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.