

Register Number.....

M.E. DEGREE EXAMINATIONS: JANUARY 2009

First Semester

STRUCTURAL ENGINEERING

P07SEE16 Advanced Concrete Technology

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (20 x 1 = 20 Marks)

1. To find the fineness of cement, IS sieve used is
A. 90 microns B. 75 microns C. 60 microns D. 100microns
2. To find the initial setting time of cement, the water required to produce cement paste of standard consistency
A. 0.8P B. 0.75P C. 0.85P D. 0.7P
3. For concrete, the crushing value of aggregate should be less than
A. 30% B. 35 % C. 40% D. 45%
4. For making concrete, the fineness modulus of sand should be less than
A. 3.5 B. 3.2 C. 2.9 D. 2.6
5. Tolerable concentration of pH of water for making concrete is
A. < 6 B. > 6 C. ≥ 6 D. ≤ 6
6. To find the compatability of superplasticizer with cement, the test conducted is
A. slump test B. flow test C. Vee Bee Test D. Marsh Cone Test
7. One of the following is corrosion inhibitor
A. Calcium Chloride B. Calcium Sulphate C. Sulphate D. Calcium Nitrite
8. Shacklok and Entroy method of mix design is used for
A. HPC B. SCC C. HSC D. Pumpable concrete
9. For very wet or very dry concrete, one of the following tests is not suitable
A. slump test B. Kelly Ball Test C. Vee Bee Test D. Flow test
10. As per IS 456,2000, Flexural strength is equal to
A. $0.75\sqrt{f_{ck}}$ B. $0.7\sqrt{f_{ck}}$ C. $0.65\sqrt{f_{ck}}$ D. $0.8\sqrt{f_{ck}}$
11. The time dependent part of the strain resulting from stress is known as
A. shrinkage B. creep C. ductility D. energy absorption
12. The characteristic strength of M20 concrete is 20MPa at
A. 7days B. 14days C. 21days D. 28days

13. The main cause for higher permeability of concrete is
- A. Lower W/C ratio B. Higher W/C ratio
C. Mineral admixtures D. Chemical admixtures
14. Alkali silica reaction in concrete will cause
- A. expansion B. contraction C. crazing D. delamination
15. Air entrained concrete is used to resist
- A. fire B. Freeze-Thaw C. corrosion D. chemical attack
16. Volume of steel will increase about ----- the original volume due to corrosion
- A. five times B. four times C. six times D. ten times
17. Pumice is used for making
- A. Light weight concrete B. Heavy weight concrete
C. Prepacked concrete D. Vacuum concrete
18. Centrifuging method is adopted for
- A. Dewatering B. Ferrocement
C. Prepacked concrete D. resin concrete
19. Fibres are added to concrete to improve its
- A. compressive strength B. modulus of elasticity
C. shrinkage Resistance D. ductility
20. The advantage of prepacked concrete is it undergoes less
- A creep B. drying shrinkage C. corrosion D. disintegration

PART B (5 x 16 = 80 Marks)

21. (a) What are the tests to be conducted on cement? Explain any three tests

(OR)

- (b) Explain Alkali Aggregate reaction with respect to the factors promoting it and how to control alkali aggregate reaction.

22. (a) Discuss how the mineral and chemical admixtures are improving the strength and durability of concrete

(OR)

- (b) Explain ACI method of mix design with an example

23. (a) What are the factors affecting the workability of the concrete and explain any two tests to measure the workability of concrete.

(OR)

(b) Explain statistical quality control of concrete with respect to acceptance criteria with the aid of normal distribution curve

24. (a) Explain corrosion of concrete and how the corrosion can be controlled

(OR)

(b) Explain how the concrete is attacked by sea water and chemical and explain how to overcome these attacks

25. (a) Explain

- i) Gap Graded Concrete
- ii) Shotcrete

(OR)

(b) Explain

- i) Polymer Concrete
- ii) High Performance Concrete
