Clinical features of neurological compression syndromes:

Radiculopathy: pain in the neck or back radiating to the dermatome of affected nerve which can be associated with sensory and motor weakness. Pain is increased by movement>
C2and C3- occipital PAIN
C4-top of shoulder
C5-lateral arm
C6 – Thumb and index
C7-middle fingers
C8-little finger, medial forearm etc…
The most commonly involved roots are C6 and C7 in the arm and L5, S1 roots in the leg. L5 nerve root leaves through L5/S1 foramen and can be compressed by L4-L5 disc prolapse in the lateral recess and far lateral L5-S1 disc prolapse.

Myelopathy: characterized by deterioration of gait (wide based stooped spastic gait, deterioration of hand function (writing and buttoning buttons), patchy sensory changes, hyperreflexia with +ve Hoffman's, upgoing plantar reflex and clonus (pathological **clonus=>7 beats of ankle clonus and >than 3 beats of knee clonus**) , in 25% Lhermitte's sign . The severity of cervical myelopathy can be graded using **Nurwick** scale (0- radiculopathy, 1-signs no symptoms, 2-mild disability independent, 3-moderate disability requires some help4-severe disability dependent on others 5-bed ridden or chair bound) or the Japanese orthopedic association scale for motor sensory functions of upper and lower limbs and bladder function.

Cauda equina compression: characterised by urinary retention and decreased perianal sensation and anal tone with or without leg symptoms. Cauda equina by definition contains the nerve roots L2-Coccygeal 1).

Neurogenic claudication: bilateral leg pain and heaviness induced by walking and relieved by sitting or lying down. Pain is worse when the spine is extended and relieved by spinal flexion (buckling of lig flavum and narrowing of the canal, biking does not cause pain-flexion). In vascular claudication, the pain is relieved by stopping (no relation to flexion and extension), decreased pulses and atrophic changes in the feet.

Discuss the importance and relative urgencies in various compressive syndromes:
Cauda equina compression is a neurosurgical emergency and it should be relieved as soon as possible. Spinal root compression in the absence of motor weakness can be treated initially conservatively (3 months). Surgery is indicated in the presence of motor weakness and pain not responding to conservative treatment. Neurogenic claudication is an indication of spinal stenosis. Surgery is done electively.

Define the terms spondylolysis, Spondylolisthesis and spondylosis:
Spondylolysis= defect in pars interarticularis
Spondylolisthesis= subluxation of one vertebra on another. **Wiltse-Neman-Mcnab** classification

1. Isthmic: usually occurs at L5-S1 level and is usually due to bilateral pars defect (spondylolysis). (stress fractures)
2. Degenerative: most commonly occurs at L4/L5 level.(usually grade 1-2)
3. pathologic: generalized or local bone disease (tumours, infections)
4. Dysplastic: congenital abnormalities of the sacrum and L5
5. Traumatic: fractures other than pars interarticularis

The degree of subluxation is described using Meyerding system:

1. Grade 1<25% slippage
2. Grade 2: 25-50%
3. Grade 3 50-75%
4. Grade 4 > 75%

Patients present with mechanical back pain and radiculopathy. Investigations include plain films with flexion/extension (>4mm movement or 10 degrees angulation=instability), CT scan, MRI scan. Grade 1 is treated conservatively with analgesics, physiotherapy and brace. Symptomatic grade2, 3 and 4 require surgical decompression, fusion with /without instrumentation (pedicle screws).