

INI CET Orthopaedics

Sample Paper – 10

Duration: 14 Minutes

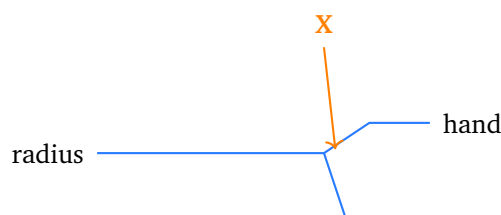
Maximum Marks: 15

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. The wrist radiograph shown below reveals an oblique intra-articular fracture that splits off the radial styloid (marked X) after a direct blow. This injury, classically caused by the starting crank of an engine kicking back, is best described as a:



- (A) Smith fracture of the distal radius
- (B) Galeazzi fracture-dislocation



- (C) Chauffeur (Hutchinson) fracture of the radial styloid
- (D) Barton fracture with volar rim displacement

Q2. A fit adult sustains a closed, transverse midshaft fracture of the femur in a road accident. Regarding blood loss and definitive management, the single best statement is:

- (A) Blood loss is negligible, and a below-knee plaster is sufficient treatment
- (B) Blood loss is minimal, and skin traction alone gives definitive union
- (C) A femoral shaft fracture can lose 1 to 1.5 litres of blood, and closed intramedullary nailing is the definitive treatment of choice
- (D) Blood loss is trivial, and simple bed rest without fixation is preferred

Q3. A man raises his forearm to shield his head from a stick and sustains an isolated fracture of the mid-shaft of the ulna with no radial or joint involvement. This injury is known as a:

- (A) Nightstick fracture
- (B) Monteggia fracture-dislocation
- (C) Galeazzi fracture-dislocation
- (D) Essex-Lopresti injury

Fracture Complications and Emergencies

Q4. A patient with a closed calcaneal fracture develops tense fluid-filled blisters and marked soft-tissue swelling over the heel. The correct significance of these fracture blisters for the timing of open surgery is that they:

- (A) Indicate that definitive open surgery should be delayed until the swelling settles and skin wrinkles return, to reduce wound breakdown and infection
- (B) Are harmless and permit immediate open reduction through the blistered skin



- (C) Confirm established compartment syndrome requiring urgent fasciotomy in every case
- (D) Are a sign of deep vein thrombosis and mandate immediate anticoagulation

Q5. A child with an extension-type supracondylar fracture of the humerus is unable to make the 'OK' sign and has lost sensation over the radial border of the palm. The nerve most commonly injured in this fracture is the:

- (A) Radial nerve
- (B) Median nerve (with its anterior interosseous branch)
- (C) Ulnar nerve
- (D) Musculocutaneous nerve

Q6. Traumatic dislocation of the hip is usually posterior. In the rarer traumatic anterior dislocation, the affected lower limb characteristically lies in:

- (A) Flexion, adduction and internal rotation
- (B) Extension with shortening and internal rotation
- (C) Adduction with a fixed flexion at the knee only
- (D) Abduction, external rotation and slight flexion

Paediatric Orthopaedics

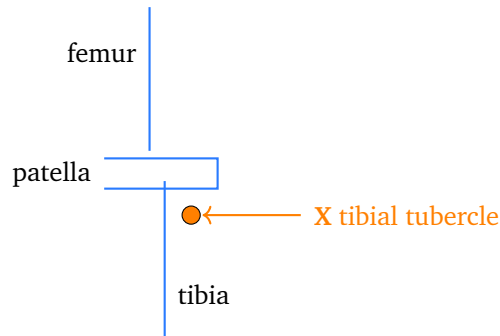
Q7. A 14-year-old presents with vague knee pain, intermittent locking and giving way. A radiograph shows a fragment of subchondral bone with its overlying cartilage separating from the lateral part of the medial femoral condyle. The most likely diagnosis is:

- (A) Osteochondritis dissecans of the knee
- (B) Acute septic arthritis of the knee
- (C) Osteosarcoma of the distal femur



(D) Anterior cruciate ligament rupture

Q8. A sporty 13-year-old boy has pain and a tender bony swelling over the tibial tubercle (marked X below), worse on running, jumping and kneeling. This traction apophysitis of the tibial tubercle is:



- (A) Sinding-Larsen-Johansson disease
- (B) Osgood-Schlatter disease
- (C) Perthes disease
- (D) Slipped capital femoral epiphysis

Bone and Joint Infection and Metabolic Bone Disease

Q9. In chronic osteomyelitis, a radiograph shows a dense, separated piece of dead bone (the sequestrum) surrounded by a sheath of new living bone. This surrounding sheath of new bone laid down by the raised periosteum is termed the:

- (A) Cloaca
- (B) Brodie abscess
- (C) Sinus tract
- (D) Involucrum

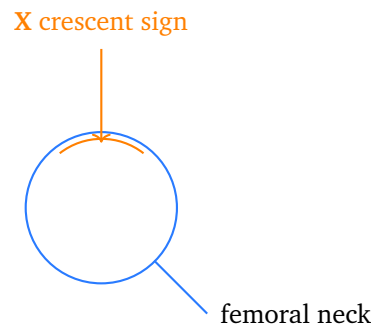
Q10. A malnourished infant has painful limbs and radiographs of the knee. The feature that points to scurvy rather than rickets is:

- (A) Cupping and fraying of the metaphysis



- (B) Widening of the growth plate with a frayed physis
- (C) Bowing of the long bones with a rachitic rosary
- (D) A dense white metaphyseal line (Frankel), a Wimberger ring around the epiphysis and subperiosteal haemorrhage

Q11. A patient on long-term corticosteroids develops groin pain, and the hip radiograph shows a subchondral lucent crescent (marked X) beneath the articular surface of the femoral head. The most likely diagnosis is:



- (A) Osteoarthritis of the hip
- (B) Avascular necrosis of the femoral head
- (C) Developmental dysplasia of the hip
- (D) Transient synovitis of the hip

Bone Tumours

Q12. When planning a biopsy of a suspected primary bone sarcoma, a fundamental Enneking principle of musculoskeletal tumour surgery is that:

- (A) The biopsy should be taken through a wide transverse incision to sample as much tissue as possible
- (B) The biopsy tract must be sited so that it can be excised en bloc with the tumour at the definitive resection
- (C) The biopsy should routinely open and contaminate the nearest joint to assess spread
- (D) The biopsy is best placed through a separate limb compartment from the tumour



- Q13.** A 10-year-old sustains a fracture through the proximal humerus after trivial trauma. The radiograph shows a well-defined, centrally placed lucent lesion in the metaphysis with a 'fallen fragment' sign. The underlying benign lesion is most likely a:
- (A) Simple (unicameral) bone cyst
 - (B) Osteosarcoma
 - (C) Chronic osteomyelitis
 - (D) Giant cell tumour of the epiphysis

Spine, Arthritis and Sports Injuries

- Q14.** A 45-year-old painter has shoulder pain on overhead activity, a painful arc between 60 and 120 degrees, and positive Neer and Hawkins-Kennedy tests. The most likely diagnosis is:
- (A) Adhesive capsulitis (frozen shoulder)
 - (B) Acromioclavicular joint dislocation
 - (C) Subacromial (shoulder) impingement syndrome
 - (D) Anterior shoulder instability
- Q15.** A 55-year-old man has a painless nodular thickening of the palmar fascia with a palpable cord and progressive fixed flexion of the ring and little fingers at the metacarpophalangeal joints. The diagnosis is:
- (A) Trigger finger (stenosing tenosynovitis)
 - (B) Rheumatoid ulnar deviation of the fingers
 - (C) Dupuytren contracture
 - (D) Carpal tunnel syndrome



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

Concept – the chauffeur (Hutchinson) fracture: This is an oblique intra-articular fracture that shears off the radial styloid process of the distal radius.

Step 1 – read the image: The fracture line runs through the base of the radial styloid (marked X), separating the styloid fragment from the rest of the distal radius.

Step 2 – the mechanism: It was historically caused by the hand-crank of an early motor car kicking back against the wrist, driving the scaphoid against the styloid; hence the name chauffeur or Hutchinson fracture.

Why the other options are wrong:

- A, Smith fracture: a distal radial fracture with volar displacement of the whole distal fragment, not a styloid shear.
- B, Galeazzi: a radial shaft fracture with distal radio-ulnar joint disruption.
- D, Barton fracture: a fracture-dislocation of the volar or dorsal articular rim of the distal radius.

Final Answer: Radial styloid shear fracture ⇒ C

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

Q2.**Solution**

Concept – femoral shaft fracture, blood loss and fixation: The femur is the largest long bone, and its shaft fractures carry both significant haemorrhage and a clear definitive treatment.

Step 1 – estimate the blood loss: A closed femoral shaft fracture can lose **1 to 1.5 litres** of blood into the thigh, enough to cause hypovolaemia, so fluid resuscitation and monitoring are needed.

Step 2 – name the definitive treatment: **Closed intramedullary (interlocking) nailing** is the treatment of choice; it gives stable fixation, allows early mobilisation and has high union rates.

Why the other options are wrong:

- A, negligible loss and below-knee plaster: understates the haemorrhage, and



a plaster cannot control a femoral shaft fracture.

- B, skin traction alone: not definitive for an adult femoral shaft fracture.
- D, bed rest without fixation: risks malunion, non-union and complications of prolonged immobility.

Final Answer: 1 to 1.5 L loss with intramedullary nailing ⇒ **C**

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

Q3.

Solution

Concept – the nightstick fracture: This is an isolated fracture of the ulnar shaft caused by a direct blow.

Step 1 – match the mechanism: When a person raises the forearm to protect the head, a blow lands on the subcutaneous border of the ulna and breaks the shaft in isolation, without radial or joint involvement.

Step 2 – the name: It is called a **nightstick fracture** because it classically follows a defensive blow from a baton or stick.

Why the other options are wrong:

- B, Monteggia: a proximal ulnar fracture with dislocation of the radial head.
- C, Galeazzi: a radial shaft fracture with distal radio-ulnar joint dislocation.
- D, Colles fracture: a distal radial fracture, not an ulnar shaft injury.

Final Answer: Isolated ulnar shaft fracture from a direct blow ⇒ **A**

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

Q4.

Solution

Concept – fracture blisters and the timing of surgery: Fracture blisters reflect severe soft-tissue injury over the fracture and are a warning sign for wound complications.

Step 1 – read the significance: Tense blisters and swelling mean the soft-tissue envelope is compromised. Operating through such skin risks wound breakdown, dehiscence and deep infection.

Step 2 – the correct action: Definitive open surgery is **delayed** until the swelling settles and the skin wrinkles return (the positive wrinkle sign), usually after sev-



eral days of elevation, at which point wound healing is far safer.

Why the other options are wrong:

- B, operate immediately through blistered skin: this invites wound breakdown and infection.
- C, established compartment syndrome in every case: blisters alone do not confirm compartment syndrome, which is diagnosed by pain out of proportion and pressure measurement.
- D, sign of deep vein thrombosis: fracture blisters are a soft-tissue phenomenon, not a marker of thrombosis.

Final Answer: Delay surgery until swelling settles ⇒ A

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

Q5.

Solution

Concept – nerve injury in supracondylar humeral fracture: The extension-type supracondylar fracture in children is closely related to the nerves crossing the elbow.

Step 1 – match the clinical signs: Inability to make the ‘OK’ sign (weak flexion of the thumb interphalangeal and index distal interphalangeal joints) points to the **anterior interosseous branch of the median nerve**; loss of sensation over the radial palm confirms median involvement.

Step 2 – the anatomy: In the common extension (posteriorly displaced) fracture, the proximal fragment stretches the median nerve and brachial artery, making median (anterior interosseous) injury the most frequent nerve lesion.

Why the other options are wrong:

- A, radial nerve: more often injured in a flexion-type fracture, causing wrist drop.
- C, ulnar nerve: typically injured in flexion-type fractures or by medial pinning.
- D, musculocutaneous nerve: not usually involved in supracondylar fractures.

Final Answer: Median (anterior interosseous) nerve ⇒ B

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



Q6.

Solution

Concept – anterior dislocation of the hip: Most traumatic hip dislocations are posterior; the anterior variety is rarer and produces the opposite limb posture.

Step 1 – recall the posture: In anterior dislocation the femoral head lies in front of the acetabulum, so the limb is held in **abduction, external rotation and slight flexion**.

Step 2 – contrast with posterior: A posterior dislocation, by comparison, produces flexion, adduction and internal rotation with shortening; the two are near mirror images.

Why the other options are wrong:

- A, flexion/adduction/internal rotation: this is the posterior dislocation posture.
- B, extension with shortening and internal rotation: not the anterior pattern.
- C, adduction with knee flexion only: does not describe the abducted, externally rotated anterior dislocation.

Final Answer: Abduction, external rotation and slight flexion ⇒ **D**

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

Q7.

Solution

Concept – osteochondritis dissecans of the knee: This is a focal disorder in which a segment of subchondral bone with its overlying cartilage loses its blood supply and may separate.

Step 1 – match the picture: An adolescent with vague knee pain, locking and giving way, whose radiograph shows a fragment separating from the **lateral aspect of the medial femoral condyle**, has classic osteochondritis dissecans.

Step 2 – the consequence: If the fragment detaches it becomes a loose body, which explains the mechanical locking.

Why the other options are wrong:

- B, septic arthritis: presents acutely with a hot, swollen, very painful joint and systemic signs, not a slowly separating bony fragment.
- C, osteosarcoma: shows an aggressive lesion with a sunburst reaction and Codman triangle, not a subchondral fragment.



- D, ACL rupture: causes instability after a twisting injury with a haemarthrosis, without the described osteochondral fragment.

Final Answer: Osteochondritis dissecans of the knee ⇒ A

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

Q8.

Solution

Concept – Osgood-Schlatter disease: This is a traction apophysitis of the tibial tubercle at the insertion of the patellar tendon.

Step 1 – match the picture: A sporty teenager with pain and a tender bony prominence over the **tibial tubercle** (marked X), aggravated by running, jumping and kneeling, has Osgood-Schlatter disease.

Step 2 – the mechanism: Repeated pull of the powerful quadriceps through the patellar tendon on the immature tubercle apophysis causes microavulsion, inflammation and enlargement of the tubercle.

Why the other options are wrong:

- A, Sinding-Larsen-Johansson disease: a traction apophysitis at the *lower pole of the patella*, not the tibial tubercle.
- C, Perthes disease: an avascular necrosis of the femoral head in younger children, presenting with hip or knee pain and a limp.
- D, slipped capital femoral epiphysis: a slip of the proximal femoral epiphysis in an adolescent, causing hip pain and external rotation, not tubercle swelling.

Final Answer: Traction apophysitis of the tibial tubercle ⇒ B

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

Q9.

Solution

Concept – sequestrum and involucrum in chronic osteomyelitis: Chronic bone infection produces two characteristic radiological structures.

Step 1 – define each: A **sequestrum** is a piece of dead, avascular bone separated from living bone. The **involucrum** is the sheath of new living bone laid down around the sequestrum by the elevated periosteum.



Step 2 – confirm the answer: The question asks for the surrounding new-bone sheath, which is the involucrum.

Why the other options are wrong:

- A, cloaca: an opening in the involucrum through which pus and sequestra can discharge, not the sheath itself.
- B, Brodie abscess: a localised subacute intraosseous abscess, not the enclosing new bone.
- C, sinus tract: the channel draining pus to the skin surface, not the bony sheath.

Final Answer: Sheath of new living bone ⇒ D

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

Q10.

Solution

Concept – distinguishing scurvy from rickets on radiographs: Both are nutritional bone diseases of children but give different radiographic signs.

Step 1 – recall the scurvy signs: Vitamin C deficiency (scurvy) shows a **dense white metaphyseal line of Frankel**, a **Wimberger ring** of sclerosis around the epiphysis, and **subperiosteal haemorrhage** from fragile vessels.

Step 2 – contrast with rickets: Vitamin D deficiency (rickets) instead shows cupping, fraying and widening of the metaphysis with a broadened, poorly mineralised growth plate.

Why the other options are wrong:

- A, cupping and fraying of the metaphysis: a feature of rickets, not scurvy.
- B, widened growth plate with a frayed physis: again a rickets feature.
- C, bowing with a rachitic rosary: a rickets feature from soft, deforming bone.

Final Answer: Frankel line, Wimberger ring and subperiosteal haemorrhage ⇒ D

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



Q11.

Solution

Concept – avascular necrosis of the femoral head: Loss of the blood supply to the femoral head leads to bony death and eventual collapse.

Step 1 – read the clues: Long-term **corticosteroid** use (and alcohol excess) is a leading cause. The subchondral lucent **crescent sign** (marked X) beneath the articular surface is the classic early radiographic feature.

Step 2 – the mechanism: Interruption of the tenuous blood supply to the head causes subchondral bone death; the crescent represents a subchondral fracture before the head collapses.

Why the other options are wrong:

- A, osteoarthritis: shows joint-space narrowing, osteophytes and subchondral sclerosis, not an early crescent in a steroid user.
- C, developmental dysplasia of the hip: a paediatric condition of a shallow acetabulum, not steroid-related head necrosis.
- D, transient synovitis: a self-limiting irritable hip of childhood with a normal radiograph.

Final Answer: Avascular necrosis of the femoral head ⇒ **B**

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

Q12.

Solution

Concept – the Enneking biopsy principle: Correct biopsy technique is central to safe musculoskeletal tumour surgery.

Step 1 – state the principle: The **biopsy tract must be placed so that it can be removed en bloc with the tumour** at the definitive resection, because the tract is considered contaminated by tumour cells.

Step 2 – the rationale: A badly sited biopsy can seed tumour into uninvolved compartments and turn a limb-salvage operation into an amputation, so the biopsy is ideally done by the team that will perform the resection.

Why the other options are wrong:

- A, wide transverse incision: transverse incisions spread contamination across compartments and are hard to excise; a small longitudinal incision is preferred.



- C, opening the nearest joint: deliberately contaminating a joint spreads tumour and is contraindicated.
- D, a separate compartment from the tumour: crossing into an uninvolved compartment contaminates it and must be avoided.

Final Answer: Biopsy tract excised with the tumour ⇒ **B**

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

Q13.

Solution

Concept – pathological fracture through a simple bone cyst: A simple (unicameral) bone cyst is a benign fluid-filled cavity that weakens the bone and often first presents with a fracture.

Step 1 – read the clues: A child with a fracture through the **proximal humerus** after trivial trauma, showing a well-defined central lucent metaphyseal lesion with a **fallen fragment sign** (a piece of cortex that has fallen into the fluid-filled cavity), points to a simple bone cyst.

Step 2 – the significance: The fallen fragment sign confirms the cavity is fluid-filled, distinguishing it from a solid tumour, and such cysts commonly present through a pathological fracture.

Why the other options are wrong:

- B, osteosarcoma: an aggressive malignant lesion with a sunburst reaction and Codman triangle, not a well-defined benign cyst.
- C, chronic osteomyelitis: shows sequestrum and involucrum with sclerosis, not a clean fluid-filled cavity.
- D, giant cell tumour: an eccentric epiphyseal lytic lesion of young adults, not a central metaphyseal cyst in a child.

Final Answer: Simple (unicameral) bone cyst ⇒ **A**

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



Q14.

Solution

Concept – subacromial impingement syndrome: Impingement of the rotator cuff and subacromial bursa beneath the coracoacromial arch causes shoulder pain on elevation.

Step 1 – match the signs: A painful arc between 60 and 120 degrees with positive Neer and Hawkins-Kennedy impingement tests is characteristic of subacromial impingement syndrome.

Step 2 – the mechanism: On elevation the supraspinatus tendon and bursa are compressed against the anterior acromion, producing pain in the mid-range arc.

Why the other options are wrong:

- A, adhesive capsulitis: gives global restriction of both active and passive movement, especially external rotation, not a painful arc.
- B, acromioclavicular joint dislocation: presents with a step deformity and tenderness over the AC joint after trauma.
- D, anterior shoulder instability: presents with apprehension on abduction and external rotation, not an impingement arc.

Final Answer: Subacromial impingement syndrome ⇒ C

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

Q15.

Solution

Concept – Dupuytren contracture: This is a progressive fibrosis of the palmar fascia (aponeurosis) that draws the fingers into flexion.

Step 1 – match the picture: A middle-aged man with a painless nodular thickening of the **palmar fascia**, a palpable cord, and fixed flexion of the **ring and little fingers** has Dupuytren contracture.

Step 2 – the mechanism: Fibroblastic proliferation and contraction of the palmar aponeurosis pull the metacarpophalangeal (and later proximal interphalangeal) joints into flexion; it is associated with diabetes, alcohol and a positive family history.

Why the other options are wrong:

- A, trigger finger: a stenosing tenosynovitis causing catching and locking of a flexor tendon, not a fixed fascial cord.



- B, rheumatoid ulnar deviation: results from joint and tendon disease at the MCP joints with synovitis, not palmar fascial fibrosis.
- D, carpal tunnel syndrome: causes median nerve sensory symptoms and thenar wasting, not a flexion contracture of the fingers.

Final Answer: Dupuytren contracture $\Rightarrow$

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



Answer Key

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

