

USN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

10CV42

Fourth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Concrete Technology

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.
2. Use of code Book IS10262-2009 is allowed.

PART – A

- 1 a. List at least Five of the various cement types being used in practice. Give their field application. (10 Marks)
- b. Describe the following terms with respect to cement :
- i) Normal consistency
 - ii) Water cement ratio
 - iii) Initial setting time
 - iv) Soundness. (10 Marks)
- 2 a. Explain the laboratory procedure to determine the SP. Gravity of coarse Aggregate sample. State the importance of size and shape of aggregate in concrete. (10 Marks)
- b. Give the procedure to determine the Bulk density of fine aggregate sample. Describe the importance of the same. (10 Marks)
- 3 a. Define workability. Explain how
- i) Mix proportion and
 - ii) Size of aggregate affect workability. (10 Marks)
- b. What are the tests adopted in laboratory to determine workability of concrete mix? Brief the Advantages of slump test over compaction factor test. (10 Marks)
- 4 a. State the function of an 'Admixture' in concrete mix. Differentiate between chemical and mineral Admixtures. (10 Marks)
- b. Describe the effect of fly ash on fresh concrete. (10 Marks)

PART – B

- 5 a. List the tests conducted to determine the properties of Hardened concrete. Explain how water cement ratio influences the strength of Hardened concrete. (10 Marks)
- b. Brief the stress-strain behaviour of concrete under compression. How do you determine the modulus of elasticity of given concrete sample? (10 Marks)
- 6 a. Define the terms with respect to concrete:
- i) Poisson's ratio
 - ii) Shrinkage
 - iii) Creep
 - iv) Elasticity
 - v) Compression strength. (10 Marks)
- b. State the types of Shrinkage occurring in concrete. Explain plastic Shrinkage. (10 Marks)

- 7 a. Define the term permeability of concrete. Explain the factors that influence permeability of concrete. (10 Marks)
- b. Discuss the process of disintegration of concrete due to acids. Suggest remedies to control sulphate attack. (10 Marks)
- 8 a. Brief the importance of mix design in "Concrete Technology". (05 Marks)
- b. Obtain the first trial mix of M₂₀ grade as per IS 10262 for the following requirements
- | | | |
|--------------------------------------|------------------|---------|
| Max size of aggregates angular shape | – | 20mm |
| Degree of workability | – | 0.90 |
| Degree of quality control | – | Good |
| Types of Exposure | – | Mild |
| Properties of material available : – | | |
| Cement specific gravity | – | 3.15 |
| Specific gravity of coarse aggregate | – | 2.60 |
| Specific gravity of fine aggregate | – | 2.60 |
| Free moisture content | Coarse aggregate | – Nil |
| | Fine aggregate | – 20% |
| Water absorption | Coarse aggregate | – 0.50% |
| | Fine aggregate | – 1.0% |

(15 Marks)

* * * * *