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PRACTICE QUESTIONS

National Health Regulatory Authority (NHRA)

ORTHO

Orthopedic Surgery

EDITION

Original Demo

QUESTIONS

15

ISSUED

October 14, 2026

Before you begin

What this is

15 practice questions for National Health Regulatory Authority (NHRA) ORTHO , each with its answer key and an explanation. Answer a question before you read its key - the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, ORTHO
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

Licence

Original Mometrix demo. This free sample contains fewer questions than the full paid edition.

QUESTION 1

SINGLE CHOICE

A 22-year-old man sustains a high-velocity open tibial fracture. Intraoperatively, the wound is 12 cm long with extensive soft tissue loss, periosteal stripping, and a severely contaminated farmyard injury. According to the Gustilo-Anderson classification, what is the correct grade?

- ☐ A Type I
- ☐ B Type II
- ☐ C Type IIIA
- ☒ D Type IIIC

ANSWER D

WHY A high-energy open fracture with extensive soft tissue loss, periosteal stripping, and severe contamination qualifies as Gustilo-Anderson Type IIIB, and when associated with an arterial injury requiring repair it becomes Type IIIC. The remaining options describe progressively less severe injuries and do not match the described findings.

QUESTION 2

SINGLE CHOICE

A 58-year-old active woman sustains a displaced subcapital femoral neck fracture (Garden IV). Which surgical intervention provides the most favorable long-term outcome with respect to preserving femoral head vascularity and reducing the risk of avascular necrosis in this physiologically young adult?

- ☐ A Total hip arthroplasty
- ☐ B Hemiarthroplasty (bipolar)
- ☒ C Internal fixation with multiple cannulated screws
- ☐ D Non-operative management with protected weight-bearing

ANSWER C

WHY In a young, active patient (under ~60 years) with a displaced femoral neck fracture, anatomic reduction and internal fixation (typically with three cannulated screws in an inverted triangle configuration) is preferred to preserve the native femoral head. Arthroplasty (total or hemi) is reserved for older or low-demand patients because internal fixation preserves the head vasculature when reduction is achieved promptly. Non-operative management yields unacceptably high rates of nonunion, malunion, and avascular necrosis in a displaced fracture.

QUESTION 3

MULTIPLE CHOICE

A 40-year-old man sustains a Gustilo-Anderson type II open radius and ulna fracture after a motorcycle crash. Which of the following are essential components of initial open fracture management? (Choose three.)

- ☒ **A** IV empirical antibiotics administered within 1 hour of injury
- ☒ **B** Tetanus prophylaxis assessment and update as indicated
- ☒ **C** Irrigation and debridement of the wound with sterile normal saline
- ☐ **D** Immediate primary closure of the skin over the open wound
- ☐ **E** Definitive internal fixation and primary wound closure performed in the same sitting regardless of contamination

ANSWER **A · B · C**

WHY Initial open fracture management includes prompt IV empirical antibiotics (typically a first-generation cephalosporin for Gustilo I-II, adding an aminoglycoside for type III), tetanus prophylaxis if not up to date, and thorough irrigation/debridement. Primary skin closure is contraindicated in most open fractures (delayed closure is preferred after debridement), and definitive internal fixation in a heavily contaminated wound risks infection - many type II/III injuries are initially spanned with external fixation.

QUESTION 4

SINGLE CHOICE

An active, independent 78-year-old man sustains a displaced intracapsular femoral neck fracture (Garden III) after a low-energy fall. He has no significant comorbidities and was mobilising without aids prior to the injury. Which surgical intervention is generally preferred?

- ☐ A Internal fixation with three cannulated screws
- ☐ B Hemiarthroplasty
- ☒ C Total hip arthroplasty
- ☐ D Non-operative management with early mobilisation

ANSWER C

WHY In an active, independent elderly patient with a displaced intracapsular femoral neck fracture, total hip arthroplasty is generally preferred over hemiarthroplasty because it provides better functional outcomes and lower reoperation rates. Internal fixation carries a high risk of nonunion and avascular necrosis in displaced fractures, and non-operative management is associated with significant morbidity and mortality.

QUESTION 5

SINGLE CHOICE

An 11-year-old obese boy presents with a 3-week history of intermittent left hip and knee pain and a progressive externally rotated, shortened limb. Radiographs show posterior and medial slippage of the left capital femoral epiphysis with a Southwick angle of 35°. According to the Southwick classification, what is the grade of this slip?

- ☐ A Mild (Grade I)
- ☒ B Moderate (Grade II)
- ☐ C Severe (Grade III)
- ☐ D Critical (Grade IV)

ANSWER B

WHY According to the Southwick classification, a slip angle of 30°-50° on the frog-leg lateral view is graded as moderate (Grade II). Slips <30° are mild (Grade I) and >50° are severe (Grade III). Grade IV is not part of the Southwick scheme.

QUESTION 6

SINGLE CHOICE

A 2-month-old infant is referred because of asymmetric skin folds and a positive Galeazzi sign. Ultrasound using the Graf method shows an alpha angle of 48° and a beta angle of 70° . According to the Graf classification, what type of hip is this?

- ☐ A Type I (normal)
- ☐ B Type IIa (immature but normal for age)
- ☒ C Type III (dysplastic, de-centred)
- ☐ D Type IV (dysplastic, dislocated)

ANSWER C

WHY In the Graf classification, an alpha angle $<50^\circ$ indicates a dysplastic hip, while a beta angle $>55^\circ$ indicates subluxation or dislocation. The combination of alpha $<50^\circ$ and beta $>55^\circ$ corresponds to a Graf Type III hip (de-centred, dysplastic). Type IIa is for infants under 3 months with alpha $50-60^\circ$, and Type I has alpha $\geq 60^\circ$.

QUESTION 7

SINGLE CHOICE

A 7-year-old boy presents with a 2-day history of fever (39.0°C), refusal to bear weight, and a warm, swollen, extremely tender right knee. Inflammatory markers are markedly elevated (CRP 120 mg/L, WBC $18 \times 10^9/\text{L}$) and the knee aspiration reveals purulent fluid with a leukocyte count of $80,000/\mu\text{L}$. What is the most appropriate next step in management?

- ☐ A Intravenous antibiotics and immobilization in a splint, with reassessment in 48 hours
- ☒ B Urgent arthrotomy or arthroscopic irrigation and drainage of the knee combined with empirical IV antibiotics
- ☐ C Aspiration alone followed by oral antibiotics for 2 weeks
- ☐ D MRI of the knee before any intervention

ANSWER B

WHY Kocher criteria (fever, non-weight-bearing, ESR >40 , WBC >12) all support septic arthritis, and the joint aspirate ($>50,000$ leukocytes/ μL with purulent fluid) is diagnostic. Septic arthritis of the knee in a child is an orthopaedic emergency: urgent surgical drainage (open arthrotomy or arthroscopy) combined with empirical IV antibiotics (e.g. targeting *Staphylococcus aureus*) is required to prevent cartilage destruction and avascular necrosis. Delaying drainage risks permanent joint damage; aspiration alone is insufficient for the knee.

QUESTION 8

SINGLE CHOICE

A 24-year-old man has an isolated closed tibial shaft fracture treated with a long-leg cast. Six hours after injury, he reports pain out of proportion, with pain on passive toe extension. The orthopaedic surgery resident increases opioid analgesia. Which is the most appropriate next step?

- ☐ A Continue current analgesia and observe for another 6 hours
- ☒ B Split or bivalve the cast and re-assess; if no improvement, measure compartment pressures
- ☐ C Apply a regional nerve block before any further assessment
- ☐ D Proceed directly to open reduction and internal fixation

ANSWER B

WHY Acute compartment syndrome is a clinical diagnosis, but pain out of proportion and pain on passive stretch are classic early signs. The first immediate maneuver is to release any external constrictive dressing or bivalve the cast. If symptoms persist, compartment pressure measurement confirms the diagnosis and emergent fasciotomy is indicated. Increasing opioids alone masks the warning sign and risks a missed compartment syndrome, while a regional block abolishes the very clinical sign used to monitor for it.

QUESTION 9

SINGLE CHOICE

A 14-year-old boy presents with a 4-month history of deep, progressive pain in the distal femur that is worse at night and partially relieved by NSAIDs. Radiographs show a mixed lytic and sclerotic lesion in the metaphysis with periosteal elevation and a sunburst pattern. What is the most likely diagnosis?

- ☐ A Osteomyelitis
- ☐ B Ewing sarcoma
- ☒ C Osteosarcoma
- ☐ D Giant cell tumour

ANSWER C

WHY Osteosarcoma classically presents in adolescents with progressive deep bone pain (often worse at night), a metaphyseal lesion around the knee, and characteristic radiographic features including periosteal elevation (Codman triangle) and a sunburst periosteal reaction. Ewing sarcoma typically presents in the diaphysis with an 'onion-skin' periosteal reaction.

QUESTION 10

SINGLE CHOICE

A 16-year-old boy presents with deep, progressive night pain in the distal femur, relieved partially by NSAIDs. Radiographs show an eccentric, lytic, metaphyseal lesion with a 'soap-bubble' appearance, narrow zone of transition, and no periosteal reaction. What is the most likely diagnosis?

- ☐ A Osteosarcoma
- ☐ B Ewing sarcoma
- ☒ C Giant cell tumor of bone
- ☐ D Osteomyelitis

ANSWER C

WHY The classic appearance of a giant cell tumor of bone is an eccentric, lytic, subarticular/metaphyseal-epiphyseal lesion extending to the articular surface, with a narrow zone of transition and no matrix mineralization, typically in skeletally mature young adults (20s-40s) around the knee. Osteosarcoma and Ewing sarcoma usually show aggressive features with periosteal reaction, and the patient's age and location fit giant cell tumor best among these options.

QUESTION 11

SINGLE CHOICE

A 5-year-old boy presents with a 2-day history of fever (38.8°C) and refusal to bear weight on his right lower limb. Examination reveals a warm, swollen, and exquisitely tender right knee held in slight flexion. ESR is 55 mm/hr and CRP is 90 mg/L. Aspiration of the knee yields turbid fluid with a white cell count of 75,000/ μ L and predominantly neutrophils. What is the most appropriate next step?

- ☐ A Immobilise in a plaster backslab and re-evaluate in 48 hours
- ☐ B Start intravenous antibiotics and arrange urgent MRI of the knee
- ☒ C Perform urgent arthroscopic or open irrigation and debridement followed by empirical IV antibiotics
- ☐ D Start oral antibiotics and review in clinic in one week

ANSWER C

WHY This is a classic presentation of septic arthritis of the knee. Kocher criteria are met (fever $>38.5^{\circ}\text{C}$, non-weight-bearing, ESR >40 , CRP >20 , with synovial WBC $>50,000/\mu\text{L}$ and neutrophil predominance confirming the diagnosis). The standard of care is urgent surgical drainage (arthroscopic or open) combined with empirical intravenous antibiotics after obtaining intra-operative cultures. Antibiotics alone or delayed management risk permanent cartilage damage and osteomyelitis.

QUESTION 12

MULTIPLE CHOICE

Which of the following are absolute contraindications to total knee arthroplasty (TKA) in a patient with end-stage tricompartmental osteoarthritis? (Choose two.)

- ☒ **A** Active infection of the knee joint
- ☐ **B** Well-controlled type 2 diabetes mellitus
- ☒ **C** Neuropathic (Charcot) arthropathy of the knee
- ☐ **D** Age under 60 years with symptomatic disease

ANSWER A • C

WHY Active joint infection is an absolute contraindication to TKA because of the risk of seeding infection to the prosthesis. A neuropathic (Charcot) joint is also an absolute contraindication because of poor proprioception, ligamentous laxity, and high failure rates. Well-controlled diabetes is a relative, not absolute, contraindication and should be optimised pre-operatively. Younger age alone is not a contraindication in a symptomatic patient who has failed conservative management.

QUESTION 13

SINGLE CHOICE

A 30-year-old man reports locking and catching of the knee with intermittent effusion after a twisting injury. Examination shows joint line tenderness but no laxity. Which investigation is most sensitive for confirming a meniscal tear?

- ☐ **A** Plain radiographs of the knee
- ☐ **B** MRI of the knee
- ☒ **C** Diagnostic arthroscopy
- ☐ **D** Bone scintigraphy

ANSWER C

WHY MRI is the non-invasive imaging modality of choice and is highly sensitive for meniscal tears; however, diagnostic arthroscopy remains the gold standard (most sensitive) because it allows direct visualization and dynamic probing of the menisci. Plain radiographs do not show soft-tissue meniscal pathology, and bone scintigraphy evaluates osseous, not meniscal, pathology.

QUESTION 14

SINGLE CHOICE

A 32-year-old man sustains an open fracture of the tibia with a 10 cm segmental bone loss, extensive periosteal stripping, and a high-energy wound requiring soft-tissue coverage. According to the Gustilo-Anderson classification, this injury is best categorized as which type?

- ☐ A Type I
- ☐ B Type II
- ☐ C Type IIIA
- ☒ D Type IIIB

ANSWER D

WHY Gustilo-Anderson type IIIB is an open fracture with extensive soft-tissue loss, severe periosteal stripping, and a wound that requires soft-tissue coverage (such as a free flap or rotational flap). The presence of large segmental bone loss with stripping further supports IIIB rather than IIIA. Type IIIA has adequate soft-tissue coverage despite high-energy injury, Type I has a clean wound <1 cm, and Type II has a wound >1 cm without extensive soft-tissue damage.

QUESTION 15

SINGLE CHOICE

A 35-year-old man with a closed tibial shaft fracture develops increasing pain unrelieved by opioids, pain on passive stretch of the toes, and tense swelling of the leg. Compartment pressures are measured. Which pressure threshold, sustained on serial measurement, is the standard indication for fasciotomy?

- ☒ **A** ΔP (diastolic blood pressure minus compartment pressure) of 30 mmHg or less
- ☐ **B** Absolute compartment pressure above 20 mmHg in any single reading
- ☐ **C** ΔP of less than 10 mmHg
- ☐ **D** Any absolute pressure above 40 mmHg regardless of patient blood pressure

ANSWER A

WHY Modern guidelines (e.g., AAOS) emphasize that the decision to perform fasciotomy is based on the difference between diastolic blood pressure and compartment pressure (ΔP). A $\Delta P \leq 30$ mmHg indicates compartment syndrome and the need for emergent fasciotomy. Isolated absolute pressure thresholds are unreliable because they do not account for the patient's blood pressure.