

Review Questions on Vertebrae, Spinal Cord, Spinal Nerves

1. ____ Pregnant women can show lordosis of the spinal column to counter the added weight and shift in center of gravity. A lordosis is a spinal curvature which is:
 - A. concave anteriorly in the thoracic region
 - B. concave posteriorly in the lumbar region
 - C. concave posteriorly in the cervical region
 - D. concave laterally opposite the side of handedness (right or left)
 - E. concave anteriorly in the lumbar region

2. ____ In herniation of the nucleus pulposus (slipped disc), displacement often occurs in a postero-lateral direction leading to painful nerve compression. This occurs because the ____ is a relatively narrow band.
 - A. Anterior longitudinal ligament
 - B. Ligamenta flava
 - C. Interspinous ligament
 - D. Posterior longitudinal ligament
 - E. Supraspinous ligament

3. ____ A 'hemivertebra' occurs when half of a vertebra fails to develop. This can result in painful nerve compression and curvature of the spinal column that is termed
 - A. Lordosis
 - B. Scoliosis
 - C. Kyphosis
 - D. Exaggerated primary curvature
 - E. Exaggerated secondary curvature in the lumbar region

4. ____ A patient complains of numbness over the region of the little finger of the hand on the palmar surface. This could be a sign of herniation of an intervertebral disc located between vertebrae
 - A. C3-C4
 - B. C4-C5
 - C. C5-C6
 - D. C6-C7
 - E. C7-T1

5. ____ A lumbar puncture for sampling of CSF will pass through all of the following structures or spaces EXCEPT the
 - A. pia mater.
 - B. dura mater.

- C. epidural space.
 - D. ligamentum flavum.
 - E. supraspinous ligament.
6. ____ Which of the following is an action of Gamma motor neurons?
- A. Increase sensitivity of Golgi tendon organs
 - B. Increase sensitivity of Ia fibers in muscle spindles
 - C. Directly produce contraction of all muscle cells
 - D. Increase sensitivity of free nerve endings in muscles
 - E. Produce relaxation of muscle cells in muscle spindles
7. ____ Which of the following occurs in Lower motor neuron lesions?
- A. Hyperreflexia
 - B. Fasciculations
 - C. Decreased muscle tonus
 - D. Clasped knife reflexes
 - E. Babinski sign

Key to Questions on Vertebrae, Spinal Cord, Spinal Nerves

1. B
2. D
3. B
4. E
5. A
6. B
7. C

HEAD AND NECK EMBRYOLOGY PRACTICE QUESTIONS

1. ____ A neonate is examined and found to have a large cleft in the philtrum of the upper lip. This condition arises because of failure of fusion of the
 - A. maxillary and mandibular processes
 - B. maxillary and medial nasal processes
 - C. maxillary and lateral nasal processes
 - D. medial and lateral nasal processes
 - E. frontonasal process with medial nasal process.

2. ____ An 8 month old infant is brought to a physician working in a field hospital in Africa. The mother of the child says the infant has difficulty swallowing and that food is expelled through the nasal cavity. Upon examination, the physician finds a large cleft in the midline in the hard and soft palates and suspects that the infant developed with a Posterior Cleft palate. The anatomical landmark that would be used to differentiate Posterior and Anterior cleft palate is the
 - A. Greater palatine foramen.
 - B. Infraorbital foramen
 - C. Incisive foramen
 - D. Mental foramen
 - E. Mandibular foramen

3. ____ An infant has a continuous secretion of tears from the right eye. MRI of the orbit appears normal and the lacrimal gland is not enlarged. The physician suspects that the condition is resulting from obstruction of the nasolacrimal duct due to failure of canalization of the duct in development. This prevents drainage of tears to the
 - A. Inferior meatus of the nasal cavity
 - B. Superior meatus of the nasal cavity
 - C. Bulla ethmoidalis of the nasal cavity
 - D. Infraorbital foramen
 - E. Maxillary sinus

4. ____ During a routine auditory test, a child is found have a severe conduction deficit in one ear. High resolution CT scan of the tympanic cavity shows a complete agenesis of the stapes. This condition could result from failure of formation of the stapes from the
 - A. First branchial arch
 - B. Second branchial arch
 - C. Third branchial arch
 - D. Frontonasal process
 - E. First branchial pouch

5. _____ Treacher Collins syndrome is a genetic defect in which neural crest cells do not migrate appropriately into the First branchial arch. Children with this syndrome often have hypoplasia of the

- A. Frontal bone
- B. Zygomatic bone
- C. Mandible
- D. Hyoid bone
- E. Nasal septum

6. _____ Accidental removal of the parathyroid glands during thyroid surgery is the most frequent cause of hypoparathyroidism. The parathyroid glands are typically located on the posterior surface of the thyroid or within the substance of the gland but their location is variable. This variability is due to the multiple origin of the parathyroid glands from the

- A. First and second branchial pouches
- B. Second and third branchial pouches
- C. First and third branchial pouches
- D. Third and fourth branchial pouches
- E. Second and fourth branchial pouches

7. _____ A teenage patient complains that he has a secretion from his neck every time he gets a cold. Examination of the patient shows a small opening in the neck and swelling of the palatine tonsils. The physician suspects that this condition has resulted from branchial fistula because the opening in the neck is

- A. anterior to the Sternocleidomastoid muscle
- B. in the midline of the neck above the hyoid bone
- C. in the midline of the neck below the cricoid cartilage
- D. posterior to the Sternocleidomastoid muscle
- E. immediately superior to the sternal notch

8. _____ A young child who has difficulty swallowing is brought to a physician's office for a second opinion. Examination of the oral cavity shows a mass in the posterior tongue and the child has been scheduled for surgical removal of the mass. The physician insists that further tests and scans be performed because the mass could be normal but ectopic tissue of the

- A. submandibular salivary glands
- B. thyroid gland
- C. sublingual salivary glands
- D. palatine tonsils
- E. thymus gland

Head and Neck Embryology Question Key

- 1.B
- 2.C
- 3.A
- 4.B
- 5.C
- 6.D
- 7.A
- 8.B

HEAD AND NECK ANATOMY PRACTICE QUESTIONS

A patient complains that he has lost sensation on his face and that the skin of his forehead feels numb. The physician lightly touches the patient's forehead (immediately above the eye brow) with a fine pointed object but the patient says he does not feel anything.

1. _____ The nerve that is being tested is the _____ which is a branch of _____.
- A. Mental nerve, V3
 - B. Supraorbital nerve, V1
 - C. Infraorbital nerve, V2
 - D. Facial nerve
 - E. Glossopharyngeal nerve

A person is in an automobile accident and gets bumped on the side of the head. The patient refuses to be taken to the hospital and instead demands to simply go home and lie down for a while. Within hours, the person is rushed to the hospital after losing consciousness. X-ray of the skull shows a fracture on the side of the skull in the temporal region.

2. _____ You would immediately suspect that the patient was suffering from a _____ and that the _____ may have been severed to cause the symptoms.
- A. Subdural hematoma, ophthalmic artery
 - B. Subdural hematoma, middle meningeal artery
 - C. Epidural hematoma, ophthalmic artery
 - D. Epidural hematoma, middle meningeal artery
 - E. Epidural hematoma, deep temporal artery

3. _____ This artery is a branch of the _____
- A. Internal Carotid Artery
 - B. Superficial Temporal Artery
 - C. Occipital Artery
 - D. Maxillary Artery
 - E. Facial Artery

A patient sees a physician because the eyelid of his right eye is drooping (ptosis) and he is having double vision. Examination shows that pupil is dilated in the same eye and that it shows lateral strabismus (wall-eyed) at rest.

4. _____ The physician suspects that the _____ nerve may have been damaged.
- A. Trochlear
 - B. Abducens
 - C. Oculomotor
 - D. Facial
 - E. Ophthalmic division of the Trigeminal (V1).

5. _____ The ptosis (drooping eyelid) is due to partial paralysis of the

- A. Superior oblique
- B. Levator Palpebrae Superioris
- C. Frontalis
- D. Superior Rectus
- E. Orbicularis Oculi

6. _____ The pupil is dilated because the action of the dilator pupillae muscle is unopposed. The dilator pupillae muscle is innervated by

- A. Sympathetic fibers
- B. Facial nerve
- C. Infraorbital nerve (V2)
- D. Trochlear nerve
- E. Optic nerve

A teenager patient develops a pimple on the face lateral to the nose and scratches the sore. In time, the sore becomes infected but remains untreated. The patient then develops neurological symptoms and has the major complaint of 'blurred vision' which is diagnosed as Diplopia.

7. _____ You suspect that the infection has spread to the _____ via the _____.

- A. Superior Sagittal sinus, 'bridging' veins
- B. Inferior Petrosal sinus, middle meningeal vein
- C. Cavernous sinus, ophthalmic veins
- D. Transverse sinus, mastoid veins
- E. Cavernous sinus, retromandibular veins

8. _____ The blurred vision is likely result from compromised function of

- A. optic nerve (II)
- B. optic chiasm
- C. long ciliary nerves
- D. short ciliary nerves
- E. nerves to eye muscles (III, IV, VI)

9. _____ An acoustic neurinoma (neuroma) is a tumor that compresses the nerves passing through the internal auditory meatus. A patient with an acoustic neurinoma could show all of the following symptoms EXCEPT

- A. loss of hearing
- B. facial paralysis
- C. loss of taste to the anterior 2/3 of the tongue
- D. decreased secretion of the lacrimal gland
- E. dilated pupil of the eye

10. _____ A 63-year-old jazz musician fell off the stage during a concert tour and his head struck a large speaker in front of the stage. While he felt fine the day of the fall, but the next morning he awoke with a bad headache and was verbally incoherent. X rays

taken at the hospital show no fractures of the skull but there is evidence of papilledema. Damage to which of the following vessels is most likely to account for the symptoms?

- A. Internal Carotid Artery
- B. Internal Jugular Vein
- C. Vertebral Artery
- D. Superficial Temporal Artery
- E. 'Bridging' Vein or Venous Sinus

11. ____ A patient chronically suffers from excess production of mucous in the nasal cavity. He also complains that he often has tears in his eye. These symptoms could result from damage to the parasympathetic innervation of the mucous glands of the nose and the lacrimal gland. Damage to which of the following cranial nerves and associated ganglion could produce these symptoms.

- A. CN VII, pterygopalatine ganglion
- B. CN IX, otic ganglion
- C. CN III, ciliary ganglion
- D. CN V, Semilunar ganglion
- E. CN VII, submandibular ganglion

12. ____ Access to the circulatory system may be obtained in neonates by a needle placed into the skull at the Anterior fontanelle. The needle enters the

- A. superior sagittal sinus
- B. inferior sagittal sinus
- C. sigmoid sinus
- D. middle meningeal vein.
- E. cavernous sinus

13. ____ A patient complains that he has difficulty chewing and that part of his face feels numb. When asked to open his mouth, the jaw is observed to deviate toward the right. You suspect that the patient has damage to the

- A. right Facial nerve
- B. left Trigeminal nerve
- C. right Trigeminal nerve
- D. left Facial nerve
- E. left Glossopharyngeal nerve

14. ____ An 18 year-old female is in the back seat of car that suddenly decelerates in an accident. In the emergency room she complains that she has a stiff neck and is seeing double. She also holds her head tilted toward the left. A cranial nerve examination finds that she has difficulty moving her right eye downward, particularly from an adducted position. A head CT is ordered to specifically image which the following cranial nerves?

- A. right cranial nerve III
- B. left cranial nerve IV
- C. right cranial nerve IV
- D. left cranial nerve III

E. right cranial nerve VI

15. ____ When a person eats lunch quietly (not engaging in ill-timed or argumentative conversations) and begins to swallow, the soft palate is tensed by the action of the tensor palati muscle. The tensor palati muscle is innervated by cranial nerve

- A. IX (Glossopharyngeal)
- B. V (Trigeminal)
- C. X (Vagus)
- D. VII (Facial)
- E. XII (Hypoglossal)

16. ____ A person suffers a violent blow to the nose during a fist fight. After some time, the person notices that a clear fluid persists in dripping from the nose. This is most likely due to a fracture of the _____ and leakage of _____.

- A. Cribriform plate of the ethmoid bone; Cerebrospinal fluid (CSF)
- B. Cribriform plate of the ethmoid bone; Mucous
- C. Horizontal plate of the maxillary bone; Cerebrospinal fluid (CSF)
- D. Horizontal plate of the maxillary bone; Mucous
- E. Lateral pterygoid plate of the sphenoid bone; Cerebrospinal fluid (CSF)

17. ____ A small child is brought to your office and its head is in a position so that it is rotated to the left side (face looking over left shoulder). You suspect that the patient has a torticollis resulting from contracture of the _____ muscle.

- A. Left Sternocleidomastoid
- B. Right Sternocleidomastoid
- C. Left Scalenus Anterior
- D. Right Scalenus Anterior
- E. Left Digastric

HEAD AND NECK SAMPLE QUESTIONS KEY

- 1.B
- 2.D
- 3.D
- 4.C
- 5.B
- 6.A
- 7.C
- 8.E
- 9.E
- 10.E
- 11.A
- 12.A
- 13.C
- 14.C
- 15.B
- 16.A
- 17.B

LOWER EXTREMITY PRACTICE QUESTIONS

1. ____ A skier went off a down hill course and caught one ski under a log. X ray after the accident showed that he had fractured the tibia. A cast was placed on the leg that went from the knee to the foot. When the cast was removed, the patient dragged his foot and was unable to lift it from the ground. This condition most likely resulted from pressure of the cast on which of the following nerves?

- A. Femoral
- B. Obturator
- C. Superficial peroneal
- D. Common peroneal
- E. Tibial

2. ____ A football player was tackled from the lateral side while attempting an end around run in a tie game. The foot on that leg was planted on the ground and the tackle was made by another player who weighed in excess of 300 pounds and was running at the rate of 6 miles per hour. MRI of the knee showed damaged to three structures of the knee, consistent with a classic terrible triad (O'Donoghue's triad). These three structures include the

- A. tibial collateral ligament, medial meniscus, anterior cruciate ligament.
- B. fibular collateral ligament, lateral meniscus, posterior cruciate ligament.
- C. tibial collateral ligament, lateral lemniscus, anterior cruciate ligament.
- D. fibular collateral ligament, medial meniscus, posterior cruciate ligament.
- E. tibial collateral ligament, medial meniscus, posterior cruciate ligament.

3. ____ A cross country runner was attempting to pass another runner in a race and stepped off the path. His foot landed on a small stump resulting in hyperinversion of the foot. Subsequent x-ray showed no fractures of the tarsal bones, distal tibia or fibula but the ankle was swollen and painful. Which of the following structures were most likely to be damaged.

- A. deltoid ligament.
- B. long plantar ligament.
- C. spring ligament.
- D. calcaneofibular and anterior talofibular ligaments.
- E. calcaneofibular and posterior talofibular ligaments.

4. ____ A 63 year old grandmother lifted her 7 year old grandson and felt a sharp pain in her thigh. She was admitted to the emergency room and examination by palpation detected a bulge below the level of the inguinal ligament. MRI imaging showed a loop of bowel that was projecting from the Saphenous opening. The

fascial layer that is immediately overlying the bulge (femoral sheath) is continuous with the

- A. fascia of the Internal Oblique muscle
- B. transversalis fascia
- C. Camper's fascia
- D. Rectus sheath
- E. Iliotibial tract

5. ____ A runner accelerated toward the finish line and suddenly felt a pop on the back of his thigh. He then fell down in excruciating pain. MRI imaging showed an avulsion of tendons from their origin on the innominate bone. A small piece of bone remained attached to the muscle tendons. This bone was probably part of the

- A. pubis
- B. ischial spine
- C. ischial tuberosity
- D. acetabulum
- E. ilium

6. ____ Following hip replacement surgery on the left side of the body, an adult patient complains that he has difficulty walking. He is also very unstable when standing if he lifts his right leg. When the patient is observed while walking in a physician's office, the pelvis sways considerably and tilts toward the right when the right leg is lifted. Which of the following nerves was likely to have been damaged in the hip surgery?

- A. Left Inferior Gluteal Nerve
- B. Right Inferior Gluteal Nerve
- C. Left Sciatic Nerve
- D. Left Superior Gluteal Nerve
- E. Right Superior Gluteal Nerve

7. ____ While on a hunting trip, a teenage patient falls and the hunting knife is his belt penetrates his upper thigh. After being rushed to an emergency room, inspection of the wound shows a deep cut 1.5 inches below the inguinal ligament that is bleeding profusely. The physician suspects that the femoral artery has been severed and ligates the Femoral artery immediately below the inguinal ligament. The lower limb is still able to receive a sufficient supply of arterial blood because of which of the following anastomoses.

- A. Inferior Gluteal artery with the Medial and Lateral Femoral Circumflex arteries.
- B. Internal Pudendal artery with the Medial and Lateral Femoral Circumflex arteries.

- C. Superficial Circumflex Iliac artery with the Inferior Gluteal artery.
- D. Inferior Epigastric artery with the Medial and Lateral Femoral Circumflex arteries.
- E. Inferior Epigastric artery with the Inferior Gluteal artery.

8. ____ Avascular necrosis of the head of the femur can occur following falls in the elderly. This complication is most frequent following fracture of the femoral neck. The blood supply from which of the following arteries is likely to be compromised by the fracture and result in insufficient blood supply to the head of the femur?

- A. Lateral Femoral Circumflex artery
- B. Medial Femoral Circumflex artery
- C. Inferior Epigastric artery
- D. Inferior Gluteal artery
- E. Superficial External Pudendal artery

LOWER EXTREMITY ANSWER KEY

- 1.D
- 2.A
- 3.D
- 4.B
- 5.C
- 6.D
- 7.A
- 8.B