

MATERIALS OF CONSTRUCTION (COMMON TO CV/TR/CTM)

Written by Administrator

Friday, 23 October 2009 11:16 - Last Updated Friday, 23 October 2009 11:30

Sub Code

:

06 CV 32

□

IA Marks

:

25

Hrs/ Week

:

04

□

Exam Hours

:

03

Total Hrs.

:

52

□

Exam Marks

:

100

PART – A

UNIT 1:

BUILDING STONES

1.1. Common building stones and their uses

1.2. Quarrying of stones

1.3. Deterioration of stones

1.4. Preservation of stones

1.5. Dressing of stones

7 Hours

UNIT 2:

“ **BRICKS & TILES**

2.1. Classification of bricks

2.2. Manufacture of bricks

2.3. Tests on bricks

2.4. Types of tiles

2.5. Quality of tiles & their uses

7 Hours

UNIT 3:

“ **TIMBER**

3.1. Varieties & uses

3.2. Defects in Timber

3.3. Tests for good Timber

3.4. Seasoning of timber

3.5. Plywood & its uses

3.6. Wood wool boards

7 Hours

UNIT 4:

“ LIME & CEMENT

4.1. Types of lime

4.2. Manufacture of Hydraulic & Fat Limes

4.3. Activated Lime – Pozzolana mixture

4.4. Chemical Composition of Portland Cement and Hydration of Cement

4.5. Manufacture of Portland Pozzolana Cement

4.6. Types of Cements and their uses

4.7. Lime & cement mortar

7 Hours

PART – B

UNIT 5:

CONCRETE INGREDIENTS

5.1. Testing of Cement-field testing, fineness by sieve test and Blaine's air permeability test.

5.2. Normal consistency, setting time, soundness.

5.3. Compression strength of cement and grades of cement, quality of mixing water.

5.4. Fine aggregate – grading, analysis.

5.5. Specific gravity, bulking, moisture content, deleterious materials.

5.6. Coarse aggregate- importance of size, shape and texture.

5.7. Grading of aggregates-sieve analysis, specific gravity. Flakiness and elongation index, crushing impact and abrasion tests.

6 Hours

UNIT 6:

“ FRESH □ CONCRETE

6.1. Workability – factors affecting workability,

6.2. Measurement of workability – slump. Flow tests.

- 6.3. Compaction factor and vee-bee consistometer tests.
- 6.4. Segregation and bleeding.
- 6.5. Process of manufacture of concrete: Batching .
- 6.6. Mixing.
- 6.7. Transporting
- 6.8. Placing
- 6.9. Compaction
- 6.10. Curing
- 6.11. Chemical admixtures- plasticizers, accelerators, retarders and air entraining agents.
- 6.12. Mineral admixtures – fly ash.
- 6.13.** Silica fumes and rice husk ash.

6 Hours

UNIT 7:

" HARDENED CONCRETE

- 7.1. Factors affecting strength, w/c ratio, gel/space ratio, maturity concept.

- 7.2. Effect of aggregate properties, relation between compressive strength, and tensile strength, bond strength, modulus of rupture.

- 7.3. Accelerated curing, aggregate-cement bond strength.

- 7.4. Elasticity- Relation between modulus of elasticity, Poission ratio.

- 7.5. Shrinkage – plastic shrinkage and drying shrinkage, factors affecting shrinkage.

- 7.6. Creep- measurement of creep, factors affecting creep, effect of creep.

- 7.7. Durability – definition, significance, permeability, sulphate attack, chloride attack, carbonation, freezing and thawing..

- 7.8. Factors contributing to cracks in concrete-plastic shrinkage, settlement cracks, construction joints.

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- 7.9. Thermal expansion, transition zone, structural design deficiencies.

- 7.10. Testing of hardened concrete-compressive strength, split tensile strength.

- 7.11. Flexural strength, factors influencing strength test results.

6 Hours

UNIT 8:

“ **OTHER BUILDING MATERIALS:** Properties & uses of

- 8.1. Reinforcing steel, structural steel

- 8.2. Cast Iron, Plain carbon steel

- 8.3. Glasses

- 8.4. Electrical, Thermal & Sound Insulating Materials

- 8.5. Paints, Varnish & Enamels

8.6. Plastics

8.7. Rubber

8.8. Bitumen & Asphalt

6 Hours

TEXT BOOKS

1. **Engineering Materials**, Rangawala P.C. Charter Publishing House, Anand, India.
2. **Engineering Materials**, Sushil Kumar, Standard Publication and Distributors, New Delhi.
3. **Concrete technology – Theory and practice**, M..S. Shetty, S. Chand and Co, New Delhi, 2002.

REFERENCE BOOKS

1. **A Text Book Building Materials**, by P.G. Varghese, Prentice-Hall of India Pvt. Ltd., Publication.

2. **Advances in Building Materials and Construction** by Mohan Rai and M.P. Jain Singh – publication by CBRI, Roorkee.

3. **Concrete Technology**, Neville A.M and Brooks J.J — ELBS Edition. London

4. **Concrete Technology** – Gambhir M.L –Dhanpat Rai and Sons, New Delhi.