

I. For each of the following multiple choice questions, select the One most appropriate answer: (50%) 本大題請於試卷上「選擇題作答區」依序作答。

1. The facial (VII) nerve supplies muscles derived from which pharyngeal arch?

- a). first
- b). second
- c). third
- d). fourth

2. Cleft lip results from lack of fusion of the:

- a). medial nasal and lateral nasal processes
- b). medial nasal and maxillary processes
- c). lateral nasal and maxillary processes
- d). lateral nasal and mandibular processes

3. In case of holoprosencephaly, defects of facial structures are typically secondary to defects of the:

- a). pharynx
- b). oral cavity
- c). forebrain
- d). eyes

4. Meckel's cartilage is a prominent structure in the early formation of the:

- a). upper jaw
- b). hard palate
- c). soft palate
- d). lower jaw

5. An early induction in tooth development consists of the ectoderm of the dental epithelium acting on the underlying neural crest mesenchyme. Which of the following molecules is an important mediator of the inductive stimulus?

- a). BMP-4
- b). Tenascin
- c). Hoxb-13
- d). Msx-1

6. If the medial nasal process is absent, which of the following structure is not missing or incompletely formed?

- a). nasal septum

- b). philtrum
- c). primary palate
- d). secondary palate

7. The cheeks are formed by the:

- a). mandibular process only
- b). mandibular and maxillary processes
- c). maxillary processes only
- d). maxillary and lateral nasal process

8. Which of the following statements concerning the buccopharyngeal (oropharyngeal) membrane is not correct? The membrane:

- a). consists of ectoderm and endoderm
- b). normally persists until the sixth week postconception
- c). separates foregut from stomodeum
- d). extends between the frontonasal elevation and the processes of the first branchial arch

9. The oronasal membrane, located between the nasal sac and the embryonic oral cavity is a structure consisting of :

- a). ectoderm only
- b). ectoderm and endoderm only
- c). ectoderm, mesoderm and endoderm
- d). ectomesenchyme

10. The striated musculature of the tongue is derived from :

- a). first branchial arch mesenchyme, innervated by cranial nerve V
- b). second branchial arch mesenchyme, innervated by cranial nerve VII
- c). myotomes of the occipital somites, innervated by cranial nerve XII
- d). myotomes of the preotic somites, innervated by cranial nerve V and VII

II. Answer the following questions:

1. Why neural crest cells are considered such an important cell population for craniofacial development? (15%)
2. The mother of a 2-year-old boy consulted her pedodontist about an intermittent discharge of mucoid material from a small opening in the side of his neck. There was also extensive redness and swelling in the inferior third of the neck, just

anterior to the sternocleidomastoid muscle. (10%)

- a. What is the most likely diagnosis?
 - b. What is the probable embryologic basis of this intermittent mucoid discharge?
 - c. Discuss the etiology of this congenital anomaly.
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3. A male infant was born with a unilateral cleft lip extending into the floor of his nose and through the alveolar process of his maxilla. (15%)
 - a. What is the embryologic basis of these anomalies?
 - b. Neither parent had a cleft lip or cleft palate. Are genetic factors likely involved?
 - c. Are these anomalies more common in males?
 - d. What is the chance that the next child will have a cleft lip?
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4. A woman who took a dental x-ray check during the tenth week of pregnancy gave birth to an infant with bilateral cleft lip and cleft palate. She sued the dentist, blaming the facial malformations on the drug, and you are called in as an expert witness for the defense. What would be the basis for your case? (10%)