

**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. **A patient on a lower limb cast with a callus forming fracture is advised to bear weight so as to:**
2. Reduce pain.
3. Prevent re-displacement of the fracture.
4. Increase calcification of the fracture.
5. Gain mobility.
6. **A fracture to which of the following fingers would most likely require an ulna gutter splint**
	1. Pinky fingers
	2. Middle fingers
	3. Pointer fingers
	4. Thumb
7. **The amount of heat produced during casting DOES NOT depend on:**
8. Amount of water used.
9. Temperature of the water used.
10. The number of layers applied.
11. Manufactures specifications.
12. **Thumb spica splints are commonly used for injured thumbs and are usually worn until\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
13. Swelling of injury goes away
14. Injury is completely healed
15. A person regains feeling in the thumb
16. A person can move their thumb
17. **A lady presents with swelling of hands with shiny skin. She had a history of fracture of radius and kept on P.O.P cast for 4 weeks. The most likely diagnosis is?**
18. Malunion
19. Myositis ossificans progressiva
20. Reflex sympathetic syndrome
21. Rupture of extensor pollicis longus tendon
22. **Which of the following is NOT an advantage of fiber glass cast?**
23. Fiber glass cast will retain its structural integrity in water
24. Fiber glass cast is light weight yet strong
25. Fiber glass cast will not expand to accommodate any swelling
26. Fiber glass cast comes in many colours
27. **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
28. **During cast removal, the patient may get injuries from the cast saw blade due to the following reasons EXCEPT**
29. Dragging the blade up and down motions
30. Blood stained casts
31. Due to edema
32. Resin based materials
33. **A cast is usually wedged to do which of the following:**
34. Relieve swelling
35. Properly align a reduced-displaced fractured bone
36. Reduce skin irritation
37. Permit suture removal
38. **Which of the following is NOT one of the signs and symptoms of cast sores?**
39. Local heat
40. Loose cast
41. Burning sensation
42. Offensive smell
43. **Patients with knee injuries will benefit from which of the following treatments?**
	1. Rest, ice, compression, elevation
	2. Hiking, ice, long term splint use, sunlight
	3. Rest, traction, massage therapy, gait therapy
	4. Heat, exercise, water therapy, pain medication
44. **Cylinder cast is indicated to the following conditions EXCEPT**
45. Malleoli fracture
46. Knee dislocations
47. Patella fractures
48. Knee sprains
49. **Which of the following is NOT a reason for serial casting:**
50. Fractures of tibia-fibula.
51. Congenital talipes equino varus.
52. Correction of joint contractures.
53. Repaired tendon Achilles.
54. **Hard cervical collars are NOT indicated for:**
55. Whiplash injuries.
56. Fractures of cervical region.
57. Injuries around the hip in women.
58. Prolapsed intervertebral discs of the neck.
59. **Which of the following is a possible indication for a white man P.O.P cast?**
60. Vertebral discs fractures.
61. Pelvic fractures.
62. Shoulder joint fractures.
63. Sternum fractures.
64. **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\_\_\_\_**
65. Radius
66. Ulna
67. Humerus
68. Acromion
69. **A patient on a lower limb cast with a callus forming fracture is advised to bear weight so as to:**
70. Reduce pain.
71. Prevent re-displacement of the fracture.
72. Increase calcification of the fracture.
73. Gain mobility.
74. **Areas that should be well padded include:**
75. Pressure tolerant areas.
76. Pressure sensitive areas.
77. Unanticipated swelling regions.
78. Bulky muscle regions.
79. **Which situation would a splint NOT be the best choice for treatment**
	1. A patient with finger dislocation
	2. A patient with non-displaced , closed fracture
	3. A patient with a sprained ankle joint
	4. A patient with tendonitis of the elbow.
80. **Functions of the tabular gauze/stockinette include three of the following except:**
81. It is skin tight cast.
82. It helps prevent the limb-hairs from becoming caught in the plaster.
83. It removes any roughness caused by the plaster casts edges.
84. It aids in the removal of the cast.
85. **The bulky Jones splint is a specific type of stirrup splint. What is the difference between a stirrup splint and a bulky Jones splint?**
86. A bulky Jones splint is longer
87. A bulky Jones splint is made of elastic bandages
88. A bulky Jones splint requires the lower leg to be wrapped in cotton padding
89. A bulky Jones splint is only used for children
90. **Figure of 8 bandage can best be applied to manage which orthopedic condition?**
91. Ankle joint dislocation.
92. Fracture olecranon process.
93. Skull fractures.
94. Fractures of the ribs.
95. **Orthopaedic technologists are a family of orthopaedics that are specialists in:**
96. Exercising the patient.
97. Fine tune maneuvers to restore functions.
98. Fabrications of orthotics and prosthetics.
99. Surgery of orthopaedic patients.
100. **When ulna gutter and radial gutter splints are applied, the fingers are usually placed in a\_\_\_\_\_ position**
101. Straight
102. Slightly extended
103. Flexed and rounded
104. Slightly pronated
105. **When long arm casts are applied, the elbow joint is usually bent at \_\_\_\_\_\_degrees.**
106. 450
107. 600
108. 900
109. 1200
110. **When you mix P.O.P in water, there is production of bubbles, this is due to:**
111. Heat production.
112. Thermal expansion of P.O.P.
113. Formation of gypsum molecules.
114. Drying of the cast.
115. **What do you understand by the term ‘green period’ in casting?**
116. Grace period when modeling of the cast can be done.
117. Period when the fracture is fresh.
118. Period when the cast is producing bubbles.
119. Period when the cast cannot break.
120. **Windowing of a cast done to:**
121. Correct deformities.
122. Inspection of the cast.
123. Allow dressing of the wound.
124. To make the cast cosmetic.
125. **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\_\_\_\_\_**
126. Base of the wrist
127. Tip of the fingers
128. Base of the fingers
129. One inch below the wrist
130. **Short arm casts are frequently used for Colle’s fractures. Where do Colle’s fractures occur?**
131. On the radius near the wrist
132. On the radius near the elbow
133. On the ulna near the elbow
134. On the ulna near the wrist

**SECTION TWO: TRUE/FALSE QUESTIONS.**

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. F
7. **The following are NOT indications for lower limb anterior slabs.**
8. Burns on the posterior aspect of the lower limb. F
9. Burns on the anterior aspect of the lower limb. T
10. Contracture at the knee joint. F
11. Swelling of the lower limb. F
12. Posterior compound fractures F
13. **The following factors increases setting time of the cast:**
14. Resin. T
15. Cold water F
16. Salt. T
17. Hot water T
18. Number of cast layers T
19. REUSE OF CASTING WATER
20. **Consideration of setting up a cast room are:**
21. Space. T
22. Staffing. T
23. Furniture and equipment. T
24. Patients’ population. F
25. Expected income generation. F
26. **The following are factors affecting setting time of plaster of Paris casts.**
27. Type of the plaster. T
28. Thickness of the cast. T
29. Alignment of the bone fragments. F
30. Temperature of the water. T
31. Impurities. T
32. **The following are features of arterial obstruction in a casted limb:**
33. Paresthesia of the limb. T
34. Pallor of the skin. T
35. Ability to flex and extend the limb. F
36. Severe pain at the fracture site. T
37. Disturbed capillary return. T

**SECTION THREE: SHORT ESSAY.**

1. State four (4) indications of cylinder cast. [4 marks]
* For joint immobilization in ligamentous injury around the the knee
* Joint swelling due to an infection, strain at the knee
* To immobilize fracture patellar that swelling is not anticipated
* To provide rest to a diseased limb at knee joint
* To immobilize the dislocation of the patellar
* Prevent movement in case of nerve, tendon or vessel repair at the knee jint
1. Outline four (4) ways of reducing the setting time of a cast. [4 marks]
* Use Hot water during cast application
* Add Salt to the water
* Add Borax to the water to be used for casting
* Add Resin to the water
* Reuse casting water
1. Highlight four (4) causes of cast sores. [4 marks]
* Tight cast
* Not enough padding of bony prominences
* Poor technique of cast application hence presence of creases within the cast
* Shape edges of the casts
* Presence of foreign material in the cast such as coins, sticks e.t.c.
1. Mention three (3) uses of single sugar-tong splint. [3 marks]

Dislocation at the wrist joint

Soft tissue injuries at the forearm and wrist

Strains at the wrist joint

1. Mention five [5] components of a casting room. [5 marks]

**SECTION FOUR: LONG ESSAY.**

1. **Describe the management of a sprained ankle joint. [20 marks]**
2. **Explain the process of applying and removing long leg cast. [20 marks]**
* With the equipment’s ready and buckets filled with the water.
* The patient sits comfortably with suitable protective covering.
* The patient must understand what is happening.
* Ensure privacy of the patient.
* The assistant must hold the patient in the desired way.
* Put suitable padding especially around the pressure areas (bony prominence)