

INI CET Orthopaedics

Sample Paper – 9

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

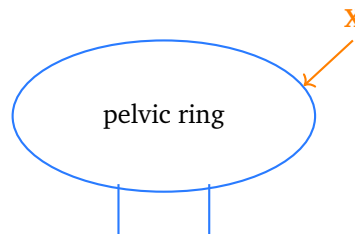
- Q1.** A radiograph shows an intra-articular fracture-dislocation of the distal radius in which a fragment of the articular rim is displaced together with the carpus (subluxated wrist). This distinctive injury is a:
- (A) Colles fracture
(B) Smith fracture
(C) Barton fracture (intra-articular rim fracture with carpal subluxation)
(D) Galeazzi fracture
- Q2.** A young adult presents with a painful, swollen elbow and a mechanical block to forearm rotation after a fall on the outstretched hand, with



tenderness maximal over the lateral elbow. A radial head fracture is confirmed. The classification system used to grade this fracture is the:

- (A) Garden classification
- (B) Neer classification
- (C) Gartland classification
- (D) Mason classification

Q3. A patient brought in after a high-energy road traffic accident is hypotensive and tachycardic, with an unstable, opened pelvic ring on examination (schematic below). The most appropriate immediate step to control life-threatening haemorrhage is:



- (A) Immediate open reduction and internal fixation of the pelvis
- (B) Await an MRI scan before any intervention
- (C) Encourage early weight bearing to stabilise the pelvis
- (D) Apply a pelvic binder at the level of the greater trochanters to close the pelvic ring

Fracture Complications and Emergencies

Q4. A man reports persistent wrist pain many months after an untreated fall on the outstretched hand. Radiographs now show a scaphoid non-union. If left untreated, the characteristic long-term complication is:

- (A) Complete spontaneous healing with no sequelae
- (B) A progressive pattern of degenerative wrist arthritis, the scaphoid non-union advanced collapse (SNAC) wrist
- (C) Recurrent anterior shoulder dislocation



(D) A benign condition needing no follow-up

Q5. A young man has suffered several recurrent anterior shoulder dislocations. A CT scan shows a compression dent in the posterolateral aspect of the humeral head. This bony lesion is a:

(A) Bankart lesion of the anteroinferior glenoid labrum

(B) An osteochondroma of the humeral neck

(C) A Codman triangle

(D) Hill-Sachs lesion of the posterolateral humeral head

Q6. Following an anterior shoulder dislocation, which nerve is most commonly injured and must be assessed (sensation over the lateral deltoid 'regimental badge' area and deltoid function) both before and after reduction?

(A) Axillary nerve

(B) Median nerve

(C) Tibial nerve

(D) Common peroneal nerve

Paediatric Orthopaedics

Q7. A child with spastic cerebral palsy walks on tip-toe with a fixed equinus deformity of the ankle and tight hamstrings. The primary underlying problem that drives these fixed contractures is:

(A) A peripheral nerve transection

(B) A primary metabolic bone disease

(C) An upper motor neurone lesion causing spasticity that progresses to fixed muscle contractures

(D) A primary bone tumour of the tibia

Q8. A healthy 2-year-old toddler is brought for in-toeing. Examination localises the rotation to the tibia (increased internal tibial torsion), with a normal hip and a normal foot. The most appropriate advice is:



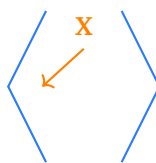
- (A) Reassurance, as internal tibial torsion is benign and resolves spontaneously with growth
- (B) Immediate corrective tibial osteotomy
- (C) Long-leg plaster casts for one year
- (D) Lifelong bracing of both legs

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

Q9. A postmenopausal woman with osteoporosis is started on a bisphosphonate. The principal mechanism by which this drug preserves bone mass is:

- (A) Inhibition of osteoclast-mediated bone resorption
- (B) Stimulation of osteoclast activity
- (C) Direct chelation of dietary calcium in the gut
- (D) Blockade of the vitamin D receptor

Q10. A toddler on a vitamin-D-deficient diet has bow legs (genu varum, schematic below), swelling of the wrists and delayed walking. The underlying defect in nutritional rickets is:



bow legs (genu varum)

- (A) Excess apoptosis of osteoclasts
- (B) Over-mineralisation of osteoid
- (C) Defective mineralisation of the growth plate and osteoid because of low vitamin D
- (D) Malignant transformation of the epiphyseal cartilage

Q11. A man with poorly controlled chronic tophaceous gout develops firm periarticular nodules that ulcerate and discharge chalky white material,



with progressive destruction of the joint. The complication responsible for the joint destruction is:

- (A) An acute infection by *Staphylococcus aureus*
- (B) An autoimmune synovitis identical to rheumatoid arthritis
- (C) Deposition of monosodium urate crystal tophi that erode cartilage and bone
- (D) A malignant sarcoma arising within the joint

Bone Tumours

Q12. An adult with a long-standing solitary osteochondroma reports new pain and growth of the lesion; imaging shows a thickened cartilage cap greater than 2 cm. This picture indicates malignant transformation into a:

- (A) Ewing sarcoma
- (B) Secondary chondrosarcoma
- (C) Osteoid osteoma
- (D) Giant cell tumour

Q13. An adolescent has an aggressive, expansile, fluid-filled lytic lesion around the knee that on X-ray can mimic an aneurysmal bone cyst but is highly malignant on biopsy. This variant is a:

- (A) Chondroblastoma
- (B) Telangiectatic osteosarcoma
- (C) Simple (unicameral) bone cyst
- (D) Enchondroma

Spine, Arthritis and Sports Injuries

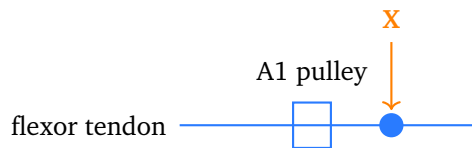
Q14. A golfer complains of pain over the medial aspect of the elbow, reproduced by resisted flexion and pronation of the wrist. The diagnosis is:

- (A) Medial epicondylitis (golfer's elbow)
- (B) Lateral epicondylitis (tennis elbow)



- (C) Olecranon bursitis
- (D) Cubital tunnel syndrome

Q15. A patient's finger catches and locks in flexion, then releases with a painful snap, because a nodule on the flexor tendon catches at the A1 pulley (schematic below). This condition is:



- (A) Dupuytren contracture
- (B) Trigger finger (stenosing flexor tenosynovitis)
- (C) De Quervain tenosynovitis
- (D) Carpal tunnel syndrome



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

Concept – the Barton fracture: A Barton fracture is an intra-articular fracture-dislocation of the distal radius.

Step 1 – read the key feature: A fragment of the dorsal or volar **articular rim** of the distal radius shears off and displaces **together with the carpus**, so the wrist subluxates (marked X).

Step 2 – why it is different: The defining point is that the carpus follows the rim fragment, making it a fracture-dislocation rather than a simple metaphyseal fracture.

Why the other options are wrong:

- A, Colles fracture: an extra-articular distal radius fracture with dorsal displacement, without carpal subluxation.
- B, Smith fracture: the volar-displaced reverse Colles, again extra-articular.
- D, Galeazzi fracture: a radial shaft fracture with distal radio-ulnar joint disruption, not a rim injury.

Final Answer: Intra-articular rim fracture with carpal subluxation ⇒ **C**

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

Q2.**Solution**

Concept – classifying the radial head fracture: A fall on the outstretched hand can drive the radial head against the capitellum and fracture it.

Step 1 – read the clinical clues: A painful elbow with a block to forearm rotation and tenderness over the lateral elbow points to a **radial head fracture**.

Step 2 – name the system: Radial head fractures are graded by the **Mason classification** (Type I undisplaced, Type II displaced, Type III comminuted, Type IV with dislocation).

Why the other options are wrong:

- A, Garden classification: grades femoral neck fractures.
- B, Neer classification: grades proximal humerus fractures.



- C, Gartland classification: grades paediatric supracondylar humerus fractures.

Final Answer: Mason classification $\Rightarrow$ D

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

Q3.

Solution

Concept – the haemodynamically unstable pelvic ring: A high-energy pelvic ring disruption can tear the presacral venous plexus and cause massive bleeding.

Step 1 – identify the priority: In a hypotensive, tachycardic patient with an unstable, opened pelvis (marked X), the immediate priority is to **close and stabilise the pelvic ring** to reduce its volume and tamponade the bleeding.

Step 2 – the practical step: Apply a **pelvic binder at the level of the greater trochanters**; this compresses an ‘open-book’ pelvis, restores the ring and slows venous haemorrhage while resuscitation continues.

Why the other options are wrong:

- A, immediate ORIF: is not the first step in an unstable patient; temporary closure and resuscitation come first.
- B, await MRI: dangerously delays haemorrhage control in an unstable patient.
- C, early weight bearing: is unsafe and does nothing to control bleeding.

Final Answer: Pelvic binder at the greater trochanters $\Rightarrow$ D

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

Q4.

Solution

Concept – the untreated scaphoid non-union: A scaphoid that fails to unite disturbs the mechanics of the whole carpus.

Step 1 – trace the consequence: Persistent motion at the non-union and the associated avascular changes lead to a predictable pattern of **degenerative wrist arthritis**.

Step 2 – name the pattern: This is the **scaphoid non-union advanced collapse (SNAC) wrist**, in which arthritis begins at the radial styloid and spreads across



the carpus.

Why the other options are wrong:

- A, spontaneous healing: an established non-union will not heal without intervention.
- C, shoulder dislocation: unrelated to a wrist non-union.
- D, benign, no follow-up: incorrect, untreated SNAC progresses to disabling arthritis.

Final Answer: SNAC wrist arthritis $\Rightarrow$ B

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

Q5.

Solution

Concept – the Hill-Sachs lesion: Recurrent anterior shoulder dislocations damage both the glenoid and the humeral head.

Step 1 – localise the lesion: A compression dent in the **posterolateral humeral head** is created as the head impacts the anterior glenoid rim during dislocation. This is the **Hill-Sachs lesion**.

Step 2 – the paired lesion: It is often accompanied by a Bankart lesion of the anteroinferior glenoid labrum; the two together predispose to recurrent instability.

Why the other options are wrong:

- A, Bankart lesion: this is the glenoid labral injury, not the humeral head dent.
- B, osteochondroma: a benign cartilage-capped outgrowth, not a compression injury.
- C, Codman triangle: a periosteal reaction seen in malignant bone tumours.

Final Answer: Hill-Sachs lesion of the humeral head $\Rightarrow$ D

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



Q6.

Solution

Concept – nerve injury with shoulder dislocation: The nerves around the shoulder are at risk when the humeral head dislocates anteriorly.

Step 1 – name the nerve: The **axillary nerve** is the one most commonly injured; it winds around the surgical neck of the humerus.

Step 2 – how to test it: Check sensation over the **lateral deltoid** ('regimental badge') area and deltoid contraction, both before and after reduction, to document the nerve's function.

Why the other options are wrong:

- B, median nerve: a forearm and hand nerve, not typically injured by shoulder dislocation.
- C, tibial nerve: a lower-limb nerve, unrelated to the shoulder.
- D, common peroneal nerve: a lower-limb nerve at the fibular neck.

Final Answer: Axillary nerve ⇒ A

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

Q7.

Solution

Concept – contractures in spastic cerebral palsy: Cerebral palsy is a non-progressive brain lesion that produces a progressive musculoskeletal picture.

Step 1 – name the mechanism: An **upper motor neurone lesion** causes spasticity; the persistently overactive muscles fail to grow with the bones and develop **fixed contractures** such as equinus.

Step 2 – the gait effect: Fixed equinus and hamstring tightness produce the characteristic tip-toe, crouch-tending gait seen in these children.

Why the other options are wrong:

- A, peripheral nerve transection: would cause flaccid weakness, not spasticity.
- B, metabolic bone disease: affects bone mineralisation, not muscle tone.
- D, bone tumour: is a focal lesion, not the cause of generalised spastic contractures.

Final Answer: Upper motor neurone spasticity with fixed contractures ⇒ C



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

Q8.

Solution

Concept – internal tibial torsion in the toddler: In-toeing in young children usually arises from a benign rotational variant.

Step 1 – localise the cause: When the rotation is in the tibia (**internal tibial torsion**) with a normal hip and foot, the cause is a physiological variant that corrects with growth.

Step 2 – the management: The correct approach is **reassurance and observation**, since the great majority resolve spontaneously by school age.

Why the other options are wrong:

- B, immediate osteotomy: surgery is reserved for the rare severe, persistent case in an older child.
- C, plaster casts: do not alter the natural resolution and are unnecessary.
- D, lifelong bracing: is inappropriate for a self-limiting condition.

Final Answer: Reassurance, benign and self-resolving ⇒ A

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

Q9.

Solution

Concept – how bisphosphonates work: Bisphosphonates are the mainstay antiresorptive drugs for osteoporosis.

Step 1 – name the action: They **inhibit osteoclast-mediated bone resorption**, binding avidly to bone mineral and impairing osteoclast function and survival.

Step 2 – the net effect: By slowing resorption while formation continues, bone mineral density is preserved and fracture risk falls.

Why the other options are wrong:

- B, stimulating osteoclasts: is the opposite of the true antiresorptive action.
- C, chelating gut calcium: is not the mechanism; bisphosphonates act on bone, not by binding dietary calcium.
- D, blocking vitamin D receptors: is unrelated to the bisphosphonate mechanism.



Final Answer: Inhibition of osteoclast-mediated resorption $\Rightarrow$ **A**

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

Q10.

Solution

Concept – nutritional rickets: Rickets is the childhood disease of a growing skeleton deprived of vitamin D.

Step 1 – name the defect: Low vitamin D causes **defective mineralisation of the growth plate and newly formed osteoid**. Unmineralised osteoid is soft and deforms.

Step 2 – read the signs: Soft, poorly mineralised bone bows under load, giving **genu varum (bow legs)** marked X, along with widened, cupped wrists and delayed walking.

Why the other options are wrong:

- A, osteoclast apoptosis: is not the defect; the problem is failed mineralisation.
- B, over-mineralisation: is the reverse of the true under-mineralised state.
- D, malignant transformation: rickets is a metabolic, not a neoplastic, disease.

Final Answer: Defective mineralisation from low vitamin D $\Rightarrow$ **C**

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

Q11.

Solution

Concept – chronic tophaceous gout: Long-standing untreated hyperuricaemia deposits urate in and around joints.

Step 1 – name the process: **Monosodium urate crystals aggregate into tophi** that ulcerate and discharge chalky material, and that erode articular cartilage and subchondral bone.

Step 2 – the joint outcome: This crystal-driven erosion produces the progressive joint destruction and deformity of advanced gout.

Why the other options are wrong:

- A, staphylococcal infection: describes septic arthritis, a different process.



- B, rheumatoid autoimmune synovitis: is a separate disease with a different mechanism, not urate deposition.
- D, malignant sarcoma: tophi are crystal deposits, not tumours.

Final Answer: Urate tophi eroding cartilage and bone $\Rightarrow$ C

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

Q12.

Solution

Concept – malignant change in an osteochondroma: A solitary osteochondroma is benign, but a small proportion undergo malignant transformation in adulthood.

Step 1 – read the warning signs: New pain, renewed growth of a previously stable lesion and a cartilage cap thicker than 2 cm signal transformation.

Step 2 – name the tumour: The osteochondroma transforms into a **secondary chondrosarcoma**, arising from the malignant change of its cartilage cap.

Why the other options are wrong:

- A, Ewing sarcoma: a small round-blue-cell tumour of childhood, unrelated to osteochondroma.
- C, osteoid osteoma: a small benign lesion with night pain, not a transformation product.
- D, giant cell tumour: an epiphyseal lesion of young adults, unrelated to a cartilage cap.

Final Answer: Secondary chondrosarcoma $\Rightarrow$ B

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

Q13.

Solution

Concept – telangiectatic osteosarcoma: This is an aggressive, blood-filled variant of osteosarcoma.

Step 1 – read the imaging trap: An expansile, fluid-filled lytic lesion around the knee can radiologically mimic an aneurysmal bone cyst, but the biopsy shows a highly malignant sarcoma.

Step 2 – name the variant: This is **telangiectatic osteosarcoma**, characterised



by blood-filled spaces with malignant cells in the septa.

Why the other options are wrong:

- A, chondroblastoma: a benign epiphyseal tumour of young patients.
- C, simple bone cyst: a benign fluid-filled lesion, not malignant on biopsy.
- D, enchondroma: a benign intramedullary cartilage tumour.

Final Answer: Telangiectatic osteosarcoma $\Rightarrow$ **B**

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

Q14.

Solution

Concept – golfer’s elbow: Overuse of the wrist flexor-pronator group inflames its origin at the elbow.

Step 1 – localise the pain: Pain over the **medial epicondyle**, reproduced by **resisted wrist flexion and pronation**, indicates medial epicondylitis.

Step 2 – name it: This is **golfer’s elbow**, a tendinopathy at the common flexor origin.

Why the other options are wrong:

- B, lateral epicondylitis (tennis elbow): affects the lateral epicondyle and is provoked by resisted wrist extension.
- C, olecranon bursitis: presents with a swelling over the tip of the elbow, not medial tendon pain.
- D, cubital tunnel syndrome: causes ulnar nerve symptoms (little-finger numbness), not tendon pain on resisted flexion.

Final Answer: Medial epicondylitis (golfer’s elbow) $\Rightarrow$ **A**

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

Q15.

Solution

Concept – trigger finger: Trigger finger is a stenosing tenosynovitis of a digital flexor tendon.

Step 1 – read the mechanism: A **nodule on the flexor tendon** catches as it passes the **A1 pulley** (marked X), so the finger locks in flexion and then releases



with a painful snap.

Step 2 – name it: This catching and locking is **trigger finger (stenosing flexor tenosynovitis)**.

Why the other options are wrong:

- A, Dupuytren contracture: a painless palmar fascial thickening pulling the finger into fixed flexion, without catching.
- C, De Quervain tenosynovitis: affects the thumb extensor and abductor tendons at the wrist.
- D, carpal tunnel syndrome: is median nerve compression, giving numbness rather than a catching finger.

Final Answer: Trigger finger (stenosing flexor tenosynovitis) ⇒ B

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



Answer Key

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

