

NCDOT CONCRETE FIELD TECHNICIAN SCHOOL PRE-EXAM

Components

1. The chemical reaction between water and cement is called _____ .

2. List the basic components that are used to make concrete.
_____, _____, _____, and _____.

3. There are _____ types of Portland cement.

4. Initial set takes place _____ to _____ hours after the cement has come in contact with the water.

5. Final setting takes place approximately _____ to _____ hours after the cement and water are placed in contact.

6. Fly Ash is a byproduct of :
 - a) concrete
 - b) sand
 - c) the combustion of pulverized coal in coal power plants
 - d) reaction between cement and water under pressure

7. What are the two most important characteristics when selecting a fly ash for concrete?
 - a) Specific gravity and shape
 - b) Reactivity and absorption
 - c) Fineness and carbon content

8. According to NCDOT Standard Specifications fly ash may be substituted for Portland cement up to _____ by weight of the required cement.

9. The allowable pH range for mixing water used to batch concrete for NCDOT projects is _____ to _____.

10. Air entraining agent is added to concrete primarily to _____.

11. Less air is entrained as the temperature of the concrete _____.

Specifications

12. Make sure the concrete temperature at the time of placement in the forms is not less than _____ °F nor more than _____ °F.
13. Do not place concrete when the air temperature is below _____ °F without permission.
14. A curing day is defined as any consecutive _____ period, beginning when the manipulation of each separate mass is _____, during which the air temperature adjacent to the mass does not fall below _____ °F.
15. The _____ will review the mix design for compliance with the Specifications and notify the _____ as to its acceptability.
16. An air entraining agent is added at the time of mixing to produce air content in the range of _____ for incidental and structural concrete when tested at the job site.
- a) 5.0 ± 1.5 percent
 - b) 4.5 ± 1.5 percent
 - c) 6.0 ± 1.0 percent
 - d) 6.0 ± 1.5 percent
17. Use an approved set retarding admixture in all concrete placed in the superstructure of bridges.
- 1. True
 - 2. False
18. When concrete is being used in structures and incidental construction have present during all acceptance testing and placement operations a _____.
- a) Certified Concrete Field Technician
 - b) Certified Concrete Batch Technician

Policies

19. When using 6" x 12" cylindrical specimens for strength determination, place the concrete in _____ layers of approximately equal volume.

20. The minimum set of cylinders that can be made for a Class AA concrete pour of 100 cubic yards concrete is _____.

21. When an air entraining agent is added on the jobsite to bring concrete within specifications, the concrete must be mixed _____ revolutions at mixing speed.

22. Mix designs for structural concrete shall be submitted to the Engineer _____ before proposed use.