

INI CET Orthopaedics

Sample Paper – 6

Duration: 14 Minutes

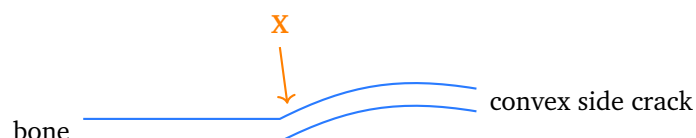
Maximum Marks: 15

Instructions

- This paper contains **15** Multiple Choice Questions (Single Best Response), modelled on the Orthopaedics content of **INI CET** (Institutes of National Importance Combined Entrance Test) conducted by AIIMS New Delhi.
- The **15-question** length matches the number of Orthopaedics items you actually meet in the real 200-question paper.
- Each correct answer carries **+1 mark**. There is **negative marking of one-third (0.33) mark** for every incorrect answer; unattempted questions carry no penalty.
- Every question has **exactly one best answer**. Choose the single most appropriate option.
- Attempt this practice paper in one timed sitting of about **14 minutes**, the pace the real computer-based test demands.

Trauma and Fracture Principles

Q1. A 6-year-old child falls on an outstretched arm. The radiograph shows the forearm bone bent and cracked on the convex (tension) side while the opposite cortex stays intact, as marked X below. This incomplete fracture of a child's soft, springy bone is best called a:



- (A) Greenstick fracture
- (B) Comminuted fracture
- (C) Displaced transverse fracture



(D) Pathological fracture

Q2. A young army recruit develops gradually worsening forefoot pain after weeks of long route marches. There is no single injury, but a tender swelling appears over the shaft of the second metatarsal and early films are normal. The most likely diagnosis is a:

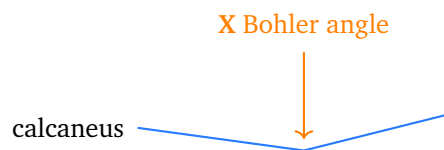
(A) Acute traumatic mid-shaft fracture from a direct blow

(B) Osteomyelitis of the metatarsal

(C) Stress (march) fracture of the metatarsal

(D) Gouty arthritis of the forefoot

Q3. A labourer lands on his heels after a fall from a height. The lateral radiograph of the heel shows the angle marked X below reduced below its normal range. This flattened Bohler angle indicates a calcaneal fracture, and you must also actively examine which region for associated injury?



(A) The opposite shoulder

(B) The cervical spine only

(C) The thoracolumbar spine (for associated vertebral fractures)

(D) The wrist

Fracture Complications and Emergencies

Q4. A farmer presents with a heavily soil-contaminated crush wound of the leg. Over hours the limb becomes tensely swollen with a foul discharge, and crackling (crepitus) is felt under the skin from gas in the tissues. The most likely organism responsible is:

(A) Clostridium perfringens

(B) Staphylococcus aureus



- (C) Streptococcus pyogenes
- (D) Escherichia coli

Q5. A young man has had several episodes of his shoulder slipping out anteriorly, each easier than the last. Examination shows a positive apprehension test. Arthroscopy reveals a tear of the anteroinferior labrum. This lesion, the classic cause of recurrent anterior instability, is a:

- (A) Hill-Sachs lesion of the humeral head
- (B) Bankart lesion (anteroinferior labral detachment)
- (C) Rotator cuff tear
- (D) SLAP lesion of the biceps anchor

Q6. A child sustains a crush injury across the growth plate of the distal femur. Years later the leg is noticeably shorter and angled compared with the other side. The mechanism of this late deformity is:

- (A) A simple soft-tissue contracture
- (B) Malunion of the shaft alone
- (C) Chronic osteomyelitis of the metaphysis
- (D) Physeal (growth-plate) damage causing partial growth arrest

Paediatric Orthopaedics

Q7. A 2-year-old is brought in refusing to use one arm after being lifted sharply by the wrist. The arm hangs slightly flexed and pronated, with no swelling or bony tenderness. The most likely diagnosis is:

- (A) Supracondylar fracture of the humerus
- (B) Fracture of the clavicle
- (C) Acute septic arthritis of the elbow
- (D) Pulled elbow (radial head subluxation, nursemaid's elbow)

Q8. A toddler who began walking early shows a progressive bow-legged (varus) deformity centred on the upper tibia, with beaking of the medial proximal tibial metaphysis on X-ray. The most likely diagnosis is:



- (A) Physiological genu varum that will correct on its own
- (B) Blount disease (tibia vara)
- (C) Rickets from vitamin D deficiency
- (D) Congenital pseudarthrosis of the tibia

**Bone and Joint Infection
and Metabolic Bone Disease**

- Q9.** A man with a long history of recurrent painful first-toe attacks now has firm, chalky nodules over his ear and finger joints that discharge a white pasty material. These deposits are made of:
- (A) Calcium pyrophosphate crystals
 - (B) Cholesterol
 - (C) Monosodium urate crystals (tophi)
 - (D) Amyloid protein
- Q10.** A poorly fed infant is irritable, refuses to move the legs (pseudoparalysis) and has swollen, tender limbs. Radiographs show subperiosteal haemorrhage and a dense white line at the metaphysis. The underlying deficiency is of:
- (A) Vitamin C (ascorbic acid), causing scurvy
 - (B) Vitamin D
 - (C) Calcium alone
 - (D) Vitamin B12
- Q11.** A 72-year-old woman develops sudden mid-back pain after a trivial stumble. Imaging shows an anterior wedge collapse of a thoracic vertebral body with reduced bone density, no tumour or infection. The most likely cause is:
- (A) Metastatic bone deposit
 - (B) Tuberculosis of the spine



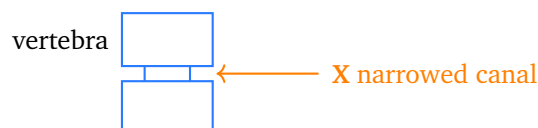
- (C) Multiple myeloma
- (D) Osteoporotic vertebral compression fracture

Bone Tumours

- Q12.** A teenager has a painless bowing of the thigh. X-ray shows a 'ground-glass' lucent lesion in the femur with a 'shepherd's crook' deformity of the neck, and the skin shows large pigmented patches. This lesion, part of the McCune-Albright picture, is:
- (A) Fibrous dysplasia
 - (B) Osteosarcoma
 - (C) Simple bone cyst
 - (D) Chondrosarcoma
- Q13.** A radiograph taken for an ankle sprain in a 10-year-old incidentally shows a small, well-defined eccentric lucent lesion with a thin sclerotic rim in the metaphyseal cortex, causing no symptoms. The most likely diagnosis is a:
- (A) Osteosarcoma
 - (B) Non-ossifying fibroma (fibrous cortical defect)
 - (C) Ewing sarcoma
 - (D) Osteomyelitis

Spine, Arthritis and Sports Injuries

- Q14.** An elderly man reports leg pain and heaviness that come on after walking a set distance and ease when he sits or bends forward, as shown by the narrowed central canal marked X. Cycling is comfortable. This neurogenic claudication is caused by:



- (A) Peripheral arterial disease of the legs



- (B) An acute single-level disc prolapse
- (C) Lumbar spinal (canal) stenosis
- (D) A hip osteoarthritis

Q15. A 45-year-old tennis player complains of pain over the outer aspect of the elbow. It is worst when the wrist is extended against resistance, and there is point tenderness over the lateral epicondyle. The diagnosis is:

- (A) Medial epicondylitis (golfer's elbow)
- (B) Olecranon bursitis
- (C) Lateral epicondylitis (tennis elbow)
- (D) Cubital tunnel syndrome



Detailed Solutions**Q1.****Solution**

Concept – the greenstick fracture: A child's growing bone is soft and springy, so it can bend and crack only partway across.

Step 1 – read the pattern: The bone fails on the convex (tension) side while the concave cortex stays intact, marked X. This incomplete break is a **greenstick fracture**, named for a young green twig that snaps on one side only.

Step 2 – the reason: The thick periosteum and elastic bone of childhood prevent a complete break.

Why the other options are wrong:

- B, comminuted: means the bone is broken into several fragments, not a partial crack.
- C, displaced transverse: is a complete fracture across the bone, unlike this incomplete one.
- D, pathological: occurs through diseased bone; this is normal childhood bone.

Final Answer: An incomplete break of soft childhood bone $\Rightarrow$ A

Answer: (A) [Go Back to Q1](#)

Q2.**Solution**

Concept – the stress (march) fracture: A stress fracture is a fatigue break of normal bone caused by repeated submaximal loading rather than a single injury.

Step 1 – read the story: Insidious forefoot pain after weeks of marching, a tender swelling over the second metatarsal and normal early films point to a **stress (march) fracture**.

Step 2 – the imaging catch: Plain films are often normal for the first two to three weeks; callus or a bone scan or MRI confirms it later.

Why the other options are wrong:

- A, acute traumatic fracture: requires a single injuring event, which is absent here.
- B, osteomyelitis: gives fever and systemic upset, not a march-related me-



chanical pain.

- D, gout: causes an acutely hot, red, exquisitely painful joint, not shaft tenderness after marching.

Final Answer: A fatigue fracture of the metatarsal from repeated marching ⇒ **C**

Answer: (C) [Go Back to Q2](#)

Q3.

Solution

Concept – calcaneal fracture and the Bohler angle: A fall from height driving the heels down is the classic mechanism for a calcaneal fracture.

Step 1 – read the angle: The **Bohler angle** (marked X, normally about 20 to 40 degrees) is flattened when the calcaneus is crushed, confirming the fracture.

Step 2 – look for the associated injury: The same axial load transmits up the skeleton, so you must actively examine the **thoracolumbar spine** for associated vertebral compression fractures.

Why the other options are wrong:

- A, the opposite shoulder: is not in the line of axial force from a heel landing.
- B, cervical spine only: the thoracolumbar junction, not the neck, is the classic associated site.
- D, the wrist: relates to a fall on an outstretched hand, a different mechanism.

Final Answer: Examine the thoracolumbar spine ⇒ **B**

Answer: (B) [Go Back to Q3](#)

Q4.

Solution

Concept – gas gangrene: Gas gangrene is a rapidly spreading necrotising infection of muscle in a contaminated wound.

Step 1 – name the organism: **Clostridium perfringens**, an anaerobic spore-forming Gram-positive bacillus found in soil, is the classic cause.

Step 2 – match the signs: It produces gas (crepitus), a foul discharge, tense swelling and toxaemia; the gas comes from bacterial fermentation in the tissues.

Why the other options are wrong:



- B, *Staphylococcus aureus*: causes abscesses and osteomyelitis, not gas-forming myonecrosis.
- C, *Streptococcus pyogenes*: causes cellulitis and necrotising fasciitis, but not the classic clostridial gas gangrene picture.
- D, *E. coli*: can produce gas in mixed infections but is not the classic cause of this clostridial myonecrosis.

Final Answer: *Clostridium perfringens* ⇒ A

Answer: (A) [Go Back to Q4](#)

Q5.

Solution

Concept – recurrent anterior shoulder instability: The shoulder is the most commonly dislocated joint, and repeated anterior dislocations damage the labrum.

Step 1 – name the lesion: Detachment of the **anteroinferior labrum** from the glenoid rim is a **Bankart lesion**, the classic structural cause of recurrent anterior instability.

Step 2 – the clinical link: Loss of the labral bumper and capsular attachment allows the humeral head to slip forward, giving a positive apprehension test.

Why the other options are wrong:

- A, Hill-Sachs lesion: is the compression dent on the humeral head, a companion finding but not the labral tear itself.
- C, rotator cuff tear: causes weakness and night pain, more typical of older patients, not recurrent instability in the young.
- D, SLAP lesion: is a superior labral tear at the biceps anchor, giving deep pain and clicking rather than anterior instability.

Final Answer: Bankart lesion of the anteroinferior labrum ⇒ B

Answer: (B) [Go Back to Q5](#)



Q6.

Solution

Concept – physeal injury and growth arrest: The growth plate (physis) is responsible for the length and alignment of a growing bone.

Step 1 – name the mechanism: A crush of the physis damages the germinal cartilage. Partial closure forms a bony bar, so one part of the plate stops growing while the rest continues, giving **partial growth arrest**.

Step 2 – the result: Uneven growth produces both shortening and angular deformity of the limb over the following years.

Why the other options are wrong:

- A, soft-tissue contracture: limits movement but does not shorten and angulate the bone itself.
- B, malunion of the shaft: causes deformity at the old fracture but not the progressive discrepancy of a growth-plate injury.
- C, chronic osteomyelitis: is an infection; there is no history of infection here.

Final Answer: Physeal damage with partial growth arrest ⇒ D

Answer: (D) [Go Back to Q6](#)

Q7.

Solution

Concept – pulled elbow (nursemaid's elbow): A sudden longitudinal pull on a toddler's forearm can subluxate the radial head.

Step 1 – read the story: The child was lifted by the wrist, then held the arm flexed and pronated with no swelling or bony tenderness. This is a **pulled elbow (radial head subluxation)**.

Step 2 – the mechanism: The immature annular ligament slips over the radial head with axial traction; gentle supination and flexion usually reduces it.

Why the other options are wrong:

- A, supracondylar fracture: follows a fall on an outstretched hand and causes marked swelling and bony tenderness.
- B, clavicle fracture: gives tenderness and swelling over the collarbone, not the elbow.
- C, septic arthritis: causes fever, a hot swollen joint and refusal of all movement, absent here.



Final Answer: Pulled elbow (radial head subluxation) ⇒ D

Answer: (D) [Go Back to Q7](#)

Q8.

Solution

Concept – Blount disease (tibia vara): Blount disease is a growth disorder of the medial proximal tibial physis producing a true varus deformity.

Step 1 – read the clues: An early walker with a progressive bow-legged deformity centred on the upper tibia and **beaking of the medial proximal tibial metaphysis** has **Blount disease (tibia vara)**.

Step 2 – the mechanism: Suppressed growth at the medial part of the plate lets the lateral side grow on, angling the tibia into varus.

Why the other options are wrong:

- A, physiological genu varum: is symmetrical and self-correcting by about age 2, without metaphyseal beaking.
- C, rickets: causes generalised metaphyseal cupping and fraying, not the focal medial tibial change, and shows biochemical abnormalities.
- D, congenital pseudarthrosis of the tibia: gives anterolateral bowing and a false joint in the shaft, not proximal varus.

Final Answer: Blount disease (tibia vara) ⇒ B

Answer: (B) [Go Back to Q8](#)

Q9.

Solution

Concept – chronic tophaceous gout: Long-standing gout deposits urate crystals in soft tissues as visible nodules called tophi.

Step 1 – name the deposit: The chalky nodules over the ear and finger joints that discharge a white pasty material are tophi made of **monosodium urate crystals**.

Step 2 – the link: Recurrent first-toe (podagra) attacks and chronic hyperuricaemia lead to these deposits; the crystals are needle-shaped and negatively birefringent.

Why the other options are wrong:



- A, calcium pyrophosphate: causes pseudogout, with rhomboid positively birefringent crystals, not chalky tophi.
- B, cholesterol: forms xanthomas in lipid disorders, not gouty tophi.
- D, amyloid: deposits in chronic inflammatory or dialysis-related disease, a different material and context.

Final Answer: Monosodium urate crystals (tophi) ⇒ C

Answer: (C) [Go Back to Q9](#)

Q10.

Solution

Concept – scurvy in a child: Scurvy is vitamin C (ascorbic acid) deficiency, which impairs collagen synthesis.

Step 1 – name the deficiency: A poorly fed, irritable infant with pseudoparalysis, subperiosteal haemorrhage and a dense metaphyseal white line has **vitamin C deficiency (scurvy)**.

Step 2 – the mechanism: Defective collagen weakens blood vessel walls, causing subperiosteal bleeding that makes movement painful (pseudoparalysis).

Why the other options are wrong:

- B, vitamin D deficiency: causes rickets with metaphyseal cupping and fraying, not subperiosteal haemorrhage.
- C, calcium alone: does not reproduce the bleeding and collagen changes of scurvy.
- D, vitamin B12 deficiency: causes anaemia and neurological signs, not this bone picture.

Final Answer: Vitamin C deficiency (scurvy) ⇒ A

Answer: (A) [Go Back to Q10](#)

Q11.

Solution

Concept – osteoporotic vertebral compression fracture: Osteoporosis weakens bone so that a minor load can collapse a vertebral body.

Step 1 – read the picture: An elderly woman with sudden back pain after a trivial stumble and an **anterior wedge collapse** of a vertebral body with reduced bone



density, no tumour or infection, has an **osteoporotic compression fracture**.

Step 2 – the setting: Postmenopausal oestrogen loss accelerates bone resorption, making the thoracic spine prone to wedge fractures and a gradual kyphosis.

Why the other options are wrong:

- A, metastasis: usually shows bone destruction with a soft-tissue mass or pedicle erosion, not simple low-density wedging.
- B, spinal tuberculosis: destroys the disc space with a paravertebral abscess and a gibbus, absent here.
- C, multiple myeloma: gives punched-out lytic lesions and systemic features, not an isolated osteoporotic wedge.

Final Answer: Osteoporotic vertebral compression fracture ⇒ **D**

Answer: (D) [Go Back to Q11](#)

Q12.

Solution

Concept – fibrous dysplasia: Fibrous dysplasia replaces normal bone with fibro-osseous tissue, giving a hazy ground-glass appearance.

Step 1 – match the clues: A **ground-glass** lucent femoral lesion with a **shepherd's crook** deformity of the neck, plus large pigmented (cafe-au-lait) skin patches, is **fibrous dysplasia**, here as part of the McCune-Albright syndrome.

Step 2 – the biology: An activating GNAS gene mutation drives disorganised fibrous bone that bends under load, causing the varus neck deformity.

Why the other options are wrong:

- B, osteosarcoma: is malignant with a sunburst reaction and Codman triangle, not a ground-glass benign lesion.
- C, simple bone cyst: is a clear fluid-filled lucency, without the ground-glass matrix or skin patches.
- D, chondrosarcoma: is a malignant cartilage tumour of older adults with a different picture.

Final Answer: Fibrous dysplasia ⇒ **A**

Answer: (A) [Go Back to Q12](#)



Q13.

Solution

Concept – non-ossifying fibroma: A non-ossifying fibroma (fibrous cortical defect) is a benign, self-limiting lesion of childhood.

Step 1 – read the film: A small, well-defined **eccentric lucency with a thin sclerotic rim** in the metaphyseal cortex, found incidentally and causing no symptoms, is a **non-ossifying fibroma**.

Step 2 – the course: It is a 'leave me alone' lesion that typically fills in and disappears as the child grows, needing no treatment.

Why the other options are wrong:

- A, osteosarcoma: is an aggressive destructive lesion with periosteal reaction, not a quiet corticated defect.
- C, Ewing sarcoma: is a painful permeative diaphyseal tumour with an onion-skin reaction, not incidental.
- D, osteomyelitis: causes pain, fever and bone destruction, absent in this incidental finding.

Final Answer: Non-ossifying fibroma (fibrous cortical defect) ⇒ **B**

Answer: (B) [Go Back to Q13](#)

Q14.

Solution

Concept – lumbar spinal stenosis: Narrowing of the central canal (marked X) compresses the cauda equina and its blood supply during standing and walking.

Step 1 – read the story: Leg pain and heaviness brought on by walking a set distance and **relieved by sitting or bending forward**, with comfortable cycling, is **neurogenic claudication** from **lumbar spinal (canal) stenosis**.

Step 2 – the mechanism: Flexion widens the canal and eases symptoms, which is why patients stoop, lean on a trolley or cycle comfortably.

Why the other options are wrong:

- A, peripheral arterial disease: gives vascular claudication relieved simply by standing still, and cycling would also provoke it.
- B, acute disc prolapse: causes sharp radicular pain and a positive straight-leg-raise, not posture-dependent claudication.



- D, hip osteoarthritis: causes groin pain on hip movement, not canal-related leg claudication.

Final Answer: Lumbar spinal (canal) stenosis ⇒

Answer: (C) [Go Back to Q14](#)

Q15.

Solution

Concept – lateral epicondylitis (tennis elbow): Tennis elbow is an overuse tendinopathy of the common extensor origin at the lateral epicondyle.

Step 1 – match the signs: Pain over the outer elbow, worst on **resisted wrist extension**, with point tenderness over the **lateral epicondyle**, is **lateral epicondylitis (tennis elbow)**.

Step 2 – the mechanism: Repetitive gripping and wrist extension strain the extensor carpi radialis brevis origin, causing microtears and pain.

Why the other options are wrong:

- A, medial epicondylitis (golfer's elbow): gives medial pain on resisted wrist flexion, the opposite side.
- B, olecranon bursitis: causes a swelling over the tip of the elbow, not lateral epicondyle tenderness.
- D, cubital tunnel syndrome: causes ulnar nerve numbness in the little and ring fingers, not resisted-extension pain.

Final Answer: Lateral epicondylitis (tennis elbow) ⇒

Answer: (C) [Go Back to Q15](#)



Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	C	3	B	4	A	5	B
6	D	7	D	8	B	9	C	10	A
11	D	12	A	13	B	14	C	15	C

