|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **Cervical** | **Thoracic** | **Lumbar** |
| **Body** | Small and broad from side to side | Medium size and heart shaped | Large and kidney shaped |
| **Vertebral foramen** | Large and triangular | Small and circular | Large and triangular |
| **Spine** | Small and bifid | Long and inclined downward | Short, flat and quadrangular and project posteriorly |
| **Costal facets on body** | ------ | Present | ------ |
| **Costal facets on transverse process** | ------ | Present | ------ |
| **Foramina transversarium** | Present | ------ | ------ |
| **Superior articular facets** | Posteriorly and superiorly | Posteriorly and laterally | Medially |
| **Inferior articular facets** | Inferiorly and anteriorly  | Anteriorly and medially | Laterally |

**2. Number of vertebrae:**

Cervical : 7

Thoracic : 12

Lumbar : 5

Sacral : 5

coccygeal :4

Total : 33

**3. Normal curvatures of the spine**

a. Primary curvatures:

b. Secondary curvatures:

**4. List the abnormal curves of the Vertebral Column:**

Kyphosis

Lordosis

Scoliosis

**5. List the parts of typical vertebra:**

**6. List the processes of a vertebral arch:**

The vertebral arch gives rise to seven processes:

1 - Spinous process (Spine)

2 - Transverse processes

4 - Articular processes (Superior – 2 & Inferior – 2)

**7. Age at which the secondary curvatures of the spine develop:**

**8. Enumerate the contents of sacral canal**

Anterior and posterior roots of the lumbar, sacral and coccygeal spinal nerves; filum terminale and fibrofatty material.

It also contains the lower part of the subarachnoid space down as far as the lower border of the 2nd sacral vertebra.

Anterior and posterior surfaces of the sacrum possess on each side four foramina for the passage of the anterior and posterior rami of the upper four sacral nerves.

 Sacrum is usually wider in proportion to its length in the female than in the male.

 Sacrum is tilted forward so that it forms an angle with the fifth lumbar vertebra, called the lumbosacral angle.

**9. List the parts of intervertebral disc**

* Annulus fibrosus (peripheral part) – Is composed of fibro-cartilage in which the collagen fibres are arranged in concentric layers.
* Nucleus pulposus (central part) - Is an ovoid mass of gelatinous material containing a large amount of water, a small number of collagen fibres, and a few cartilage cells.

**10. List the joints of the atlanto-axial joint**

* Median atlanto-axial joint: Between the odontoid process of the axis and the anterior arch of the atlas (Pivot).
* Lateral atlanto-axial joints: Inferior articular facet of the lateral mass of atlas and superior articular facet of the axis (Plane).

**11. List the ligaments of the atlanto-axial joint**

1. Apical ligament: (median-placed structure)

Connects the apex of the odontoid process to the anterior margin of the foramen magnum.

2. Alar ligaments:

Lie one on each side of the apical ligament

Connect the odontoid process to the medial sides of the occipital condyles

3. Cruciate ligament:

 This ligament consists of a transverse part and a vertical part.

 Transverse part

Is attached on each side to the inner aspect of the lateral mass of the atlas and

Binds the odontoid process to the anterior arch of the atlas.

 Vertical part

Runs from the posterior surface of the body of the axis to the anterior margin of the foramen magnum.

4. Membrana tectoria:

 This is an upward continuation of the posterior longitudinal ligament.

 It is attached above to the occipital bone just within the foramen magnum.

 It covers the posterior surface of the odontoid process and the apical, alar, and cruciate ligaments.

5. Capsular ligament:

**12. List the movements at the atlanto-axial joint**

Extensive rotation of the atlas and thus of the head on the axis (No movement).

**13. List the movements at the atlanto-occipital joint**

* Flexion, extension, and lateral flexion (Yes movement)
* No rotation is possible

**14. What is sacral promontory?**

Anterior and upper margins of the first sacral vertebra bulge forward as the posterior margin of the pelvic inlet

**15. Name the cartilage of intervertebral disc?**

fibro-cartilage