

**KENYA MEDICAL TRAINING COLLEGE**

**DEPARTMENT: ORTHOPAEDICS AND TRAUMA MEDICINE**

**DIPLOMA IN ORTHOPAEDIC PLASTER TECHNOLOGY**

**FINAL QUALIFYING EXAMINATION**

**PAPER:** CASTING

**DURATION:** 3 Hours

**TIME:** 9 a.m. – 12 Noon

**INSTRUCTIONS**

1. Write your examination number on answer book/sheet provided
2. Section one: MCQs – choose single best response
3. Section two: mark T(True) or F(False) for each response
4. Section three: answer all questions.
5. Section four: answer one question.
6. Do not cheat
7. Use legible handwriting

**SECTION ONE: MCQ**

1. **Why is the bulky Jones splint called “ bulky”**
2. It is mostly used for injuries that result in the ankle being very swollen
3. The ankle is first wrapped with a thick cotton wrap before the splint is applied
4. Splint is made up of a very thick metal material
5. The person who created this type of splint was named Bulky Jones.
6. **When a volar/dorsal and single sugar-tong splints are applied, the wrist is usually in an\_\_\_\_\_position**
7. Extended
8. Flexed
9. Abducted
10. Adducted
11. **Which of the following people would mostly need to use a volar/dorsal splint**
12. Larry, who sprained wrist
13. Dan, who fractured his ulna
14. Bretty, who fractured his radius
15. Mike, who just had surgery to his wrist and hand
16. **Knee injuries can be classified according to sprains, fractures, inflammatory, and\_\_\_**
17. Lacerations
18. Strains
19. Abrasions
20. contractures
21. **A patient on a lower limb cast with a callus forming fracture is advised to bear weight so as to:**
22. Reduce pain.
23. Prevent re-displacement of the fracture.
24. Increase calcification of the fracture.
25. Gain mobility.
26. **The following are not diseases of the cast:**
27. Joint stiffness.
28. Osteoporosis.
29. Plaster sores.
30. Callus formation.
31. **Which one of the following is an indication for aero-plane cast in children?**
32. Club foot.
33. Congenital dislocation of the hip.
34. Erb’s palsy.
35. Achondroplasia.
36. **The amount of heat produced during casting does not depend on:**
37. Amount of water used.
38. Temperature of the water used.
39. The number of layers applied.
40. Manufactures specifications.
41. **Besides fractures, what other types of finger injury is likely to require the use of ulna gutter or radial gutter splint**
    1. Blood clots
    2. Severe sprains
    3. Tendinitis
    4. Carpal tunnel syndrome
42. **Mallet finger splints are used for avulsions of extensor tendon. Which of the following describes this type of injury?**
    1. Tendon detaches from the bone
    2. Tendon becomes weak
    3. Tendon becomes inflamed
    4. Tendon is stretched out
43. **A long arm posterior splint is applied to the underside of the arms and extends from the proximal palmer crease all the way to the axilla. What is axilla?**
44. Top of the deltoid muscle
45. Mid-point of the upper arm
46. Armpit
47. Lateral part of the clavicle
48. **Functions of the tabular gauze/stockinette include three of the following EXCEPT:**
49. It is skin tight cast.
50. It helps prevent the limb-hairs from becoming caught in the plaster.
51. It removes any roughness caused by the plaster casts edges.
52. It aids in the removal of the cast.
53. **Cork up splint is used to manage:**
54. Foot drop.
55. Shoulder dislocation.
56. Wrist drop.
57. Mal-union of fractures.
58. **Figure of 8 bandage can best be applied to manage which orthopedic condition?**
59. Ankle joint dislocation.
60. Fracture olecranon process.
61. Skull fractures.
62. Fractures of the ribs.
63. **Long arm posterior splints and double-sugar tong splints are used with fractures to the olecranon process. Olecranon is a bony prominence located at the top of the\_\_\_\_**
64. Radius
65. Ulna
66. Humerus
67. Acromion
68. **Choose the proper foot position for applying a posterior ankle or stirrup splint.**
69. Foot pointed towards the floor
70. Foot pointed towards the ceiling
71. Foot approximately at 900 angle with the lower leg
72. Foot turned in slightly to stretch the outer ankle
73. **Rest as used in management of orthopaedic and trauma conditions simply means:**
74. Patient to sleep always.
75. Patient to sit on the chair.
76. Patient to have reduced activities after immobilization.
77. Patient n
78. **What is the purpose of using ice cold compressions in the management of STIs.**
79. To vaso-dilate the blood vessels.
80. To increase blood circulation.
81. To make the limb cold.
82. To vaso-constrict the blood vessels.
83. **The bulky Jones splint is a specific type of stirrup splint. What is the difference between a stirrup splint and a bulky Jones splint?**
84. A bulky Jones splint is longer
85. A bulky Jones splint is made of elastic bandages
86. A bulky Jones splint requires the lower leg to be wrapped in cotton padding
87. A bulky Jones splint is only used for children
88. **When long arm casts are applied, the elbow is usually bent at a\_\_\_\_ degree**
89. 45
90. 60
91. 90
92. 120
93. **Which material is not typically used for posterior ankle or stirrup splints?**
94. Plastics
95. Wood
96. Fiberglass
97. Plaster
98. **What do you understand by the term ‘100-900’tricky?**
99. Reduce the elbow joint to 1000 then back to 900.
100. Reduce the elbow joint to 900 then 1000.
101. Reduce the knee joint to 1000 then back to 900.
102. Reduce the knee joint to 900 then 1000.
103. **When you mix P.O.P in water, there is production of bubbles, this is due to:**
104. Heat production.
105. Thermal expansion of P.O.P.
106. Formation of gypsum molecules.
107. Drying of the cast.
108. **What do you understand by the term ‘green period’ in casting?**
109. Grace period when modeling of the cast can be done.
110. Period when the fracture is fresh.
111. Period when the cast is producing bubbles.
112. Period when the cast cannot break.
113. **Windowing of a cast done to:**
114. Correct deformities.
115. Inspection of the cast.
116. Allow dressing of the wound.
117. To make the cast cosmetic.
118. **When ulna gutter and radial gutter splints are applied, the fingers are usually placed in a\_\_\_\_\_ position**
119. Straight
120. Slightly extended
121. Flexed and rounded
122. Slightly pronated
123. **Which of the following is not a disadvantage of oscillating plaster machine?**
124. Not easy to cut dry casts
125. Produces scary noise
126. Can easily cause burns
127. Cannot be used without electricity
128. What do you understand by the rule of two in casting:
129. Two patients, two practitioners, two limbs.
130. Two X-rays, two joints, two practitioners.
131. Two applications, two X-rays, two patients.
132. Two days, two joints, two X-rays.
133. **Both the long arm posterior splint and the double sugar-tong splint are applied to the arm with the elbow bent at a\_\_\_ degree angle.**
134. 45
135. 60
136. 90
137. 125
138. **Single sugar-tong splints usually begin at the proximal palmer crease, extend down the forearm, wrap round and under the elbow, extend up the back of the fore arm and end at the\_\_\_\_\_**
139. Base of the wrist
140. Tip of the fingers
141. Base of the fingers
142. One inch below the wrist

**SECTION TWO: TRUE/FALSE QUESTUINS**

1. **The following are features of arterial obstruction in a casted limb:**
2. Paresthesia of the limb. T
3. Pallor of the skin. T
4. Ability to flex and extend the limb. F
5. Severe pain at the fracture site. T
6. Disturbed capillary return. T
7. **The management of un-displaced fracture of clavicle includes:**
8. Hanging cast. F
9. Shoulder Spica cast. T
10. Arm sling. T
11. Above elbow cast. F
12. Figure of 8 bandaging. F
13. **The following are reasons for cast saw blade burns during cast removal:**
14. Dragging the blade up and down motions. T
15. Blood stained casts. F
16. Well-padded cast. F
17. Presence of edema. T
18. Resin based materials. T
19. **The following are not indications of hip Spica:**
20. Proximal femur fractures in children. F
21. Distal femur fractures in children. F
22. Shaft femur fractures in adults. T
23. Neck of femur fractures in adults. T
24. Distal femur fractures in adults. T

1. **The following are reason/s for applying P.O.P cast diagonally?**
2. To have a firm cast. T
3. To prevent cast breakages. T
4. To avoid tourniqueting the limb F
5. To increase the strength of the cast. T
6. To distribute the cast pressure evenly. T
7. **The following are benefit/s of treatment using a splint**
8. Splints are water proof, so that one may continue with their daily swimming F
9. Splints permit swelling, thereby reducing the risk of neurovascular compromise T
10. Splints cannot be removed, providing a constant stable environment for healing F
11. Splints can be removed, so that the patient can put it on and off as much as they want T
12. Splints are easier to remove in cases of arterial obstruction. T

**SECTION THREE: SHORT ESSAY QUSTIONS.**

1. What is splinting [2 marks]

Method of noncircumferential

1. Differentiate between setting time and drying time of a cast. [4 marks]

Time taken by Plaster of Paris cast to change liquid to crystalline gypsum. This usually takes 3-9 minutes on average whereas drying time is the time taken the plaster of Paris to change from crystalline to solid. This usually takes 24-72hours

1. List five (5) improvised materials for splinting. [5 marks]

* Sleeping pads or camping mattress Wood
* Cartons Cardboard
* Tie or socks used in splinting of fingers Pieces of sticks

1. Mention five (5) types of splints. [5 marks]

* Ulnar gutter Above elbow back slab
* Radial gutter Cork up splint
* Volar splint Thumb spica

1. Highlight four (4) tools and equipment used in casting. [4 marks]

PROTECTIVE

* Dust sheets and other covering material to protect the patient’s clothing are essential.
* Apron and boots will protect the operator.
* Sandbags and supportive pillows for comfort and support of the patient.
* Ring cutters.
* Instruction cards to guide the patient when away from hospital supervision.
* Plaster shear
* Plaster spreader
* Hack saw

IMPLEMENTS

* Protective materials – stockinette, felt wool bandages of varying widths.
* Plaster bandages of varying widths.
* Slabs of various widths.
* Plaster Shears and Plaster spreaders
* Plaster scissors, plaster knife, marking pencil.
* Orthopaedic pad/soffban of varying length.
* Electric Plaster Cutter.
* Water buckets.
* Triangular bandages/arm sling/collar and cuff.
* Walking heels, boots/iron for lower limb.
* Steel basin

**SECTION FOUR: LOND ESSAY QUESTIONS.**

1. Describe five (5) complications of casting. [20 marks]
2. Describe double sugar-tong splint [20 marks]

A splinting method used in the treatment distal radius fractures, isolated radius or ulnar fractures, fracture of the shaft of both radius and ulnar and in the postoperative protection of the forearm or wrist

1. Apply single sugar tong splint first
2. Start the second sugar tong splint at the deltoid insertion at the humerus
3. Continue with the splint distally to the elbow.
4. Bend the splint around the elbow and continue proximally
5. Stop a few inches from the axilla i.e. on the posterior humerus.