

一、問答題: 10 %

1. Please describe the development of aortic arch system. (5 %)
2. A patient complains about having difficulty swallowing. What vascular abnormality or abnormalities might produce this complaint? What is its embryological origin? (5 %)

二、選擇題: 40 % 本大題請於答案卷內之「選擇題作答區」依序作答。

1. A zona pellucida can be found surrounding the (1). oocyte (2). zygote (3). 2-cell embryo (4). morula (5). blastocyst
Answer: (A) 1+5 (B) 1+2+5 (C) 1+2+4 (D) 1+2+3+4+5 (E) 1+2+3+4
2. Which of the following statements regarding the oogenesis are CORRECT? (1). Primordial germ cells appear in the wall of yolk sac during week 3 of development (2). Differentiation of oogonia from the primordial germ cells occurs before birth (3). Primary oocyte arrests in prophase because of oocyte maturation inhibitor (4). LH surge during menstrual cycle cause oocytes to complete both meiosis I and meiosis II (5). The process of oogenesis develops one oocyte and three polar bodies
Answer: (A) 2+3+4 (B) 1+2+3 (C) 2+3+5 (D) 1+2+3+5 (E) 2+3+4+5
3. Which of the following descriptions are CORRECT? (1). GDF-9 expressed from oocyte proliferates follicular cell to establish primary follicle (2). FSH stimulates maturation of granulosa to establish secondary follicle (3). LH stimulates production of progesterone by follicular stromal cells (4). The hypothalamic-pituitary-adrenal axis controls ovarian cycle (5). Estrogen positively feedback to stimulate secretion of LH from pituitary
Answer: (A) 2+3+4+5 (B) 1+2+3+4 (C) 2+3+5 (D) 1+3+5 (E) 1+2+3+5
4. Which of the following structures secrete progesterone? (1). Pituitary (2). Corpus luteum (3). Hypothalamus (4). Placenta (5). Mammary glands
Answer: (A) 1+2 (B) 2+3 (C) 3+4 (D) 2+4 (E) 1+5
5. Which of the following hormone prevents degeneration of corpus luteum and forms corpus luteum graviditatis? (A). LH (B) human chorionic gonadotropin (C) FSH (D) Estrogen (E) Progesterone
6. Which of the following statements are CORRECT? (1). After fertilization, zygote proliferates through cleavage to form blastomeres (2). The 4-cell stage of blastomere is called morula (3). Blastocyst contains embryoblast and trophoblast (4). The inner cell mass develops into bilaminar germ disc, including ectoderm and endoderm (5). The primitive yolk sac originates from extraembryonic coelom
Answer: (A) 1+3 (B) 2+4 (C) 4+5 (D) 1+4+5 (E) 2+5
7. Which of the following descriptions are CORRECT? (1). Transcription factors secreted from entire bilaminar germ disc is responsible for establishing the anteroposterior axis (2). OTX2 and LIM 1 are responsible for establishing cephalic region (3). BMP-4 and FGF are responsible for

- ventralization to form later plate mesoderm and intermediate mesoderm (4). PITX2 is responsible for establishing left sidedness (5). Nodal is a repressor to suppress expression of left-side gene on the right
Answer: (A) 1+2+3 (B) 1+3+5 (C) 1+4+5 (D) 2+3+4 (E) 3+4+5
8. Which of the following structures are neural crest derivatives? (1). Posterior lobe of pituitary (2). Schwann cells (3). Cranial nerve ganglia (4). Adrenal cortex (5). Dorsal root ganglion
Answer: (A) 1+5 (B) 1+4+5 (C) 1+2+4+5 (D) 3+4+5 (E) 2+3+5
9. Which of the following signals are involved in the induction of caudal neural plate structures (e.g. hindbrain & spinal cord)? (1). noggin (2). BMP-4 (3). WNT-3a (4). chordin (5). FGF
Answer: (A) 3+5 (B) 1+4 (C) 2+5 (D) 4+5 (E) 1+2
10. Which of the following structures are not derived from mesoderm? (1). Kidney (2). Spinal cord (3). Liver (4). Dermis (5). Heart
Answer: (A) 1+2 (B) 2+3 (C) 4+5 (D) 3+4 (E) 1+5
11. Which of the following statements regarding development of blood vessels are CORRECT? (1). Both blood cells and blood vessels arise from mesoderm (2). VEGF induces formation of hemangioblasts (3). FGF2 signals the differentiation of peripheral hemangioblasts into endothelium (4). VEGF regulates coalescence of endothelial cells into the primitive blood vessels (5). VEGF regulates angiogenesis
Answer: (A) 2+3+4 (B) 1+3+5 (C) 2+3+5 (D) 1+4+5 (E) 1+2+5
12. Herniated intestinal loop occurs during (A) 2nd~8th weeks (B) the whole embryonic period (C) 6th~12th weeks (D) the whole fetal period (E) 18th~38th weeks
13. Which of the following hormones are secreted from placenta? (1). Progesterone (2). Human chorionic gonadotropin (3). Estriol (4). Somatomammotropin (5). Corticosterone
Answer: (A) 1+2+5 (B) 1+2+3+4 (C) 2+3+4+5 (D) 1+3+4+5 (E) 1+3+4
14. Which of the following statements regarding heart tube and cardiac loop are CORRECT? (1). Endocardium is the inner layer of the heart tube and is formed by epithelium (2). Epicardium covers the outside of the tube and is responsible for formation of the coronary arteries (3). myocardium forms the muscular wall of the heart tube (4). During the formation of cardiac loop, the part of bulbus cordis bends ventrally, caudally and to the right (5). During the formation of cardiac loop, the area of primitive atrium shifts dorsocranially and to the left
Answer: (A) 1+3+5 (B) 1+3+4+5 (C) 2+3+4+5 (D) 1+2+3+5 (E) 1+2+3+4+5
15. The ductus arteriosus connects the (A). pulmonary arteries of the left and right sides (B). pulmonary arteries with the aorta (C). pulmonary veins with the aorta (D). ascending aorta with the descending aorta (E). atria of the right and left sides
16. Which of the following is NOT a characteristic of tetralogy of Fallot? (A) pulmonary stenosis (B) right ventricular hypertrophy (C) atrial septal defect (D) overriding aorta (E) ventricular septal defect
17. Which of the following subdivisions of the heart is partitioned by the formation of a spiral septum? (A) ventricle (B) atrium (C) bulbus cordis (D) sinus venosus (E) arch of aorta
18. Which of the following descriptions are CORRECT? (1). Pontine flexure appears at the ventral

side of the mesencephalon (2). Rhombencephalon develops into metencephalon and myelencephalon (3). The lumen located within the mesencephalon is the 4th ventricle (4). The lumen within the diencephalon is the 3rd ventricle (5). The connection between lateral ventricle and the 3rd ventricle is foramina of Monro

Answer: (A) 2+4+5 (B) 1+2+3 (C) 1+3+5 (D) 2+3+4 (E) 1+4+5

19. Which of the following brain structures are derived from diencephalon? (1). Anterior lobe of pituitary (2). Posterior lobe of pituitary (3). Pineal gland (4). Hypothalamus (5). Thalamus

Answer: (A) 1+2+4 (B) 1+2+3+4 (C) 2+3+4 (D) 2+3+4+5 (E) 1+2+3+4+5

20. As a general rule, derivatives of the basal plates in the central nervous system (A) have sensory functions (B) have motor functions (C) form dorsal root ganglia (D) do not extend above the mesencephalon (E) form postganglionic fiber

三、請寫出下列之英文名：(共 20 分，每題 2 分。)

1.舟狀頭畸形， 2.脊柱側彎， 3. 隱藏式脊突裂開， 4.先天性缺指(趾)畸形， 5.關節僵硬彎曲， 6.心臟異位， 7.氣管閉鎖， 8.肺膨脹不全， 9.臍尿管瘻管， 10.尿道上裂。

四、Why happen the Testicular feminization syndrome and Female pseudohermaphrodites? What is its final results?(10%)

五、When happen the normal physiological omphalocele? Why happen the normal physiological hernia? How do you compare the omphalocele disease with gastroschisis, describe its reason and final results. (10%)

六、Why the stomach and intestine always happen the atresia, congestion, or polyps, please describe its reason from the embryological development. (10%)