**Question 1**

Form which nerves does localised back pain initially originate?

A Mixed spinal nerves

B Posterior rami

C Meningeal branches of spinal nerves

D Mixed nerve roots

Explanation (B)

Localised lower back pain, pain that is perceived to be coming form the back is either muscular, joint or fibroskeletal pain. Muscular pain is generally reflexive cramping causing ischaemia. Joint pain is generally associated with aging (OA or RA). Pain form fractures or dislocation is no different than pain form arthritis and other bone or joint abnormalities. Intervetebral disc pain associated with disc herniation emanates from disruption of the posterolateral annulus fibrosis and impingement on the posterior longitudinal ligament. Pain in all these latter instances in conveyed initially via the meningeal branches of the spinal nerves

Note: There is another section in the TB. Five categories of structures receive innervation in the back and can be sources of pain

* Fibroskeletal structures: periosteum, ligaments and anuli fibrosi of IV disc.
* Meninges: coverings of the spinal cord.
* Both categories are innervated by posterior rami.
* Synovial joints: capsules of the zygapophysial joints
* Muscles: intrinsic muscles of the back
* These two categories are innervated by the posterior rami
* Nervous tissue: spinal nerves or nerve roots existing in the IV foramina

**Question 2**

Which of the following is an example of hyaline cartilage?

A Intervertebral disc

B Epiphyseal growth plates

C Knee meniscus

D Articular surface of clavicle

Explanation (B)

Examples of hyaline cartilage include costal, nasal, tracheobronchial, some laryngeal, the articular cartilage of typical synovial joints, and epiphyseal growth plates of bones.

Knee menisci, intervertebral discs, the glenoid labrum and articular surfaces of the clavicle are all fibrocartilage.

Note: Hyaline cartilage (aka “Gristle") is a type of cartilage found on many joint surfaces. It is pearly bluish in colour with firm consistency and considerable collagen. It contains no nerves or blood vessels, and its structure is relatively simple. Hyaline cartilage is covered externally by a fibrous membrane, called the perichondrium, except at the articular ends of bones and also where it is found directly under the skin, i.e. ears and nose. This membrane contains vessels that provide the cartilage with nutrition.

**Question 3**

Which of the following is an example of a synovial joint?

A Distal tibulofibular joint

B Sternomanubrial joint

C Intervertebral disc

D Sacroiliac joint

Explanation (D)

Intervetebral discs, the sternomanubrial jointand the pubic symphesis are secondary cartilaginous joints. The dital tibulofibular joint is a fibrous joint.

**Question 4**

Regarding hyaline cartilage, which of the following is correct?

A It forms epiphyseal growth plates

B It does not ossify with age

C It forms the glenoid labrum

D It is relatively vascular

Explanation (A)

Hyaline cartilage does ossify with age, has no capillaries, is avascular and has considerable elasticity. Fibrocartilage forms the glenoid labrum.

**Question 5**

Regarding the deep fascia, which of the following is incorrect?

A It is not present in the face

B It is anchored firmly to the periostium

C It is insensate

D It forms the retinaculae

Explanation (C)

Deep fascia is very sensitive. Its nerve supply, along with the nerve supply of the subcutaneous periosteum, is that of the overlying skin. The deep fascia is always anchored to the periosteum when it passes directly over the bone. Note: The deep fascia never passes freely over bone. It is not found in the face and the ischioanal fossa.

Deep fascia is devoid of fat. The relatively unyielding deep fascia investing muscles, and especially that surrounding the fascial compartments in the limbs, limits the outward expansion of the bellies of contracting skeletal muscles

**Question 6**

Which bone is not part of the axial skeleton?

A Sacrum

B Thoracic vertebrae

C Hyoid bone

D Scapulae

Explanation (D)

The skeletal system can be divided up into two functional parts: The axial skeleton and the appendicular skeleton

Axial skeleton: consists of the bones of the head (cranium), neck (hyoid bone and cervical vertebrae) and trunk (ribs, sternum, vertebrae and sacrum)

Appendicular skeleton: consists of bones of the limbs, including those forming the pectoral (shoulder) and pelvic girdles

**Question 7**

Which is the correct linkage between a myotome and its action?

A L2,3-hip extension

B L3,4-knee extension

C S1/S2-hip abduction

D L5/S1 inversion of the ankle

Explanation (B)

Hip abduction is L5/S1

Inversion of the ankle is L4/L5

Hip extension is L4/L5.

Foot eversion is L5/S1.

NOTE: these myotomes come from older texts. If you look in the current text, it the diagram of knee flexion and extension is labelled incorrectly. (I.e. knee flexion should be knee extension)

Another description of myotomes:

Flexion at the elbow (C5, C6, biceps). Extension at the elbow (C6, C7, C8, triceps). Extension at the wrist (C6, C7, C8, radial nerve). Squeeze two of your fingers as hard as possible ("grip," C7, C8, T1) [10] Finger abduction (C8, T1, ulnar nerve). Opposition of the thumb (C8, T1, median nerve). Flexion at the hip (L2, L3, L4, iliopsoas). Adduction at the hips (L2, L3, L4, adductors). Abduction at the hips (L4, L5, S1, gluteus medius and minimus). Extension at the hips (S1, gluteus maximus). Extension at the knee (L2, L3, L4, quadriceps). Flexion at the knee (L4, L5, S1, S2, hamstrings) Dorsiflexion at the ankle (L4, L5) Plantar flexion (S1)

**Question 8**

Which of the following is an example of a secondary cartilaginous joint?

A A lambdoid suture

B An intervertebral disc

C A costochondral joint

D Temporomandibular joint

Explanation (B)

The secondary cartilaginous joints are strong, slightly moveable joints united by fibrocartilage. The intervetebral discs are classic examples. These joints provide strength, shock absorption as well as considerable flexibility to the vertebral column.

Extra: Primary cartilaginous joint.- This is usually a temporary form of joint, for the connecting cartilage is, in most cases, ultimately converted into bone. Primary cartilaginous joints are found between the epiphyses and diaphyses of long bones, between the occipital and sphenoid bones at and for some years after birth, and between the petrous parts of the temporal bones and the jugular processes of the occipital bone. No movement is permitted at these joints. Secondary cartilaginous joint.-In this joint the opposed bony surfaces are covered with hyaline cartilage, and are connected to each other by a flattened disc of fibrocartilage of a more or less complex structure. The bones are also connected by ligaments, which, however, do not form a complete capsule round the joint. A limited degree of movement is permitted. Secondary cartilaginous joints are represented by the joints between the vertebral bodies, the joint between the manubrium and the body of the sternum, and the joint between the pubic bones. All these articulations lie in the median plane of the body.

**Question 9**

In relation to bone, which of the following is correct?

A Bone substance does not receive its nutrition from the periostium

B Haversian canals are the smallest canals in bone

C Periostium covers the articulating surface of bones

D Cancellous bone is capable of rearrangement in response to strain

Explanation (D)

The periostium is a thick layer of vascular fibrous tissue that covers the outer surface of the bone. The nutrition of the underlying bone depends on the integrity of the periostiums' blood vessels. It does not cover the articulating surfaces of the bones in synovial joints. Osteoblasts are the granular cell which produce ossification.

Extra: Mature compact bone most of the individual lamellae form concentric rings around larger longitudinal canals (approx. 50 µm in diameter) within the bone tissue. These canals are called Haversian canals. Haversian canals typically run parallel to the surface and along the long axis of the bone. The canals and the surrounding lamellae (8-15) are called a Haversian system or an osteon. A Haversian canal generally contains one or two capillaries and nerve fibres.

**Question 10**

Which plane and its definition is correct?

A Axial plane: are planes passing the body dividing it into anterior and posterior parts

B Frontal plane: the vertical plane passing longitudinally through the body, divides the body into right and left halves

C Sagittal plane: are vertical planes passing through the body parallel to the median plane

D Median plane: are transverse planes passing through the body at right angles to the sagittal plane

Explanation (C)

Median plane: the vertical plane passing longitudinally through the body, divides the body into right and left halves. Median planes pass through the body at right angles to the frontal plane

Sagittal plane: are vertical planes passing through the body parallel to the median plane

Frontal plane: are vertical planes passing through the body at right angles to the median plane, dividing the body into anterior (front) and posterior (back) parts- also called coronal plane

Transverse plane: are planes passing through the body at right angles to the median, sagittal and frontal planes, dividing the body into superior (upper) and inferior (lower) parts. Also called axial (or transxial) planes

**Question 11**

What is meant by the term heterotopic bones?

A Bone formation in tissues

B Supernumerary bone formation when additional ossification centers appear

C Cartilage that has undergone bony metaplasia

D Bone that forms during fracture healing

Explanation (A)

Heterotopic bone: bones sometimes form in tissues where they are not normally found. Often horse riders and athletes develop this type of bone formation in their thigh muscles following repetitive straining which cause small haemorrhages that undergo calcification and eventual ossification

Note: Formerly called myositis ossificans. This term has fallen out of favour because the condition is not always inflammatory and ossification occurs in soft tissues other than muscle

**Question 12**

Which of the following definitions is incorrect?

A Trochlea: spool like articular process

B Condyle: rounded, knuckle-like articular head

C Capitulum: small, round articualr head

D Facet: rough flat area usually covered with cartilage

Explanation (D)

* Capitulum: small, round articualr head
* Condyle: rounded, knuckle-like articular head
* Crest: ridge of bone
* Facet: smooth flat area usually covered with cartilage
* Fossa: hollow or depressed area
* Protuberance: projection of bone
* Spine: thorn-like process
* Trochlea: spool-like articular process

**Question 13**

Which of the following is a fusiform muscle?

A Pectoralis major

B Deltoid

C Orbicularis oris

D Biceps Brachii

Explanation (D)

Fusiform muscles are spindle shaped with a round thick belly (bellies) and tapered ends. Biceps Brachii, psoas major, flexor carpi radialis, brachioradialis, extensor carpi radialis longus are a few examples.

**Question 14**

Regarding the deep fascia, which of the following statements is correct?

A It Is a dense, organised layer of tissue containing fat

B It passes freely over bone

C It allows for muscle expansion

D It is absent in the face

Explanation (D)

The deep fascia is very sensitive. Its nerve supply, along with the nerve supply of the subcutaneous periosteum, is that of the overlying skin. The deep fascia is always anchored to the periosteum when it passes directly over the bone. The deep fascia never passes freely over bone and It is not found in the face nor the ischiorectal fossa.

Deep fascia is devoid of fat. The relatively unyielding deep fascia investing muscles, and especially that surrounding the fascial compartments in the limbs, limits the outward expansion of the bellies of contracting skeletal muscles