

INI CET Orthopaedics

Sample Paper – 8

Duration: 14 Minutes

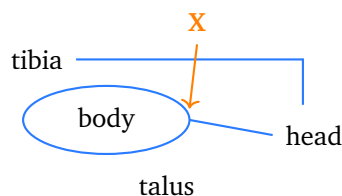
Maximum Marks: 15

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 young man lands from a height with a forced dorsiflexion injury and sustains a displaced fracture of the neck of the talus, marked **X** in the schematic below. The chief long-term complication he faces is:



- (A) No significant complication is expected
- (B) Rapid uneventful union within two weeks



- (C) Avascular necrosis of the talar body, heralded by a positive Hawkins sign on later radiographs
- (D) Malignant transformation of the talus

Q2. A footballer catches his forefoot in the turf and reports midfoot pain with plantar bruising and inability to bear weight. Radiographs show malalignment at the base of the second metatarsal. The most likely injury is:

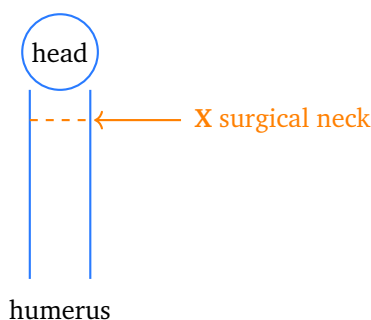
- (A) An isolated fracture of the distal fibula
- (B) A simple ankle sprain of the lateral ligament
- (C) A Lisfranc injury, a fracture-dislocation of the tarsometatarsal joints of the midfoot
- (D) A fracture of the femoral neck

Q3. A patient falls on the point of the elbow and can no longer actively extend the joint against gravity; a palpable gap is felt over the olecranon. This loss of active extension is best explained by:

- (A) Rupture of the biceps tendon
- (B) An olecranon fracture that disrupts the triceps insertion and its extensor pull
- (C) A dislocation of the shoulder joint
- (D) An injury to the median nerve

Fracture Complications and Emergencies

Q4. A fracture of the surgical neck of the humerus, marked X below, endangers the nerve that curves around it. Injury to this nerve produces:



- (A) Weakness of the deltoid with loss of shoulder abduction and a patch of numbness over the lateral upper arm (axillary nerve injury)
- (B) Wrist drop from radial nerve palsy
- (C) A claw hand from ulnar nerve palsy
- (D) Loss of thumb opposition from median nerve palsy

Q5. A labourer presents with a deep, dirty puncture wound of the foot. His last tetanus booster was more than ten years ago and he has completed a primary course in the past. The correct tetanus prophylaxis is:

- (A) No prophylaxis is required for any wound
- (B) A tetanus toxoid booster together with human tetanus immunoglobulin for this tetanus-prone wound
- (C) Oral antihistamines alone
- (D) Only cleaning the wound with water

Q6. A distal radius fracture treated in a cast unites in a poor position, leaving a visible dorsal tilt, prominent ulna and a stiff, weak wrist. This outcome, where the bone has healed but in an unacceptable position, is termed:

- (A) Malunion, union in a deformed position with residual deformity and stiffness
- (B) Non-union, a complete failure of the fracture to unite
- (C) Osteomyelitis of the radius
- (D) A fresh re-fracture through normal bone

Paediatric Orthopaedics

Q7. A six-year-old girl has had a swollen, painful knee for more than six weeks with morning stiffness, no history of injury and negative infection screens. The most likely diagnosis is:

- (A) An acute traumatic fracture
- (B) A benign growing pain of childhood



- (C) Juvenile idiopathic arthritis, a chronic childhood arthritis with oligoarticular and polyarticular subtypes
- (D) Simple muscle cramp

Q8. A newborn with an open lumbar spinal defect (spina bifida) has a fixed foot deformity and reduced sensation below the knees. The foot deformity is best explained by:

- (A) Neurological imbalance from the underlying spinal cord defect, producing paralytic muscle imbalance and deformity
- (B) A recent fracture of the ankle
- (C) An infected joint of the foot
- (D) A benign tumour of the toes

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

Q9. A sexually active young adult develops migratory polyarthralgia, tenosynovitis of the wrist and a few pustular skin lesions, followed by a hot, swollen knee. The most likely cause of this septic arthritis is:

- (A) Disseminated gonococcal infection with *Neisseria gonorrhoeae*
- (B) A degenerative osteoarthritis flare
- (C) Gout from urate crystals
- (D) A simple mechanical sprain

Q10. A patient with tuberculous spondylitis of the lumbar spine develops a fluctuant swelling that points below the inguinal ligament in the groin, without heat or acute tenderness. This is best described as:

- (A) An acute pyogenic abscess with brisk inflammation
- (B) A femoral hernia
- (C) A malignant groin tumour
- (D) A cold (psoas) abscess tracking down the psoas sheath from tuberculous spondylitis



Q11. A patient on long-term dialysis for chronic kidney disease develops bone pain and radiographic subperiosteal resorption. This metabolic bone disorder is:

- (A) Simple age-related osteoporosis alone
- (B) Renal osteodystrophy of chronic kidney disease mineral bone disorder, driven by secondary hyperparathyroidism
- (C) An acute bacterial osteomyelitis
- (D) A healed childhood rickets with no active disease

Bone Tumours

Q12. A young adult has a painful, expansile bone-forming lesion of the posterior elements of a vertebra measuring more than 2 cm. Histology resembles an osteoid osteoma but the lesion is larger and progressive. The diagnosis is:

- (A) Osteosarcoma
- (B) Ewing sarcoma
- (C) A simple bone cyst
- (D) Osteoblastoma, a benign bone-forming tumour larger than an osteoid osteoma with a predilection for the posterior spinal elements

Q13. A middle-aged adult presents with a slowly growing, painless swelling of the mid-shaft of the tibia; imaging shows a lytic, “soap-bubble” lesion of the anterior tibial diaphysis and biopsy confirms a rare low-grade malignancy. The diagnosis is:

- (A) Acute osteomyelitis
- (B) Adamantinoma, a rare low-grade malignant tumour of the tibial diaphysis
- (C) A benign osteochondroma
- (D) Rheumatoid arthritis of the ankle

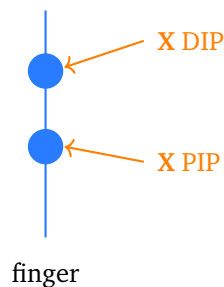
Spine, Arthritis and Sports Injuries



Q14. A new mother has pain over the radial side of the wrist near the base of the thumb, worsened by lifting her baby. Ulnar deviation of the wrist with the thumb tucked in the palm reproduces sharp pain. The most likely diagnosis is:

- (A) De Quervain tenosynovitis of the first dorsal compartment, with a positive Finkelstein test
- (B) A fracture of the scaphoid
- (C) Carpal tunnel syndrome
- (D) A dislocation of the elbow

Q15. An older woman has bony, painless swellings of her finger joints as marked below, with firm nodules at the end (distal) joints and the middle joints. These X nodules of hand osteoarthritis are:



- (A) Tophi of gout at the wrist only
- (B) Rheumatoid nodules at the metacarpophalangeal joints
- (C) Signs of an acute fracture of the phalanx
- (D) Heberden nodes at the distal interphalangeal joints and Bouchard nodes at the proximal interphalangeal joints



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

Concept – talar neck fracture and its blood supply: The talus has no muscular attachments and receives a tenuous, largely retrograde blood supply, so a displaced neck fracture threatens the body.

Step 1 – name the complication: A displaced fracture of the talar neck (marked X) commonly leads to **avascular necrosis of the talar body**, because the fracture strips the body of its main supply.

Step 2 – the Hawkins sign: At six to eight weeks a subchondral lucency in the talar dome (the Hawkins sign) indicates preserved vascularity; its *absence* predicts avascular necrosis.

Why the other options are wrong:

- A, no complication: ignores the well-known vascular vulnerability of the talus.
- B, rapid union in two weeks: the talus is slow to heal and prone to non-union.
- D, malignant transformation: fractures do not become malignant.

Final Answer: Avascular necrosis of the talar body ⇒ C

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

Q2.**Solution**

Concept – the Lisfranc injury: The Lisfranc joint complex is the tarsometatarsal articulation of the midfoot, stabilised by the Lisfranc ligament between the medial cuneiform and the second metatarsal base.

Step 1 – read the clues: Midfoot pain, plantar bruising, inability to bear weight and malalignment at the **base of the second metatarsal** point to a **Lisfranc fracture-dislocation** of the tarsometatarsal joints.

Step 2 – why it matters: Plantar ecchymosis is a classic clue, and a small “fleck sign” avulsion at the second metatarsal base confirms ligament disruption that is easily missed.

Why the other options are wrong:



- A, distal fibula fracture: an ankle-level injury, not the midfoot.
- B, lateral ligament sprain: would not cause malalignment at the metatarsal base.
- D, femoral neck fracture: is a hip injury, unrelated to the forefoot.

Final Answer: Lisfranc tarsometatarsal fracture-dislocation ⇒ C

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

Q3.

Solution

Concept – the olecranon and active elbow extension: The triceps brachii inserts into the olecranon, so this bony process is the lever through which the elbow is actively extended.

Step 1 – link injury to loss of function: A displaced **olecranon fracture** disrupts the triceps insertion, so the extensor pull can no longer straighten the elbow against gravity, and a palpable gap appears.

Step 2 – confirm clinically: Inability to actively extend against resistance with a fall onto the point of the elbow is the hallmark of this fracture.

Why the other options are wrong:

- A, biceps rupture: weakens flexion and supination, not extension.
- C, shoulder dislocation: affects the shoulder, not elbow extension.
- D, median nerve injury: impairs forearm flexors and thumb function, not triceps extension.

Final Answer: Olecranon fracture disrupting the triceps ⇒ B

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

Q4.

Solution

Concept – the axillary nerve at the surgical neck: The axillary nerve winds posteriorly around the surgical neck of the humerus (marked X), so a fracture there readily injures it.

Step 1 – name the deficit: Axillary nerve injury causes **deltoid weakness with loss of shoulder abduction** and a patch of numbness over the “regimental badge” area of the lateral upper arm.



Step 2 – test it: Test sensation over the lower deltoid and ask the patient to abduct the arm; both are impaired.

Why the other options are wrong:

- B, wrist drop: is a radial nerve lesion (spiral groove), not the surgical neck.
- C, claw hand: is an ulnar nerve lesion at the elbow or wrist.
- D, loss of opposition: is a median nerve lesion, unrelated to the surgical neck.

Final Answer: Axillary nerve injury with deltoid weakness ⇒ A

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

Q5.

Solution

Concept – tetanus prophylaxis for a dirty wound: Deep, contaminated puncture wounds are tetanus-prone and prophylaxis depends on both the wound and the immunisation history.

Step 1 – assess the patient: His last booster was more than ten years ago and the wound is dirty, so he needs both active and passive cover: a **tetanus toxoid booster plus human tetanus immunoglobulin**.

Step 2 – the rationale: The toxoid boosts long-term immunity, while the immunoglobulin gives immediate passive protection for a high-risk wound where cover has lapsed.

Why the other options are wrong:

- A, no prophylaxis: unsafe for a tetanus-prone wound with lapsed cover.
- C, antihistamines: play no part in tetanus prevention.
- D, water cleaning alone: is insufficient without immunisation.

Final Answer: Toxoid booster with tetanus immunoglobulin ⇒ B

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



Q6.

Solution

Concept – malunion versus non-union: The outcome of fracture healing is judged by whether the bone unites and in what position.

Step 1 – define the term: Here the bone has **healed but in a deformed position**, leaving dorsal tilt, a prominent ulna and stiffness. This is **malunion**.

Step 2 – contrast: Malunion means union in an unacceptable position; non-union means the fracture has not united at all.

Why the other options are wrong:

- B, non-union: the fracture here has united, so this term does not apply.
- C, osteomyelitis: implies infection, which is not described.
- D, re-fracture: there is no fresh break through normal bone.

Final Answer: Malunion of the distal radius ⇒ A

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

Q7.

Solution

Concept – juvenile idiopathic arthritis: Juvenile idiopathic arthritis is chronic arthritis beginning before sixteen years and lasting at least six weeks with no other cause.

Step 1 – read the picture: A swollen, stiff knee for more than six weeks, morning stiffness, no injury and negative infection screens fit **juvenile idiopathic arthritis**.

Step 2 – the subtypes: It has recognised subtypes including oligoarticular (four or fewer joints) and polyarticular (five or more joints), the oligoarticular form being the commonest.

Why the other options are wrong:

- A, acute fracture: there is no trauma and the course is chronic.
- B, growing pains: are intermittent and never cause a persistently swollen joint.
- D, muscle cramp: is transient and does not swell a joint for weeks.

Final Answer: Juvenile idiopathic arthritis ⇒ C

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



Q8.

Solution

Concept – spina bifida and paralytic deformity: An open spinal defect leaves the cord and nerve roots malformed, so the muscles below the lesion are unevenly innervated.

Step 1 – explain the deformity: The fixed foot deformity with reduced sensation arises from **neurological imbalance of the underlying cord defect**, giving paralytic muscle imbalance and deformity.

Step 2 – the mechanism: Stronger, innervated muscles overpull the weak, denervated antagonists, pulling the foot into a fixed position.

Why the other options are wrong:

- B, ankle fracture: there is no trauma described.
- C, infected joint: no signs of infection are present.
- D, benign tumour: does not explain a paralytic deformity with sensory loss.

Final Answer: Neurological imbalance from the cord defect ⇒ A

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

Q9.

Solution

Concept – disseminated gonococcal arthritis: *Neisseria gonorrhoeae* is the commonest cause of septic arthritis in a young, sexually active adult.

Step 1 – match the pattern: **Migratory polyarthralgia, tenosynovitis and pustular skin lesions** followed by a hot joint form the classic disseminated gonococcal syndrome.

Step 2 – confirm and treat: Cultures of blood, joint fluid and genitourinary sites plus prompt antibiotics are needed, as the arthritis-dermatitis picture is highly suggestive.

Why the other options are wrong:

- B, osteoarthritis flare: is degenerative and does not cause pustules or tenosynovitis.
- C, gout: causes crystal arthritis, not a migratory dermatitis syndrome in a young adult.
- D, mechanical sprain: does not produce systemic skin and tendon-sheath signs.



Final Answer: Disseminated gonococcal infection $\Rightarrow$ A

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

Q10.

Solution

Concept – the cold abscess of spinal tuberculosis: Tuberculous spondylitis produces a chronic paravertebral abscess that lacks the heat and redness of pyogenic infection, hence “cold”.

Step 1 – trace the tracking: Pus from lumbar tuberculous spondylitis descends within the **psoas sheath** and points below the inguinal ligament as a **cold (psoas) abscess**.

Step 2 – recognise it: It is fluctuant but cool and non-tender, distinguishing it from an acute pyogenic collection.

Why the other options are wrong:

- A, acute pyogenic abscess: would be hot, red and tender.
- B, femoral hernia: is a groin swelling but not linked to spinal tuberculosis.
- C, malignant tumour: does not track along the psoas from a spinal focus.

Final Answer: Cold (psoas) abscess from tuberculous spondylitis $\Rightarrow$ D

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

Q11.

Solution

Concept – renal osteodystrophy: Chronic kidney disease disturbs calcium, phosphate and vitamin D handling, producing a spectrum of bone disease.

Step 1 – name the disorder: Bone pain with subperiosteal resorption in a dialysis patient is **renal osteodystrophy of chronic kidney disease mineral bone disorder**, driven by **secondary hyperparathyroidism**.

Step 2 – the mechanism: Phosphate retention and low active vitamin D lower serum calcium, so the parathyroids over-secrete parathyroid hormone, which resorbs bone.

Why the other options are wrong:

- A, simple osteoporosis: does not by itself cause subperiosteal resorption.



- C, bacterial osteomyelitis: is a localised infection, not this diffuse metabolic picture.
- D, healed rickets: is inactive and would not explain new bone pain on dialysis.

Final Answer: Renal osteodystrophy with secondary hyperparathyroidism ⇒ **B**

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

Q12.

Solution

Concept – osteoblastoma: Osteoblastoma is a benign bone-forming tumour closely related to osteoid osteoma but larger and progressive.

Step 1 – read the clues: A bone-forming lesion of the **posterior spinal elements** exceeding 2 cm, histologically like an osteoid osteoma but larger, is an **osteoblastoma**.

Step 2 – the distinction: By convention a similar lesion under 1.5 to 2 cm is called osteoid osteoma; the larger, growing lesion is osteoblastoma, which favours the vertebral posterior elements.

Why the other options are wrong:

- A, osteosarcoma: is malignant with aggressive periosteal reaction, not this benign bone-forming lesion.
- B, Ewing sarcoma: is a small round-cell malignancy, not an osteoid-forming tumour.
- C, simple bone cyst: is a fluid-filled cavity, not a bone-forming tumour.

Final Answer: Osteoblastoma ⇒ **D**

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

Q13.

Solution

Concept – adamantinoma: Adamantinoma is a rare, low-grade malignant tumour with a striking predilection for the tibia.

Step 1 – match the site and picture: A slowly growing, painless, lytic “soap-bubble” lesion of the **anterior tibial diaphysis** that proves to be a low-grade malignancy is an **adamantinoma**.



Step 2 – the behaviour: It grows slowly, may recur locally and can metastasise late, so wide excision is the treatment.

Why the other options are wrong:

- A, acute osteomyelitis: is an acute infection, not a chronic painless mass.
- C, osteochondroma: is a benign cartilage-capped outgrowth, not a diaphyseal lytic malignancy.
- D, rheumatoid arthritis: is an inflammatory joint disease, not a bone tumour.

Final Answer: Adamantinoma of the tibial diaphysis ⇒ **B**

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

Q14.

Solution

Concept – De Quervain tenosynovitis: This is a stenosing tenosynovitis of the abductor pollicis longus and extensor pollicis brevis in the first dorsal compartment of the wrist.

Step 1 – read the presentation: Radial wrist pain near the thumb base, worsened by lifting and reproduced by ulnar deviation with the thumb tucked in the palm, is **De Quervain tenosynovitis** with a **positive Finkelstein test**.

Step 2 – the setting: It is common in new mothers from repeated lifting of the baby.

Why the other options are wrong:

- B, scaphoid fracture: follows a fall and gives snuffbox tenderness, not this repetitive-strain pattern.
- C, carpal tunnel syndrome: causes median-nerve numbness of the fingers, not radial tendon pain.
- D, elbow dislocation: is a proximal traumatic injury, unrelated to the thumb.

Final Answer: De Quervain tenosynovitis, positive Finkelstein test ⇒ **A**

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



Q15.

Solution

Concept – nodal osteoarthritis of the hand: Primary hand osteoarthritis produces bony osteophytic swellings at the finger interphalangeal joints.

Step 1 – name the nodes: Firm bony swellings at the distal joints are **Heberden nodes** (at the distal interphalangeal joints, marked X) and at the middle joints are **Bouchard nodes** (at the proximal interphalangeal joints).

Step 2 – the character: They are typically painless, hard and progressive, reflecting osteophyte formation rather than active inflammation.

Why the other options are wrong:

- A, gouty tophi: are urate deposits, not the symmetric bony nodes of osteoarthritis.
- B, rheumatoid nodules: occur at the metacarpophalangeal joints and pressure points, with inflammatory synovitis.
- C, acute fracture: is a traumatic single-event injury, not chronic bony nodes.

Final Answer: Heberden nodes (DIP) and Bouchard nodes (PIP) ⇒ D

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



Answer Key

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

