MCQs on first lec Embryology By Mohammad Rhiyad

1. Regarding the axial skeleton, all the following are false except:

A. Includes only the ribs and sternum.
B. Excludes the skull.
C. Includes the vertebral column.
D. Includes the limbs.
E. Is derived entirely from lateral plate mesoderm.

> ***Answer:*** *C. Includes the vertebral column.*

2. Paraxial mesoderm contributes to all the following except:

A. Sclerotome.
B. Dermomyotome.
C. Somites.
D. Shoulder girdles.
E. Myotomes.

> ***Answer:*** *D. Shoulder girdles.*

3. Neural crest cells contribute to all the following except:

A. Bones of the face.
B. Base of the skull.
C. Nasal bones.
D. Vertebral column.
E. Lacrimal bones.

Answer: *D. Vertebral column.*

4. Regarding intramembranous ossification, all the following are false except:

A. It forms hyaline cartilage models.
B. It forms flat bones of the skull.
C. It occurs in long bones.
D. It begins after birth.
E. It requires endochondral ossification.

Answer: *B. It forms flat bones of the skull.*

5. Endochondral ossification, all the following are false except:

A. Osteoblasts form directly from mesenchymal cells.
B. It involves the formation of a cartilaginous model.
C. It occurs only in flat bones.
D. Blood vessels invade after ossification completes.
E. Secondary ossification occurs first.

Answer: *B. It involves the formation of a cartilaginous model.*

6. The lateral plate mesoderm contributes to all the following except:

A. Pelvis.
B. Shoulder girdles.
C. Limbs.
D. Skull base.
E. Sternum.

Answer: *D. Skull base.*

7. Neural crest cells are responsible for forming all the following except:

A. Nasal bones.
B. Lacrimal bones.
C. Maxilla.
D. Vertebral arches.
E. Mandible.

Answer: *D. Vertebral arches.*

8. Regarding ossification, all the following are false except:

A. Intramembranous ossification forms the limb bones.
B. Endochondral ossification occurs without cartilage models.
C. Intramembranous ossification involves flat skull bones.
D. The vertebrae ossify via intramembranous ossification.
E. Mesenchyme directly becomes osteoclasts in intramembranous ossification.

Answer: *C. Intramembranous ossification involves flat skull bones.*

9. Regarding the neurocranium, all the following are false except:

A. It forms the facial skeleton.
B. It includes the mandible.
C. It develops entirely from endochondral ossification.
D. It includes both membranous and cartilaginous parts.
E. It is derived exclusively from neural crest cells.

Answer: *D. It includes both membranous and cartilaginous parts.*

10. The cartilaginous neurocranium contributes to all the following except:

A. Sella turcica structures.

B. Bones in front of the pituitary gland.

C. Occipital somites-derived bones.

D. Intramembranous ossified skull bones.

E. Bones posterior to the pituitary gland.

Answer: *D. Intramembranous ossified skull bones.*

11. Regarding the viscerocranium, all the following are false except:

A. It forms entirely from the third pharyngeal arch.

B. It is derived from paraxial mesoderm.

C. The mandibular process contains Meckel cartilage.

D. Mesenchyme around the mandibular process ossifies by endochondral ossification.

E. It does not form any part of the temporal bone.

Answer: *C. The mandibular process contains Meckel cartilage.*

12. The following features of the newborn skull are false except:

A. Sutures are formed entirely by neural crest cells.

B. Fontanelles are absent at birth.

C. Anterior fontanelle closes by 2 months of age.

D. Skull molding occurs during birth.

E. The facial region is larger than the neurocranium at birth.

Answer: *D. Skull molding occurs during birth.*

13. Resegmentation of the vertebrae results in all the following except:

A. Intersegmental arteries pass midway over vertebral bodies.

B. Spinal nerves leave through intervertebral foramina.

C. Myotomes bridge intervertebral discs.

D. Nucleus pulposus forms entirely from sclerotome cells.

E. Vertebrae form from a combination of adjacent somite halves.

Answer: *D. Nucleus pulposus forms entirely from sclerotome cells.*

14. Regarding ribs, all the following are false except:

A. Costal cartilages are derived from paraxial mesoderm.
B. The bony portion is derived from lateral plate mesoderm.
C. Ribs grow out from thoracic vertebrae's costal processes.
D. All rib development occurs through intramembranous ossification.
E. The sternum is formed from paraxial mesoderm.

Answer: *C. Ribs grow out from thoracic vertebrae's costal processes.*

15. The sternum develops through all the following mechanisms except:

A. Formation of two sternal bands in lateral plate mesoderm.
B. Fusion of sternal bands to form a cartilaginous model.
C. Ossification of sternebrae in the midline.
D. Contribution from paraxial mesoderm.
E. Development in the ventral body wall.

Answer: *D. Contribution from paraxial mesoderm.*

16. The vertebral column exhibits all the following characteristics except:

A. Formation of two primary curves: thoracic and sacral.
B. Secondary curvatures develop with head holding and walking.
C. Sclerotome cells undergo resegmentation.
D. The intervertebral discs are formed entirely by the notochord.
E. Spinal nerves pass through intervertebral foramina.

Answer: *D. The intervertebral discs are formed entirely by the notochord.*

17. The intervertebral disc includes the following structures except:

A. Nucleus pulposus derived from the notochord.
B. Annulus fibrosus made of circular fibers.
C. Mesenchyme entirely forming the disc.
D. Contribution from sclerotome cells.
E. Space between two vertebrae filled with mesenchymal cells.

Answer: *C. Mesenchyme entirely forming the disc.*

18. Resegmentation of sclerotomes causes all the following except:

A. Formation of vertebrae from two adjacent somites.
B. Alignment of spinal nerves near intervertebral discs.
C. Bridging of myotomes over intervertebral discs.
D. Positioning of arteries within vertebral bodies.
E. Formation of ribs directly from sclerotome resegmentation.

Answer: *E. Formation of ribs directly from sclerotome resegmentation.*

19. Secondary curvatures of the spine develop due to:

A. Sclerotome resegmentation.
B. Hypertrophy of thoracic vertebrae.
C. Holding up the head and learning to walk.
D. The development of intervertebral discs.
E. Cartilage formation in the vertebrae.

Answer: *C. Holding up the head and learning to walk.*

20. Costal cartilage formation involves all the following except:

A. Migration of sclerotome cells to lateral plate mesoderm.

B. Origin from paraxial mesoderm cells.
C. Growth of ribs from thoracic vertebrae.
D. Intramembranous ossification of ribs.
E. Development in association with lateral somatic frontier.

Answer: *D. Intramembranous ossification of ribs.*

21. The anterior fontanelle is characterized by all the following except:

A. Found where two parietal and two frontal bones meet.
B. Allows skull molding during birth.
C. Derived only from paraxial mesoderm.
D. Provides information about ossification and intracranial pressure.
E. Typically closes by 18 months of age.

Answer: *C. Derived only from paraxial mesoderm.*

22. The bones of the skull undergo growth by all the following mechanisms except:

A. Apposition of new layers on outer surfaces.
B. Osteoclastic resorption from inside.
C. Increase in cranial capacity during early childhood.
D. Molding without sutures or fontanelles.
E. Sutures remaining open for growth postnatally.

Answer: *D. Molding without sutures or fontanelles.*

23. The development of ribs involves all the following except:

A. Derived from the costal processes of thoracic vertebrae.
B. Formed from sclerotome cells.
C. Originating from lateral plate mesoderm exclusively.
D. Growing out from paraxial mesoderm.

E. Involvement of lateral somatic frontier in costal cartilage development.

Answer: *C. Originating from lateral plate mesoderm exclusively.*

24. The sternum develops through all the following processes except:

A. Formation of two sternal bands from lateral plate mesoderm.
B. Fusion of sternal bands to form a cartilaginous model.
C. Development in the parietal layer of lateral plate mesoderm.
D. Contribution of paraxial mesoderm to its ossification.
E. Formation of structures like the manubrium and xiphoid process.

Answer: *D. Contribution of paraxial mesoderm to its ossification.*

25. Vertebral column development involves all the following except:

A. Formation from sclerotome cells.
B. Resegmentation of sclerotomes.
C. Development of intervertebral discs from mesenchymal cells.
D. Persistent notochord forming the annulus fibrosus.
E. Spinal nerves aligning near intervertebral discs.

Answer: *D. Persistent notochord forming the annulus fibrosus.*

26. The bones of the viscerocranium include all the following except:

A. Maxilla formed from the dorsal portion of the first pharyngeal arch.
B. Zygomatic bone from the maxillary process.
C. Mandible formed through endochondral ossification.
D. Nasal and lacrimal bones derived from neural crest cells.
E. Stapes derived from the second pharyngeal arch.

Answer: *C. Mandible formed through endochondral ossification.*

27. The neurocranium includes all the following features except:

A. Derived from neural crest cells and paraxial mesoderm.
B. Forms a protective case for the brain.
C. Undergoes only endochondral ossification.
D. Includes flat bones with radiating spicules.
E. Enlarges by apposition and osteoclastic resorption.

Answer: *C. Undergoes only endochondral ossification.*

28. The face appears babyish at birth due to all the following except:

A. Absence of paranasal sinuses.
B. Small size of facial bones.
C. Lack of ossification of facial bones.
D. Delayed development of teeth.
E. Small jaws compared to the neurocranium.

Answer: *C. Lack of ossification of facial bones.*