R07

[4+12]

III B.Tech I Semester Examinations, May 2011 CONCRETE TECHNOLOGY Civil Engineering

Time: 3 hours

Code No: 07A50102

Max Marks: 80

Answer any FIVE Questions All Questions carry equal marks *****

- 1. (a) Differentiate high strength concrete from high performance concrete.
 - (b) Write short notes on:
 - i. Self consolidated concrete
 - ii. Fly ash concrete.
 - iii. High alumina concrete.
- 2. What are the different tests involved in measurement of workability. Explain in detail. [16]
- 3. (a) What are the field tests of cement?
 - (b) What is the other name of plasticizer? Mention the advantages? [3+13]
- 4. (a) What is influence of high temperatures on strength of concrete?
 - (b) What is behaviour of concrete during fire?
 - (c) What are the problems involved in concreting in hot and cold weather.[4+4+8]
- 5. (a) Classify different types of aggregate and on what bases they can be classified?
 - (b) What are the factors to be considered during the study of aggregates?
 - (c) Categorize different aggregates based on their size? [3+10+3]
- 6. What is the procedure involved in ACI method of mix design. [16]
- 7. (a) What is capping of specimens?
 - (b) What are the applications of pulse velocity methods. [8+8]
- 8. (a) What is Shrinkage- induced cracking?
 - (b) What is Shrinkage-compensating concrete?
 - (c) Explain briefly:
 - i. Elasticity
 - ii. Shrinkage
 - iii. creep. [5+5+6]

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- 1. (a) What are mineral admixtures and mention any three mineral admixtures?
 - (b) What are pozzolonas? Explain the chemical activity involved in pozzolonic reaction.
 - (c) What is meant by blended cement? Explain the significance. [3+9+4]
- 2. (a) What is glass fibred reinforced concrete?
 - (b) Write in detail about the types of FRC?
 - (c) What is recycled aggregate concrete; explain various properties of the same?
 - *

- 3. (a) What is soundness of aggregate.
 - (b) What is Alkali-silica reaction.
 - (c) What is Alkali-carbonate reaction.
 - (d) What are special aggregates. [4+4+4+4]
- 4. (a) How does the type of aggregate influence thermal cracking of concrete?(b) What is early frost damage. [10+6]
- 5. How will you determine the tensile strength of concrete? Explain in detail. [16]
- 6. (a) What is accelerated curing test?
 - (b) What is the effect of maximum size of aggregate on strength?
 - (c) What is the relation between compressive and tensile strength? [5+5+6]
- 7. (a) Discuss the various tests applicable to concrete at different levels of workability.
 - (b) Discuss briefly the different methods of compacting concrete. [6+10]
- 8. (a) Sketch a typical stress-strain curve of concrete and show how to find the Modulus of elasticity of concrete from this curve.
 - (b) What is maturity of concrete cured at 30 degrees for 14 days?
 - (c) What is Youngs Modulus and Modulus of rupture for M-30 grade of concrete as per IS 456-2000.
 - (d) What are the elastic properties of concrete? [4+4+4+4]

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1. Define:

	(a)	Segregation.
	(b)	Bleeding.
	(c)	What are the different methods of batching? Explain in detail, $[4+4+8]$
2.	(a)	Bring out the differences between normal and high strength concrete with respect to stress strain behaviour.
	(b)	Explain the term curing efficiency?
	(c)	What are the different types of compaction? $[4+4+8]$
3.	(a)	What are the limitations of Schmidts rebound hammer?
	(b)	State IS code provisions for stripping time for shuttering?
	(c)	What are the tests for strength in compression? $[4+4+8]$
4.	(a)	Explain the different processes involved in manufacturing of cement.
	(b)	What is heat of hydration and what are the water requirements? $[6+10]$
5.	(a)	What are the causes of inadequate durability.
	(b)	What are the effects of carbonation?
	(c)	What are the factors influencing carbonation?
	(d)	Write about acid attack on concrete. $[4+4+4+4]$
6.	(a)	What is fiber reinforced concrete and what are the different fibers used?
	(b)	Define aspect ratio of fibres?
	(c)	Where fibre shot concrete is used? Explain. $[8+4+4]$
7.	(a)	What is alkali aggregate reaction?
	(b)	What are the factors promoting alkali aggregate reaction?
	(c)	What is the influence of size of aggregate on the workability of concrete? $[3+8+5]$
8.	(a)	What are different types of cracking?
	(b)	What is meant by Air entrainment in concrete?

(c) What are the factors influencing air entrainment? [4+4+8]

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-4 + 4]

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- 1. (a) What is Bond of aggregates?
 - (b) What is strength of aggregate.
 - (c) What are the different mechanical properties of aggregate.
 - (d) What is the porosity and absorption of aggregate.
- 2. (a) What are the problems of delayed curing.
 - (b) What happens when unsound materials are used in concrete preparation?
 - (c) What happens when concrete is subjected to high temperature. [5+5+6]
- 3. What is the influence of following on fresh concrete .
 - (a) Fly ash.
 - (b) GGBS
 - (c) Silica fume. [16]
- 4. (a) Define Gel-space ratio and mention its significance in predicting concrete strength
 - (b) Explain the maturity concept of concrete. Explain different types of curing and their relative merits and demerits. [6+10]
- 5. (a) What is Accelerated- curing test.
 - (b) What are the tests on the composition of hardened concrete. [6+10]
- 6. (a) What are the factors affecting amount of air entrainment?
 - (b) What is the advantage of gypsum in cement?
 - (c) What are different grades of concrete? [8+4+4]
- 7. What is Shrinkage of concrete? How can it be classified explain in detail. [16]
- 8. (a) What is under water concreting.
 - (b) Discuss the factors affecting consistency of concrete.
 - (c) What is meant by degree of workability. [6+6+4]
