

***** EXAMINATION *****

STANDARD PRACTICE FOR SHOTCRETE

1. **Shotcrete is also known as:**
 - a) spraycrete
 - b) Gunitite
 - c) sprayed concrete
 - d) All of the above.

2. **Good shotcrete has:**
 - a) high absorption
 - b) high strength
 - c) low chemical resistance
 - d) None of the above.

3. **The advantage of shotcrete over conventional concrete is:**
 - a) cost
 - b) size
 - c) weight
 - d) None of the above.

4. **The bonding ability of shotcrete compared to conventional**
 - a) concrete is equal
 - b) concrete is better
 - c) concrete is less
 - d) Sometimes a or sometimes c.

5. **Shotcrete may be applied to:**
 - a) bridges
 - b) buildings
 - c) marine structures
 - d) All of the above.

6. **Damage to marine structures results from:**
 - a) deterioration of the concrete
 - b) deterioration of the reinforcement
 - c) Both a and b
 - d) Neither a nor b

7. **A shotcrete investigation report should include:**
- a) Projected quantity
 - b) Service conditions
 - c) Delivery equipment
 - d) All of the above.
8. **Large areas and thin sections are better served by:**
- a) conventional concrete
 - b) shotcrete
 - c) both a and b
 - d) None of the above.
9. **Dry-mix shotcrete has the following advantage over wet-mix shotcrete:**
- a) Easier to apply.
 - b) Faster to apply.
 - c) rebounds less.
 - d) All of the above.
10. **GFRS refers to:**
- a) glass-fiber-reinforced shotcrete
 - b) grouting-formed-reinforced shotcrete
 - c) glass-formed-reinforced shotcrete
 - d) None of the above.
11. **Tunnel construction often uses:**
- a) Fiber-reinforced shotcrete
 - b) Silica-fume shotcrete
 - c) Polymer-modified shotcrete
 - d) None of the above.
12. **Pozzolan is added to wet-mix shotcrete to:**
- a) enhance workability
 - b) improve pumpability
 - c) increase resistance to sulfate attack
 - d) All of the above.
13. **The maximum amount of calcium chloride compared to the cement is:**
- a) 1%
 - b) 2%
 - c) 5%
 - d) 9%
14. **The addition of certain latex emulsions to shotcrete:**
- a) reduces bonding
 - b) decreases tensile strength
 - c) decreases permeability.
 - d) None of the above.

15. **The bar spacing recommended for shotcrete reinforcement is:**
- a) 6 to 12 inches
 - b) 8 to 20 inches
 - c) 9 to 24 inches
 - d) 9 to 28 inches
16. **Steel fiber reinforcement in shotcrete increases:**
- a) ductility
 - b) toughness
 - c) impact resistance
 - d) All of the above
17. **Polypropylene-fiber reinforcement fiber lengths are commonly:**
- a) 0.5 inch to 1.0 inch
 - b) 0.5 inch to 2.5 inches
 - c) 1.0 inch to 2.5 inches
 - d) 1.0 inch to 4.0 inches
18. **The chloride ion content per cent of mass should not exceed:**
- a) 0.06%
 - b) 1%
 - c) 2%
 - d) 3%
19. **NMSA refers to:**
- a) normal minimum size association
 - b) normal maximum size association
 - c) normal maximum size aggregate
 - d) None of the above.
20. **The in-place shotcrete will have an entrained air content of:**
- a) 3 to 4 per cent.
 - b) 4 to 6 per cent.
 - c) 6 to 8 per cent.
 - d) 8 to 12 per cent.

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