



# General Embryology Questions

Done  
By

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1) Which of the following events is involved in cleavage of the zygote during week 1 of development?

- (A) A series of meiotic divisions forming blastomeres
- (B) Production of highly differentiated blastomeres
- (C) An increased cytoplasmic content of blastomeres
- (D) An increase in size of blastomeres
- (E) A decrease in size of blastomeres

2) Which of the following structures must degenerate for blastocyst implantation to occur?

- (A) Endometrium in progesterational phase
- (B) Zona pellucida
- (C) Syncytiotrophoblast
- (D) Cytotrophoblast
- (E) Functional layer of the endometrium

3) How soon after fertilization occurs within the uterine tube does the blastocyst begin implantation?

- (A) Within minutes
- (B) By 12 hours
- (C) By day 1
- (D) By day 2
- (E) By day 7

4) Where does the blastocyst normally implant?

- (A) Functional layer of the cervix
- (B) Functional layer of the endometrium
- (C) Basal layer of the endometrium
- (D) Myometrium
- (E) Perimetrium

5) Which of the following components plays the most active role in invading the endometrium during blastocyst implantation?

- (A) Epiblast
- (B) Syncytiotrophoblast
- (C) Hypoblast
- (D) Extraembryonic somatic mesoderm
- (E) Extraembryonic visceral mesoderm

6) Between which two layers is the extraembryonic mesoderm located?

- (A) Epiblast and hypoblast
- (B) Syncytiotrophoblast and cytotrophoblast
- (C) Syncytiotrophoblast and endometrium
- (D) Exocoelomic membrane and syncytiotrophoblast
- (E) Exocoelomic membrane and cytotrophoblast

7) During week 2 of development, the embryoblast receives its nutrients via

- (A) diffusion
- (B) osmosis

- (C) reverse osmosis
- (D) fetal capillaries
- (E) yolk sac nourishment

8) The prochordal plate marks the site of the future

- (A) umbilical cord
- (B) heart
- (C) mouth
- (D) anus
- (E) nose

9) Which of the following are components of the definitive chorion?

- (A) Extraembryonic somatic mesoderm and epiblast
- (B) Extraembryonic somatic mesoderm and cytotrophoblast
- (C) Extraembryonic somatic mesoderm and syncytiotrophoblast
- (D) Extraembryonic somatic mesoderm, cytotrophoblast, and syncytiotrophoblast
- (E) Extraembryonic visceral mesoderm, cytotrophoblast, and syncytiotrophoblast

10) At what location does the amniotic cavity develop?

- (A) Between the cytotrophoblast and syncytiotrophoblast
- (B) Within the extraembryonic mesoderm
- (C) Between the endoderm and mesoderm
- (D) Within the hypoblast
- (E) Within the epiblast

11) At the end of week 2 of development (day 14), what is the composition of the embryonic disk?

- (A) Epiblast only
- (B) Epiblast and hypoblast
- (C) Ectoderm and endoderm
- (D) Ectoderm, mesoderm, and endoderm
- (E) Epiblast, mesoderm, and hypoblast

12) Which germ layers are present at the end of week 3 of development (day 21)?

- (A) Epiblast only
- (B) Epiblast and hypoblast
- (C) Ectoderm and endoderm
- (D) Ectoderm, mesoderm, and endoderm
- (E) Epiblast, mesoderm, and hypoblast

13) Which process establishes the three definitive germ layers?

- (A) Neurulation
- (B) Gastrulation
- (C) Craniocaudal folding.
- (D) Lateral folding
- (E) Angiogenesis

14) The first indication of gastrulation in the embryo is

- (A) formation of the primitive streak
- (B) formation of the notochord
- (C) formation of the neural tube
- (D) formation of extraembryonic mesoderm
- (E) formation of tertiary chorionic villi

15) Somites may differentiate into which of the following?

- (A) Urogenital ridge
- (B) Kidneys
- (C) Notochord
- (D) Epimeric and hypomeric muscles
- (E) Epithelial lining of the gastrointestinal tract

16) Intermediate mesoderm will give rise to the

- (A) neural tube
- (B) heart
- (C) kidneys and gonads
- (D) somites
- (E) notochord

17) The lateral mesoderm is divided into two distinct layers by the formation of the

- (A) extraembryonic coelom
- (B) intraembryonic coelom
- (C) cardiogenic region

(D) notochord

(E) yolk sac

18) Very often the first indication a woman has that she is pregnant is a missed menstrual period. In which week of embryonic development will a woman experience her first missed menstrual period?

(A) Start of week 3

(B) Start of week 4

(C) Start of week 5

(D) Start of week 8

(E) End of week 8

19) The epiblast is capable of forming which of the following germ layers?

(A) Ectoderm only

(B) Ectoderm and mesoderm only

(C) Ectoderm and endoderm only

(D) Ectoderm, mesoderm, endoderm

(E) Mesoderm and endoderm only

20) Which structure is derived from the same embryonic primordium as the kidney?

(A) Gonads

(B) Epidermis

(C) Pineal gland

(D) Liver

(E) Adrenal medulla

21) During the later stages of pregnancy, maternal blood is separated from fetal blood by the

- (A) syncytiotrophoblast only
- (B) cytotrophoblast only
- (C) syncytiotrophoblast and cytotrophoblast
- (D) syncytiotrophoblast and fetal endothelium
- (E) cytotrophoblast and fetal endothelium

22) The maternal and fetal components of the placenta are

- (A) decidua basalis and secondary chorionic villi
- (B) decidua capsularis and secondary chorionic villi
- (C) decidua parietalis and tertiary chorionic villi
- (D) decidua capsularis and villous chorion
- (E) decidua basalis and villous chorion

23) The intervillous space of the placenta contains

- (A) maternal blood
- (B) fetal blood
- (C) maternal and fetal blood
- (D) amniotic fluid
- (E) maternal blood and amniotic fluid

24) What is a normal amount of amniotic fluid at term?

- (A) 50 mL

- (B) 500 mL
- (C) 1000 mL
- (D) 1500 mL
- (E) 2000 mL

25) Which of the following does not pass through the primitive umbilical ring?

- (A) Allantois
- (B) Amnion
- (C) Yolk sac
- (D) Connecting stalk
- (E) Space connecting the intraembryonic and extraembryonic coeloms

26) Human chorionic gonadotropin (hCG) is produced by which of the following?

- (A) Ectoderm
- (B) Cytotrophoblast
- (C) Decidua basalis
- (D) Syncytiotrophoblast
- (E) Mesoderm

27) Which of the following structures produces progesterone late in pregnancy?

- (A) Placenta
- (B) Corpus luteum
- (C) Syncytiotrophoblast

(D) Fetal adenohypophysis

(E) Maternal liver

28) Which of the following statements is most correct about the human menstrual cycle

a) The menstrual cycle in all women is a 28 day reproductive cycle

b) Ovulation always occurs at the midpoint of the menstrual cycle

c) The menstrual cycle's main function is to regularly replace the lining of the uterus

d) A high body temperature indicates ovulation is occurring

e) The menstrual cycle is an endocrine cycle regulating reproductive physiological changes

29) Which of the following statements is correct about the zona pellucida

a) surrounds the oocyte in the ovary

b) protects oocyte in the uterine tube

c) is a specialized extracellular matrix

d) is important for fertilization

e) all of the above

30) Pregnancy tests generally are based upon the detection in maternal urine of

a) Estrogen

b) Progesterone

c) human Chorionic Somatomotropin

d) human Chorionic Gonadotrophin

e) human Chorionic Corticotropin

31) The most correct sequence of early development following fertilization is

- a) zygote, blastomeres, morula, blastocyst
- b) oocyte, zygote, morula, blastocyst
- c) zygote, conceptus, blastocyst
- d) polar bodies, zygote, conceptus, blastocyst

32) Which process in the third week of development converts the embryonic disc into the trilaminar embryo

- a) Placentation
- b) Gastrulation
- c) neuralation
- d) somitogenesis
- e) embryonic disc folding

33) The seven-day blastocyst

- A. has a single layer of trophoblast at the embryonic pole
- B. has an amniotic cavity
- C. is attached to the endometrial epithelium
- D. is surrounded by a degenerating zona pellucida
- E. is called the hypoblast

34) The first week of human development is characterized by formation of the

- A. inner cell mass
- B. hypoblast
- C. trophoblast
- D. blastocyst
- E. all of the above

35) During implantation, the blastocyst

- A. implants in the endometrium
- B. usually attaches to endometrial epithelium at its embryonic pole
- C. usually implants in the posterior wall of the body of the uterus
- D. causes change in the endometrial tissues
- E. all of the above are correct

36) The early stages of cleavage are characterized by

- A. formation of a hollow ball of cells
- B. formation of the zona pellucida
- C. increase in the size of the cells in the zygote
- D. increase in the number of cells in the zygote
- E. none of the above

37) The most common site for implantation in ectopic pregnancy is

- A. internal os of the uterus
- B. mesentery
- C. ovary
- D. uterine tube
- E. other

38) With the light microscope, the zona pellucida appears as a translucent membrane surrounding the:

- A. primary oocyte
- B. zygote
- C. morula
- D. very early blastocyst
- E. all of the above are correct

39) The amniotic cavity develops

- A. on the tenth day
- B. within the outer cell mass
- C. within the inner cell mass near the cytotrophoblast
- D. in extraembryonic mesoderm
- E. none of the above

40) During the second week of development, the trophoblast differentiates into

- A. syncytiotrophoblast

- B. ectoderm
- C. intraembryonic mesoderm
- D. yolk sac (secondary)

41) The first two intraembryonic germ layers to differentiate are the

- A. ectoderm and hypoblast
- B. epiblast and hypoblast
- C. ectoderm and endoderm
- D. ectoderm and mesoderm

42) The blastocoele becomes the

- A. amniotic cavity
- B. extraembryonic coelom
- C. primary yolk sac
- D. chorionic cavity
- E. secondary cavity

43) The bilaminar germ disc

- A. consists of epiblast and mesoblast
- B. is derived from the outer cells of the morula
- C. forms the embryo proper
- D. synthesizes human chorionic gonadotropin, HCG

44) The primitive streak first appears at the beginning of the \_\_\_\_ week

- A. first

- B. second
- C. third
- D. fourth
- E. fifth

45) Which of the following structures is believed to be a primary organizer or inducer during organogenesis?

- A. somites
- B. notochord
- C. metanephric blastema
- D. lens placode
- E. none of the above

46) Cells from the primitive streak DO NOT become

- A. endoderm
- B. intermediate mesoderm
- C. paraxial mesoderm
- D. lateral plate mesoderm
- E. amnioblasts

47) The primitive streak

- A. is derived from the outer cells of the morula
- B. is formed during the second week in development
- C. persists as the cloacal membrane
- D. is the site of involution of epiblast cells to form mesoderm

E. was done in a bathing suit, for those who remember streaking

48) In the third week of human embryonic development

A. the amnion appears

B. a bilaminar embryonic disc is formed

C. the body stalk moves ventrally and joins with the yolk sac stalk to form the umbilical cord

D. the neural plate is induced by the notochordal process and associated mesoderm

E. the uteroplacental circulation is established

49) During development, the notochordal process

A. arises from involuting endodermal cells

B. extends from the prochordal plate to the primitive node

C. is involved in the induction of the primitive gut

D. becomes the appendicular skeleton

50) The following organs are derived from mesoderm EXCEPT

A. skeletal musculature

B. musculature of blood vessels

C. cardiac musculature

D. suprarenal cortex

E. suprarenal medulla

51) Somites

A. differentiate into myotomes which give rise to skeletal muscle in trunk and limbs

B. differentiate into sclerotomes which give rise to vertebrae

C. arise from segmentation of the paraxial mesoderm

D. differentiate into myotomes which give rise to skeletal muscle of the limbs

E. all of the above are correct

52) When the amount of amniotic fluid exceeds two liters, the condition is called

A. oligohydramnios

B. polyhydramnios or hydramnios

C. amniotitis

D. bag of waters

E. hydrogravidia

53) Which of the following structures does not turn under onto the ventral surface of the embryo during folding of the head?

A. prochordal plate

B. heart

C. notochord

D. pericardial cavity

E. septum transversum

54) The most distinctive characteristic of a primary chorionic villus is its

A. outer syncytiotrophoblastic layer

B. cytotrophoblastic shell

- C. extraembryonic somatic mesodermal core
- D. bushy appearance
- E. cytotrophoblastic core

55) When chorionic villi become vascularized they are called \_\_\_\_\_ villi

- A. branch
- B. stem
- C. tertiary
- D. anchoring
- E. mature

56) The intervillous space contains all of the following substances EXCEPT

- A. oxygen
- B. carbon dioxide
- C. maternal blood cells
- D. fetal blood
- E. electrolytes

57) Which of the following is NOT a component of the mature placental barrier

- A. the endothelial lining of fetal capillaries
- B. the cytotrophoblast
- C. the syncytiotrophoblast
- D. the basement membrane of fetal capillaries
- E. all of the above are part of the mature placental barrier

58) Which of the following is derived from ENDODERM

- A. endoneurial fibroblasts and Schwann cells of peripheral nerves
- B. endothelial lining of blood vessels
- C. epithelial lining of the respiratory tract
- D. cells lining the amniotic membrane
- E. cytotrophoblast placental cells
- F. NONE of the above

59) The MOST LIKELY cause for sacroccygeal mass is

- A. abnormal migration and proliferation of lumbosacral neural crest.
- B. abnormal persistence of primitive streak tissue after completion of gastrulation.
- C. premature regression of the primitive streak during gastrulation.
- D. abnormal closure of the posterior (caudal) neuropore.
- E. abnormal left-right patterning due to ciliary dysfunction.

60)

In which period of development are most organ systems highly susceptible to injury?

- a) Early development
- b) Embryonic development
- c) First trimester
- d) Second trimester
- e) Third trimester

61) The correct order for origin and migration of germ cells is:

- a) Epiblast to yolk sac to ventral mesentery to genital ridge
- b) Epiblast to yolk sac to dorsal mesentery to genital ridge
- c) Epiblast to hypoblast to genital ridge
- d) Epiblast to mesoderm to genital ridge
- e) Epiblast to yolk sac to mesoderm to genital ridge

62) The syncytiotrophoblast secretes \_\_\_\_ causing the corpus luteum to secrete \_\_\_\_, which maintains pregnancy.

- a) GnRH; LH
- b) GnRH; FSH
- c) GnRH; hCG
- d) hCG; Estrogen
- e) hCG; Progesterone

63) Which of the following does NOT take place during fertilization?

- a) Male pronucleus forms
- b) Endometrial implantation occurs
- c) Restoration of a diploid genome
- d) Determination of genetic sex of the embryo
- e) Cleavage initiated

64) Which structure bounds the cells after fertilization as they compact to form the morula?

- a) Zona pellucida

- b) Corona radiate
- c) Pronucleus
- d) Inner cell mass
- e) Outer cell mass

65) An ectopic pregnancy would occur if implantation occurred in all of the following places EXCEPT:

- a) Rectum
- b) Bladder
- c) Uterus
- d) Cervix
- e) Fallopian tube

66) The cells of the embryoblast form the hypoblast and epiblast, which begin to form the \_\_\_\_ cavity.

- a) Chorionic
- b) Antrumc
- c) Blasoceoled
- d) Amniotice
- e) Epiblastic

67) The two layers of extraembryonic mesoderm are called: 67)

- a) Endoderm; Mesoderm
- b) Primary; Secondary
- c) Somatopleuric; Splanchnopleuric

d) Mesenchyme; Parachyme

e) Epiblast; Hypoblast

68) On day nine, trophoblastic lacunae and maternal sinusoids begin to form around what cells:

a) Exoderm

b) Extraembryonic coelom

c) Extraembryonic splanchnopleuric

d) Exocoelomic

e) Syncytiotrophoblast

69) The cells that continue to divide from the trophoblast are called: 69)

a) Syncytiotrophoblast

b) Cytotrophoblast

c) Epiblast

d) Hypoblast

e) Tertiary stem villi

70) The notocord is composed of \_\_\_\_.

a) Mesoderm only

b) Endoderm only

c) Ectoderm only

d) Mesoderm and ectoderm

e) Mesoderm and endoderm

71) The notocord has all of the following functions EXCEPT

- a) PNS development
- b) CNS development
- c) Vertebral column development
- d) Forms anatomic midline
- e) Forms nucleus pulposus

72) Lateral folding leads to the formation of an elongated \_\_\_\_.

- a) Heart tube
- b) Spinal tube
- c) Allantois
- d) Gut tube
- e) Yolk sac

73) During the beginning of the embryonic period, the age of the embryo is expressed by \_\_\_\_ .

- a) CRL
- b) Somites
- c) Tube diameter
- d) heart beat
- e) hCG

74) The axial skeleton forms from the:

- a) Paraxial mesoderm

- b) Intermediate mesoderm
- c) Lateral plate mesoderm
- d) Surface ectoderm
- e) Neural crest cells

75) Which structure helps form the GI tract and allantois?

- a) Endoderm
- b) Ectoderm
- c) Paraxial mesoderm
- d) Intermediate mesoderm
- e) Lateral plate mesoderm

76) Which of the following statement about the principles of teratology is NOT true?

- a) Susceptibility to teratogenesis depends on the genotype of the conceptus
- b) The maternal genome plays an important role with respect to drug metabolism, resistance to infection, and other processes that affect the conceptus
- c) Susceptibility to teratogenesis depends on the development stage at the time of exposure
- d) Manifestation of abnormal development depends on duration of exposure and not dose of exposure to a teratogen
- e) Manifestations of abnormal development include death, malformation, growth retardation, and function disorders

Answers :

1) e	9) d	17) b	25) b	33) c	41) b	49) b	57) b	65) c	73) b
2) b	10) e	18) a	26) d	34) e	42) c	50) e	58) c	66) d	74) a
3) e	11) b	19) d	27) a	35) e	43) c	51) e	59) b	67) c	75) a
4) b	12) d	20) a	28) e	36) d	44) c	52) b	60) b	68) e	76) d
5) b	13) b	21) d	29) e	37) d	45) b	53) c	61) b	69) b	
6) e	14) a	22) e	30) d	38) e	46) e	54) e	62) e	70) e	
7) a	15) d	23) a	31) a	39) c	47) d	55) c	63) b	71) a	
8) c	16) c	24) c	32) b	40) a	48) d	56) d	64) a	72) d	

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