選擇題（一題二分）（50%）※ **選擇題部分請作答於電腦答案卡上，並且限用 2B 鉛筆。**

1. 以下有關adolescence的敘述何者為非?
   a. 此時牙齒會從mixed dentition 變成permanent dentition,顏面生長加速,上下顎骨的differential growth會表現出來
   b. 是源自thalamus內腦細胞所釋出的releasing factor最終驅使sex hormone的分泌,引發pubertal growth spurt
   c. growth spurt男女發生的時間相近
   d. sex hormone會加速cartilage的生長
   e. sex hormone 會讓cartilage變成骨頭的速率增快,當所有cartilage鈣化成骨頭的時候,生長潛力就會被用盡,pubertal growth進入尾聲
   f. 在青春期時cephalocaudal gradient of growth表現的更明顯
   g. 如果上下顎骨有anteroposterior差異,可以藉著pubertal growth spurt作改善
   h. 由於此時ramus高度也會有可觀的生長,因此垂直方向會有足夠的clearance讓牙齒可以更容易地作前後方向位置的調整
   A. abcgh B. bcde C. abg D. bc E. ceh

2. 有關下顎骨的生長，以下哪些是正確的?
   a. 下顎骨的endochondral growth是來自condyle部分的生長
   b. mandibular body的增長主要是來自chin point的向前下骨頭沉積以及ramus後緣的骨頭沉積
   c. ramus高度的增加主要來自condyle的生長以及表面骨頭的remodeling
   d. 下顎骨的前身是Meckel's cartilage, 是先經Meckel's cartilage鈣化後呈下顎骨體,再與condylar cartilage結合
   e. 由於mandibular body length愈來愈長,所以arch length analysis 裡的available space會隨著年齡增長而越來越多
   A. 以上皆是 B. abc C. abcd D. abce E. ac

3. 有關long face以下哪些是正確的?
   a. palatal plane rotates down posteriorly
   b. increase in internal rotation and decrease in external compensation
   c. primarily matrix rotation (centered at mandibular body)
   d. anterior open bite tendency (如果沒有dental compensation的話)
   A. 以上皆是 B. abd C. ad D. acd E. bcd

4. 以下何者為非?
   A. Osteoclastogenesis is regulated through signaling via the receptor activated NF-*k*B/receptor-activated NF-*k*B ligand/osteoprotegerin pathway.
   B. Dental follicle produces colony-stimulating factor 1, which promotes the differentiation of monocytes into macrophages and osteoclasts.
   C. Transforming growth factor-β up-regulates the expression of Runx-2 in the apical portion of the dental follicle, favoring bone removal along the surface where the tooth erupts.

5. About the changes in AGING found in Behrents' study, which is NOT true?
   A. An increase occurred in nasal projection, and the nasal tip moved more inferiorly.
   B. The lips become less prominent and also tended to become located more inferiorly.
   C. The nasolabial angle becomes more acute.
   D. Maxillary incisors becoming more upright and lower incisors becoming more protrusive in females.

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E. The molars tilt forward in both genders.

6. Which of the following fibers is NOT gingival fiber? A. circular, B. alveolar crest, C. dentogingival, D. dentoperiosteal, E. transseptal fiber.

7. Which of the following statements about TMJ is NOT true?
   A. Chronic internal derangements can adversely affect facial growth and adaptation.
   B. Compromised masticatory function associated with poor occlusion may result in progressive degeneration.
   C. Despite a long history of internal derangement and compromised function, the TMJ has a remarkable capacity for adapting when adequate stomatognathic function is restored.
   D. From a physiologic perspective, intracapsular surgery is recommended because it cures the internal derangement and encourages the joint to adapt to the changing biomechanical demands.
   E. The TMJ is a remarkably regenerative and adaptive joint if its physiologic limits are respected.

8. Through the systematic study of autopsy specimens, the most stable osseous structures in the anterior cranial base of growing children and adolescents have been defined anatomically. Which of the followings is NOT the most stable osseous landmarks for superimposition of cephalometric radiographs? A. the anterior curvature of the sella turcica, B. the cribriform plate, C. the internal curvature of the frontal bone, D. nasion.

9. During the osteoblast differentiation sequence, the photoperiod (circadian rhythm) exerts a strong influence. How many alternating 12-hour dark/light cycles are needed for a G1-stage A cell to progress through the entire histogenesis sequence to form two osteoblasts? A. three, B. four, C. five, D. six, E. seven.

10. Which of the following statements is NOT true?
   A. The PDL is supplied with 2 kinds of nerve terminals: Ruffini-like endings and nociceptive endings.
   B. The mechanoreceptors in the apical half of the dental root have a low threshold and respond to even minor stretching of the PDL.
   C. Nociceptors have a high threshold and are activated by heavy forces, tissue injury, and inflammatory mediators.
   D. The force-sensing PDL nerve fibers are either unmyelinated C fibers or small myelinated Aδ fibers.
   E. The mechanoreceptors are active in physiological conditions and contain various neuropeptides such as substance P, vasoactive intestinal polypeptide, and calcitonin gene-related peptide.

11. Which of the following statements is NOT true?
   A. The maxilla forms initially from a center of mesenchymal condensation in the maxillary process.
   B. The mandible forms predominantly from Meckel's cartilage.
   C. The cranial vault is made up of a number of flat bones that are formed directly by intramembranous bone formation.
   D. The bones of the cranial base are formed initially in cartilage and are later transformed by endochondral ossification to bone.

12. 有關cephalocaudal gradient of growth以下哪個是錯誤的?
   A. 出生後下半身長的會比上半身多
   B. 是因組織細胞以同樣速率但不等量的增生所導致
   C. 可以從Scammon's curves for growth看出cephalocaudal gradient of growth
   D.下顎長的比上顎晚但多

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13. A high-pull headgear combined with a short outer arm bended upwards will result in maxillary first molars distalization and (A) root mesial rotation (B) root distal rotation (C) bodily movement.

14. 以下哪些是顱顏複合體的生長中心?
    a. cranial base synchondroses b. nasal septum c. cranial vault d. maxillary sutures e. mandibular condyles
    A. 以上皆是 B. abc C. ade D. ab E. cde

15. 出生後cranial base的增長主要是來自synchondroses的生長。這些synchondroses包括以下哪些?
    a. fronto-ethmoid synchondrosis b. spheno-ethmoid synchondrosis c. pre-sphenoid synchondrosis d. inter-sphenoid synchondrosis e. basis-sphenoid synchondrosis f. spheno-occipital synchondrosis g. basis-occipital synchondrosis
    A. abe B. acdg C. bcd D. bdg E. bdf

16. Which of the following is NOT the effect of the Herbst appliance? (A) backward and upward movements of maxillary molars; (B) distal-crown tipping of maxillary molars; (C) opening of the mandibular plane angle; (D) anterior displacement of the mandibular dentition.

17. Which of the following statements is NOT true: (A) The choice of point of force application can affect the clinical outcome of treatment with an intrusive base arch; (B) whether or not to cinch the intrusive base arch wire can affect the clinical outcome of treatment; (C) the couple at the molar resulting from placement of an anterior intrusion arch will be greater in magnitude than the moment created by the intrusive force acting anterior to the incisors; (D) the moment acting anteriorly is equal to the intrusive force times the perpendicular distance between the vector of that force and the point of wire bending.

18. Cinch-backs distal to molar buccal tubes can be obtained by resistance or flame-annealing the end of the nitinol wire. A (A) dark straw (B) light straw (C) dark blue (D) dark red color indicates the desired annealing temperature.

19. Which of the following statements is NOT true? (A) TMA has a modulus of elasticity between that of steel and Nitinol; (B) TMA can be deflected up to three times as much as steel without permanent deformation; (C) TMA is has good ductility, equivalent to or slightly better than that of stainless steel; (D) TMA can be welded without significant reduction in yield strength.

20. Regarding the treatment for facial asymmetry, which of the followings is NOT true?
    A. In unilateral condylar fracture in an adult patient, a "half" bite plate may be inserted on the affected side and vertical elastics pull together the unaffected side.
    B. Hyperplastic growth of one side of the mandible in a child may be treated by altering with growth modification.
    C. The hybrid functional appliance distracts the shortened condyle and encourages an acceleration of the growth response.
    D. Distraction osteogenesis should be reserved for patients with no growth potential.

21. About root resorption, which is NOT true?
    A. Root resorption occurs near the hyalinized zone in close proximity to a rich vascular network.
    B. The first sign of root resorption is defined as a penetration of mononucleated TRAP- positive cells from the periphery of the necrotic tissue, which start to remove the precementum/cementum surface.

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C. Root resorption beneath the main hyalinized zone occurs in a later phase during which multinucleated TRAP-positive cells are involved in both removing the main mass of necrotic PDL tissue and resorbing the outer layer of the root cementum.
D. No significant difference exists in the tendency of root re- sorption of traumatized and noninjured incisors.
E. Endodontically treated teeth have been suggested to be more resistant to root resorption because of increased dentin hardness and density.

22. Which of the following statements is NOT true?
A. The remodeling of gingival connective tissue is not as rapid as that of the PDL and the gingival collagen fibers has slower turnover rate.
B. Gingival fibers are seen stretched and unremodeled as long as 232 days after experimental tooth rotation.
C. No agreement as yet exists regarding whether stretching and formation of elastic fibers increase the tendency for the treated tooth to return to its former position.
D. Compressed fiber bundles on the compression side tend to be more functionally arranged.
E. The most persistent relapse tendency is caused by the structures related to the marginal third of the root.

23. About bone formation, which of the following statements is NOT true?
A. The loading conditions at the time of bone formation dictate the orientation of the collagen fibers to best resist the loads to which the bone is exposed.
B. Bone formation can adapt to different loading conditions by changing the internal lamellar organization of mineralized tissue.
C. Lamellae with a longitudinally oriented matrix are particularly strong in tension.
D. Osteoblasts deposit 70% to 85% of the eventual mineral complement by a process called primary mineralization.
E. The ultimate strength of new bone is dictated by the cell-mediated process of primary mineralization.

24. The FEM analysis simulating the experimental tipping of a rat maxillary first molar indicates that areas of bone formation are associated with
A. elevated maximal principal stress in the PDL.
B. decreased maximal principal stress in the PDL.
C. elevated minimal principal stress in the cortical bone of the lamina dura.
D. decreased minimal principal stress in the cortical bone of the lamina dura.

25. If a bend is made in an orthodontic appliance, the maximal elastic load is greatest in the direction identical to the original direction of bending or twisting. This phenomenon is known as the A. Bauschinger, B. Merrifield, C. Herbst, D. Zachrisson, E. Burstone effect.

問答題 （50%）請在答案卷上作答

Please propose a research project for your master thesis. Briefly state the purpose of your research, your hypothesis, the background literatures or concepts supporting your hypothesis, and how you plan to conduct this research project.

試題隨卷繳回