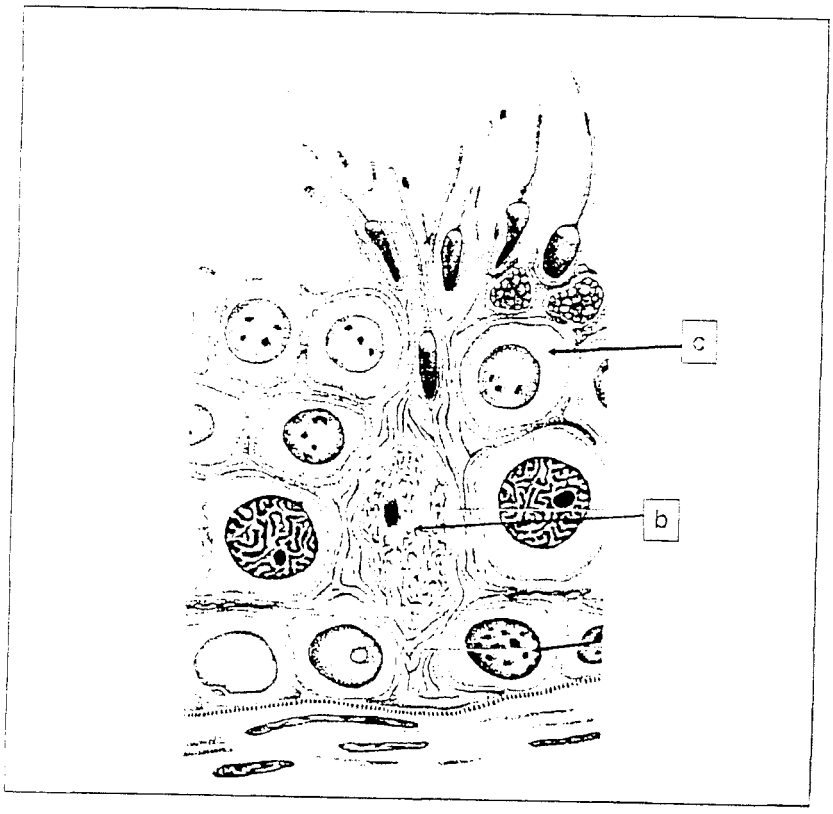


1. The structure indicated by "a":

a) Is a primary oocyte
b) Is a secondary oocyte
c) Is a polar body
d) Is a oogonium
e) Is a primary follicle

2. The structure indicated by "b":

a) Is the cumulus oophorus
b) Is the theca interna
c) Is the corona radiata
d) Is the theca externa
e) Is derived from primordial germ cells

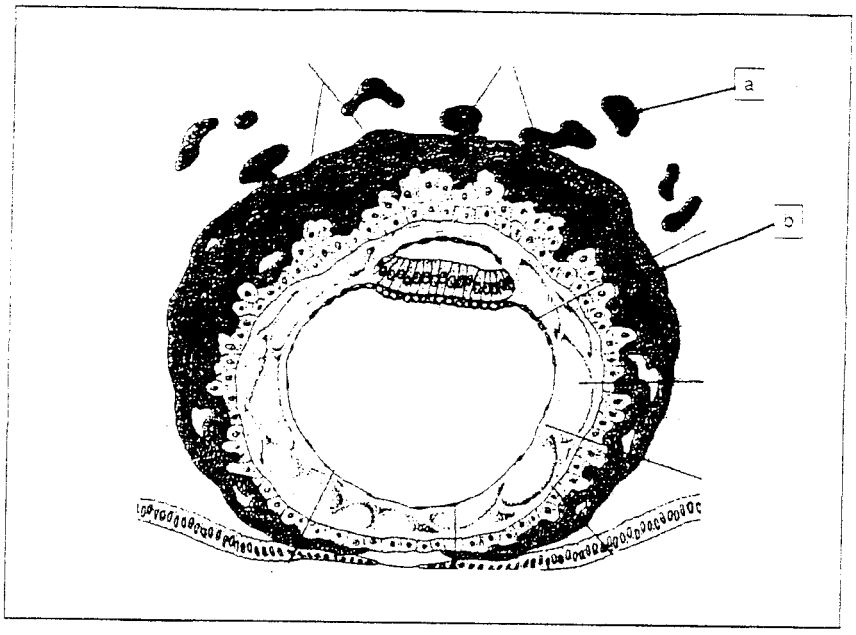


3. The structure indicated by "b":

a) is a primary spermatocyte
b) is a spermatid
c) is a secondary spermatocyte
d) is a spermatogonia
e) is a sustentacular cell

4. The structure indicated by "c":

a) is a primary spermatocyte
b) is a spermatid
c) is a secondary spermatocyte
d) is a spermatogonia
e) is a sustentacular cell

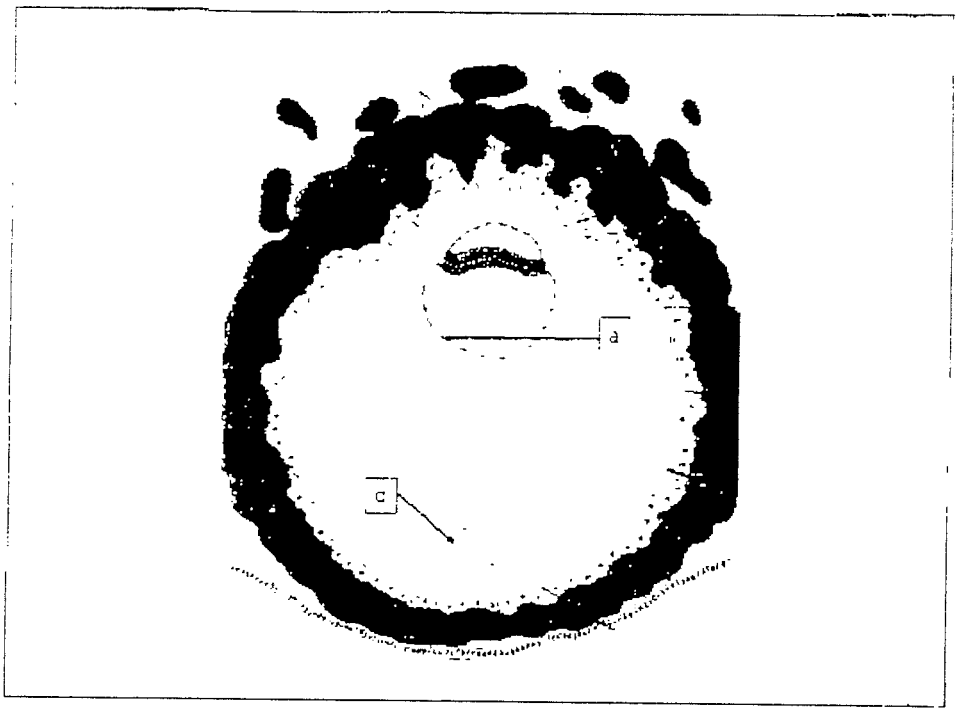


5. The structure indicated by "a":

a) is a syncytiotrophoblastic lacuna
b) is the extraembryonic coelom
c) is a secondary villus
d) is a maternal sinusoid
e) is a maternal vein

6. The structure indicated by "b":

a) initiates the decidua reaction in the endometrial stroma
b) is a cytotrophoblastic lacuna
c) secretes leutinizing hormone
d) is derived from extraembryonic mesoderm
e) develops into the maternal component of the placenta

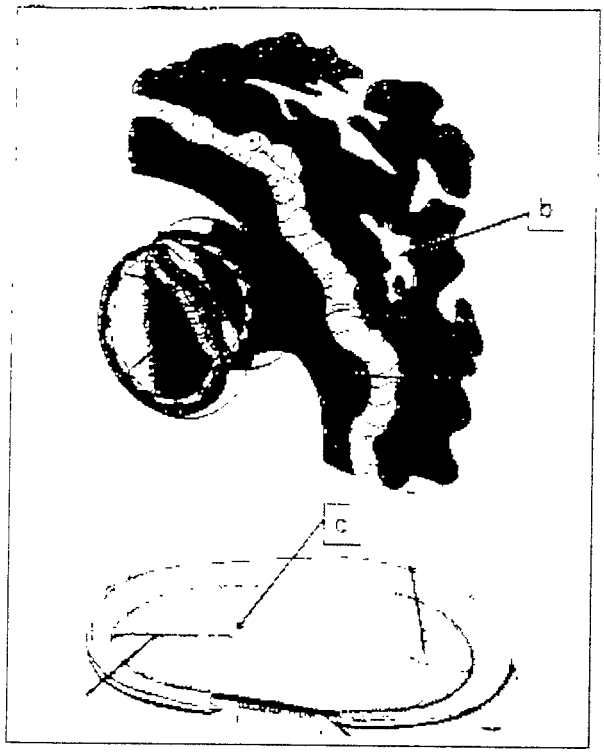


7 The structure indicated by "a":

a) is an exocoelomic membrane
b) is the primitive yolk sac
c) is derived from epiblast
d) secretes amniotic fluid
e) is the primary yolk sac

8. The structure indicated by "c":

a) is exocoelomic cyst
b) formerly the secondary yolk sac
c) lined by endoderm
d) filled with amniotic fluid
e) formed by the cytotrophoblast

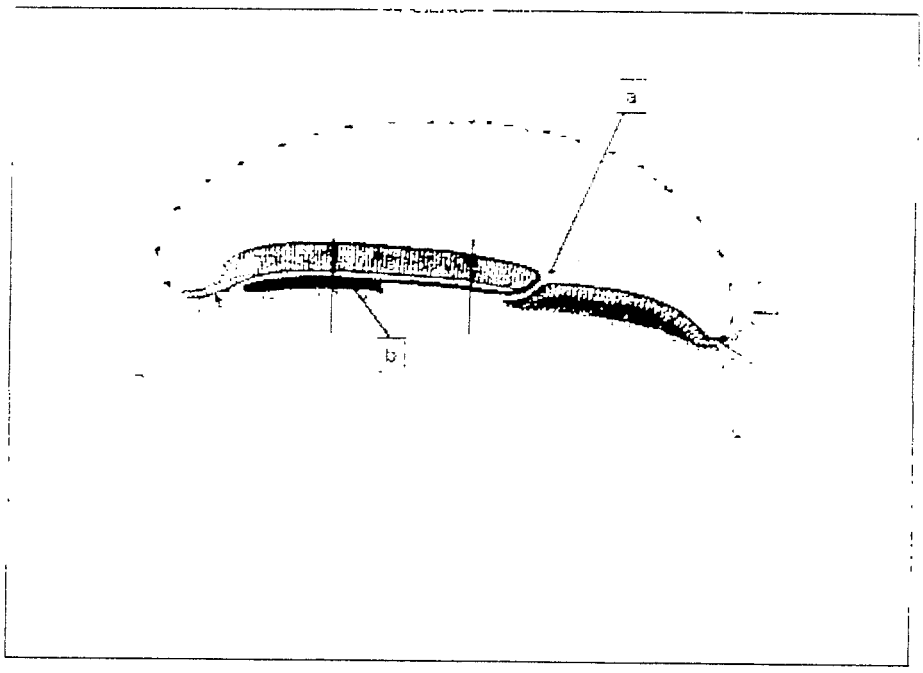


9. The structure indicated by "b":

a) Is a maternal sinusoid
b) Is a syncytiotrophoblastic lacuna
c) Is lined by the cytotrophoblast
d) Is derived from maternal tissues
e) Will fill with fetal blood

10. The structure indicated by "c":

a) is the cloacal membrane
b) is the buccopharyngeal membrane
c) is the primitive groove
d) is the primitive node
e) is the notochordal plate



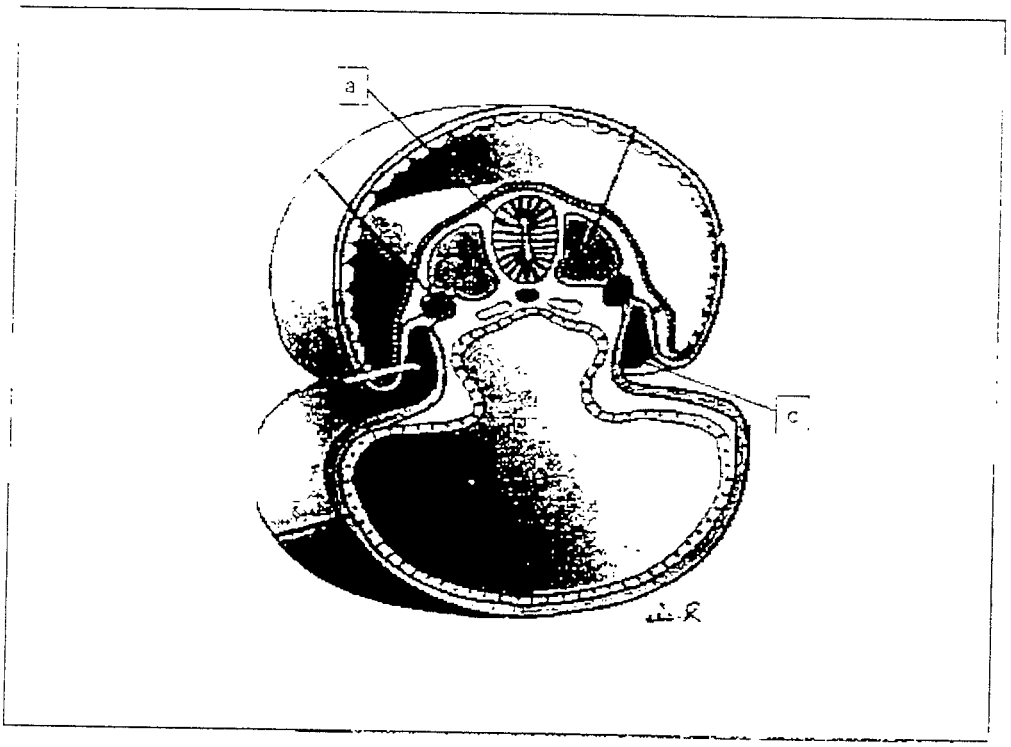
Embryo - sagittal section

11 The structure indicated by "a"

a) is called the neuroenteric canal
b) is a product of the neural tube formation
c) is the cloacal membrane
d) is moving in a cephalic direction
e) initiates the formation of neural crest

12 The structure indicated by "b"

a) is the neural tube
b) is endoderm
c) is lateral plate mesoderm
d) is the notochord
e) intermediate mesoderm



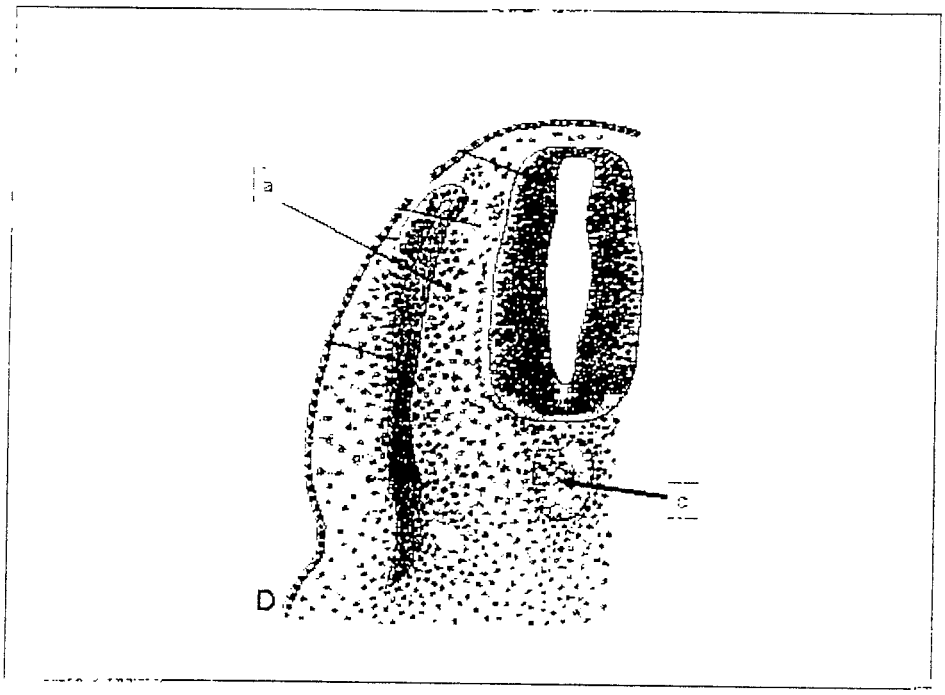
Embryo - cross section

13. The structure indicated by "a":

a) is the notochord
b) site for neural crest cell formation
c) induces overlying ectoderm to invaginate
d) is divided into somites
e) fusion site for neuroenteric canal

14. The structure indicated by "c":

a) is paraxial mesoderm
b) is intermediate mesoderm
c) is somatic mesoderm
d) is splanchnic mesoderm
e) is lateral plate mesoderm



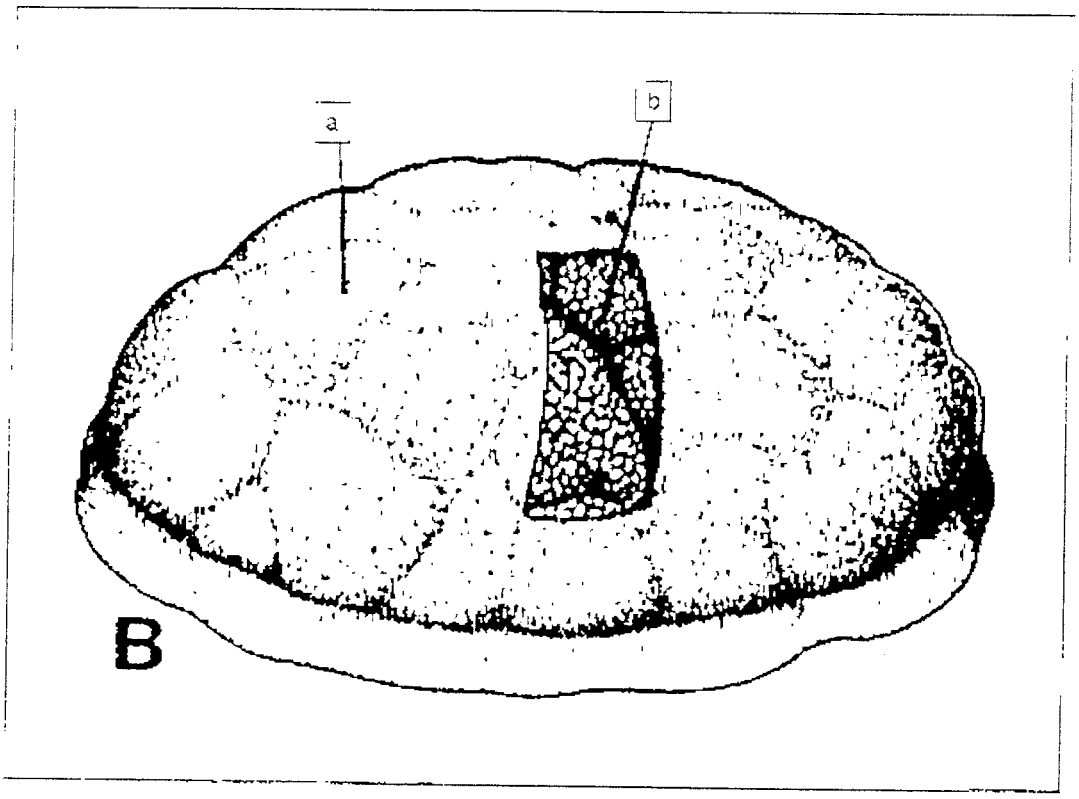
Embryo - cross section

15. The structure indicated by "a":

a) is a Myotome
b) is a Dermatome
c) is a Nephrotome
d) is a Sclerotome
e) is a Rhombotome

16. The structure indicated by "c".

a) induces paraxial mesoderm to become vertebral column
b) is induced by the neural tube
c) is future gut tube
d) is paraxial mesoderm
e) is future spinal cord



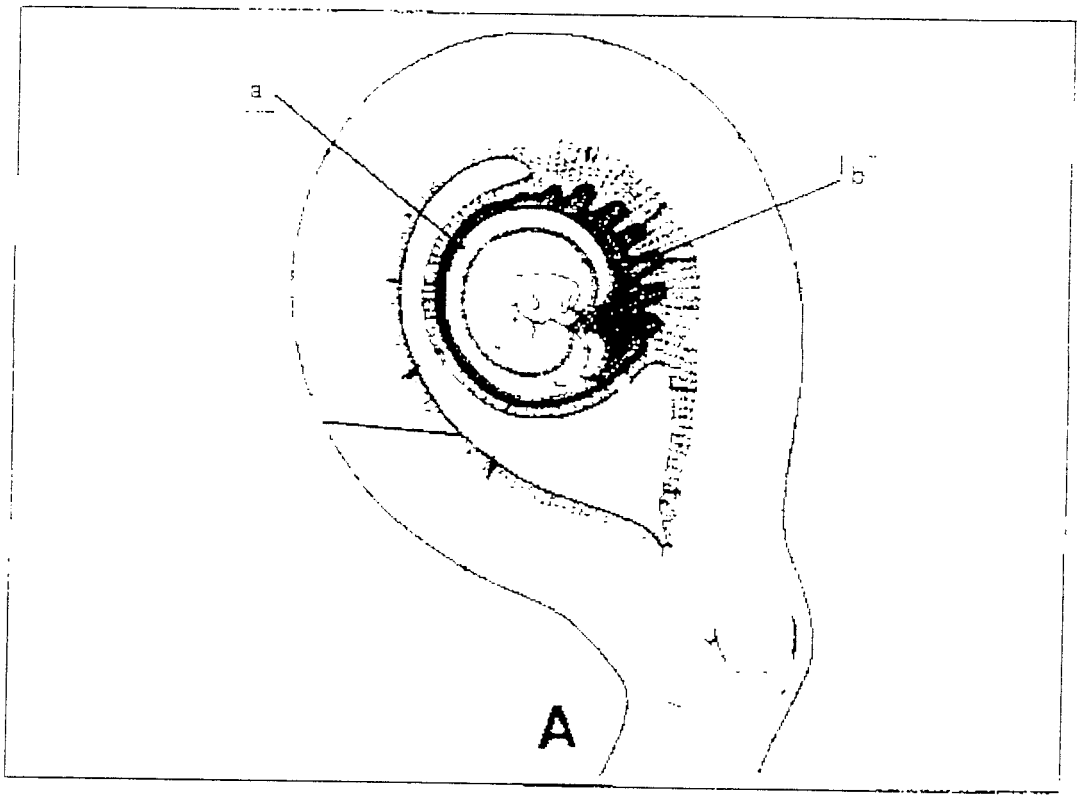
Placenta

17. The structure indicated by "a":

a) is a cotyledon
b) is the chorionic plate
c) is the amniotic cavity
d) is the produced by the fetus
e) is contained within the chorionic cavity

18 The structure indicated by "b":

a) has had the decidua basalis removed
b) indicates the chorion lavae
c) filled with follicular fluid
d) forms the umbilical cord
e) is endometrial stroma



Fetus

19 The structure indicated by "a":

a) is the chorionic lavae
b) is the chorionic frondosum
c) is the uterine cavity
d) is the amniotic cavity
e) is the chorionic cavity

20 The structure indicated by "b":

a) is the chorionic lavae
b) is the chorionic frondosum
c) is the uterine cavity
d) is the amniotic cavity
e) is the chorionic cavity

PART II. General Embryology (10 points). Circle all correct statements.

21 In regards to gametogenesis, ovulation and fertilization circle the statements that are true.

a) Granulosa cells surrounding an oocyte of a mature follicle form what is known as the cumulus oophorus.

b) The zona pellucida surrounds the oocyte and corona radiata to prevent polyspermy.

c) Once the sperm fuses with the oocyte it immediately initiates prophase of mitosis.

d) The morula describes the 64 cell stage blastocyst contained within the zona pelucida.

22. In regards to bilaminar embryo circle the statements that are true.

a) The inner cell mass of the blastocyst will differentiate into the cytotrophoblast and syncytiotrophoblast to form the embryo proper.

b) The hypoblast gives rise to cells that form both the primitive and secondary yolk sac.

c) The epiblast layer gives rise to specialized cells called amnioblasts that line the future amniotic cavity.

d) The decidua reaction is the process where by cells in the trophoblast become polyhedral and loaded in glycogen and lipids.

23. In regards to the trilaminar embryo circle the statements that are true.

a) The formation of the notochord is the result of invaginating epiblast cells through the primitive streak localized along the medial portion of the embryo.

b) Initially, epiblast cells invaginating through the primitive streak displace hypoblast cells to become ectoderm.

c) As the notochord forms, it fuses with the overlying ectoderm creating a canal between the amniotic cavity and the secondary yolk sac.

d) The primitive node is a specialized piece of the primitive groove located at its cranial end.

24. In regards to the embryonic period circle the statements that are true.

a) The neural plate is induced by the underlying notochord.

b) Lateral plate mesoderm will eventually give rise to the muscle, bones, and circulatory system of the limbs.

c) Vasculogenesis is the process through which new vessels arise from existing vessels.

d) At the beginning of the 3rd week, segmentation of the embryo starts with the formation of somites.

25. In regards to the fetal period and placenta formation circle the statements that are true.

a) At 11 weeks the sex of the fetus can be determined.

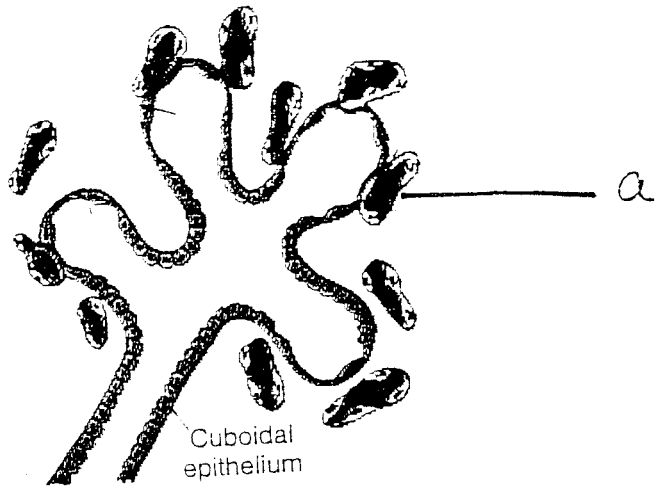
b) The chorion frundosom develops at the aembryonic pole of the embryo.

c) The decidua capsularis is located over the abembryonic pole.

d) A physiological umbilical hernia is an abnormal process resulting from the expansion of the yolk sac into the umbilical cord.

PART III. Critical Periods, Heart, and Respiratory Systems (20 points)

Circle the correct answer or fill in the blank.



26. This picture best represents what stage of lung development?

Terminal Sac Period

27. Identify the structure labeled "a" in the picture above.

Blood Capillary

28. Hyaline membrane disease was diagnosed in an infant with labored breathing and tachypnea at birth. This condition is most likely a result of

a) Excessive capillary-alveoli communication
b) Deficiency in alveoli
c) Intrauterine asphyxia
d) Abnormal differentiation of Type I alveolar cells
(e) Insufficient production of pulmonary surfactant

29. A bronchopulmonary segment is defined as

(a) Segment of lung tissue supplied by a tertiary bronchus
b) Right primary bronchus and its branches
c) Left primary bronchus and its branches
d) Alveolar-capillary junction
e) Lung-trachea juxtaposition

30. The trachea is derived from

a) Respiratory diverticulum
b) Tracheoesophageal septum
c) Hypobranchial eminence
d) Elongation of bronchial buds
e) Pharyngeal arch IV

31. The lung bud

a) Appears in the embryo at approximately 8 weeks
b) Arises as an outgrowth of the ventral wall of the foregut
c) Is associated with the third pharyngeal pouch
d) Forms the trachea and the bronchial buds
e) Degenerates before day 28

32. Incomplete fusion of the endocardial cushions usually is associated with

a) Sinus venous ASD
b) Ventricular septal defects (VSDs)
OR c) Primum-type ASD
d) Muscular VSD septal defects
e) Patent Foramen ovalis

33. Congenital heart disease is a common childhood condition that results from

a) Mutant genes
b) Tobacco consumption
c) Maternal medications
d) Multifactorial inheritance
e) Rubella virus

34. The cardiovascular system becomes functional at the end of the_____ week.

a) Second
b) Third
c) Sixth
d) Eighth
e) Twelfth

35. Transposition of the great vessels was diagnosed in an infant with cyanosis and mild tachypnea. This condition results from

a) Failure of the endocardial cushions to fuse
b) Defects in partitioning of the bulbus cordis and truncus arteriosus
c) Abnormal growth of the septum secundum and endocardial cushions
d) Failure of the interventricular septum to divide the primitive ventricles
e) Involution of the ductus arteriosus

36. Which statement is true regarding looping of the heart.

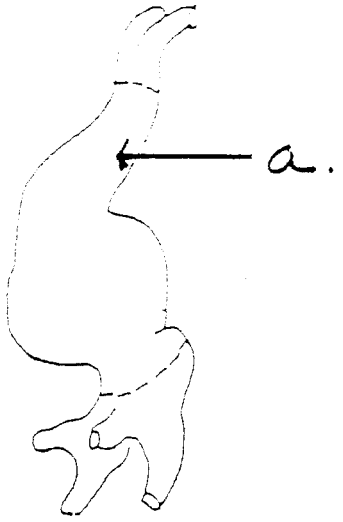
a) The primitive ventricle moves dorsally and to the left
b) The primitive atria are formed from the aortic roots
c) The heart loops ventral, caudal and to the right
d) The heart loops dorsal, caudal and to the left
e) The heart loops cranial and to the left

37. To what was this child's mother exposed during pregnancy?

a) Warfarin
b) Methotrexate
c) Alcohol
d) Thalidomide
e) Radiation

38. Infants of mothers who smoke cigarettes heavily during pregnancy most likely have:

a) Limb abnormalities
b) Ambiguous external genitalia
c) Facial anomalies
d) Low birth weight
e) Spina bifida

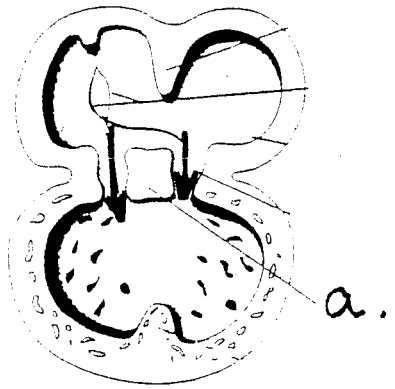


39. Identify the structure of the heart indicated in "a" in figure above

Bulbus Cordis

40. What are the adult derivatives of this region?

Smooth Part of RIGHT + LEFT VENTRICLES



41. Identify the structure indicated in "a" in the figure above.

Endocardial Cushion or (AV Septum)

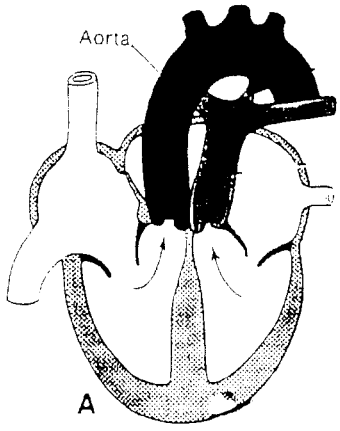
42. Identify the structure indicated by the arrows in the figure below.

AV Canals

43. This child has the characteristic facial features of

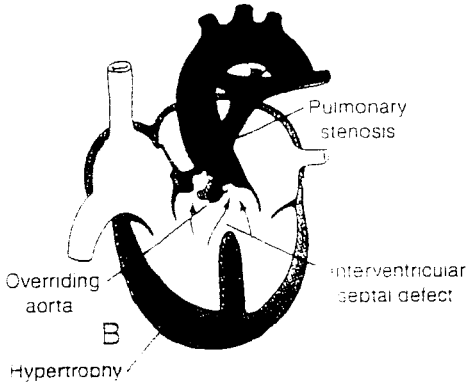
a) Intrauterine cocaine exposure
b) Fetal alcohol syndrome
c) Maternal cigarette smoking
d) Maternal aspirin ingestion
e) Maternal antidepressant usage

44. The defect depicted in "A" is



a) ASD
b) VSD
c) Overriding aorta
d) Transposition of the Great Vessels
e) Fusion of septum primum and secundum

45. The defect depicted in "B" is



a) Persistent truncus arteriosus
b) Tetralogy of Fallot
c) Transposition of the Great Vessels
d) Fusion of septum primum and secundum