

※請將第一大題選擇題作答於試卷內之「選擇題作答區」。

一、選擇題 (10%)

1. The cells from the middle section of the primitive streak form: (A). the notochord (B). the prechordal plate (C). the intraembryonic mesoderm (D). the paraxial mesoderm (E). the extraembryonic mesoderm
2. As a general rule, derivatives of the alar plates (A). have sensory functions (B). have motor functions (C). form dorsal root ganglia (D). do not extend above the mesencephalon (E). form postganglionic fiber
3. The nephrogenic cord: (A). is a part of the caudal paraxial mesoderm (B). is a segmented column of cells (metamere) (C). differentiates itself through the induction of the notochord (D). is a part of the lateral plate mesoderm (E). among other things contributes to the formation of the gonads
4. During development of the cerebellum, mitotic precursors of _____ cells migrate over the outside surface of the cerebellum. They then migrate into deeper layers of the cerebellar cortex and will form synapses with _____ cells. (A). Purkinje, Bergmann glia (B). Purkinje, pyramidal (C). Purkinje, granule (D). granule, radial glia (E). granule, Purkinje
5. The chordal process:
 - (1) extends from the primitive node to the prechordal plate
 - (2) is hollow in the middle
 - (3) communicates with the umbilical vesicle through the ductus neurentericus
 - (4) later becomes transformed into a filled tube – the notochordThe correct answer is
(A). 1+2+3 (B). 1+3 (C). 2+4 (D) 4 (E). 1+2+3+4
6. Which of the following subdivisions of the heart directly receives venous blood from the body proper during embryonic/fetal life (A). ventricle (B). atrium (C). sinus venosus (D). bulbus cordis (E). truncus arteriosus
7. The missing closure of the caudal part of the neural tube:
 - (1) leads to an abnormal development of the vertebrae
 - (2) inhibits the differentiation of the nervous tissue
 - (3) can lead to the spinal cord lying on the surface without a skin covering
 - (4) is an anomaly that arises in the 8th week of embryonic developmentThe correct answer is (A). 1+2+3 (B). 1+3 (C). 2+4 (D) 3+4 (E). 1+2+3+4
8. In oocytes, the second meiotic division is completed (A). during fetal development (B). during the proliferative phase of the menstrual cycle (C). in response to the peak of FSH and LH during the menstrual cycle (D). following fertilization (E). between birth and puberty
9. Which of these refers to the small cells that develop from a fertilized egg? (A). Blastomeres (B). Zygotes (C). Blastulas (D). Gastrulas (E). Oocytes
10. Which of these is the jelly-like layer that surrounds a fertilized egg? (A). Zona pellucida (B). Corona radiata (C). Tunica albuginea (D). Zona reticularis

見背面

二、填充題 (10%)

1. The characteristics of tetralogy of Fallot include (1) _____, (2) _____, (3) _____ and (4) _____.
2. Most defects of the spinal cord result from abnormal closure of the neural folds. Those abnormalities include (5) _____, (6) _____, (7) _____ and (8) _____.
3. What two areas remain bilaminar during gastrulation? (9) _____ and (10) _____.

三、問答題 (80%)

1. Please describe the molecular regulation of the brain development. (10%)
2. Please describe the formation of aortic arches and the subsequent development. (10%)
3. Please describe the molecular signaling which involves in the establishment of anteroposterior, dorsoventral and left-right body axis during gastrulation. (10%)
4. 有關直腸癌的發生與直腸息肉 (Polyps) 有關，為何會發生直腸息肉？請由胚胎腸管發育的過程說明其成因。(10%)
5. 請說明膈 (Diaphragm) 於胚胎時如何發育而成？(5%) 臨床上常會發生何種畸形？(5%)
6. 在胎兒時期為何會發生羊水過多症？(5%) 而又為何會發生羊水過少症？(5%) 請分別說明其造成的原因。
7. 請說明肺臟於胎兒期如何發育？(5%) 又於出生後又有怎樣的變化發育？(5%)
8. 原始生殖細胞來自何處？(2%) 它如何達到生殖腺位置？(2%) 又如何發育為公的睪丸與母的卵巢？(6%)