

GOVERNMENT POLYTECHNIC, JAIPUR  
DEPARTMENT OF CIVIL ENGINEERING  
**LESSON PLAN**

Subject: Building Materials & Concrete Technology (CEPC-209)

Semester: III

Session: Winter 2026

Duration: 01.07.2026 – 05.11.2026

Faculty: Sushree Souravi Rout

| Week | Class No. | Topic to be Covered                                                         |
|------|-----------|-----------------------------------------------------------------------------|
| 1    | 1         | Introduction to Building Materials, classification and desirable properties |
| 1    | 2         | Natural stones – geological classification, characteristics and uses        |
| 1    | 3         | Quarrying, dressing, preservation and testing of stones                     |
| 2    | 4         | Bricks – manufacturing process and classification                           |
| 2    | 5         | Properties, uses and tests on bricks                                        |
| 2    | 6         | Tiles, refractory bricks and hollow blocks                                  |
| 3    | 7         | Lime – manufacture, properties and uses                                     |
| 3    | 8         | Cement – raw materials and manufacturing process                            |
| 3    | 9         | Types of cement and their applications                                      |
| 4    | 10        | Physical properties of cement                                               |
| 4    | 11        | Standard laboratory tests on cement                                         |
| 4    | 12        | Storage, handling and field identification of cement                        |
| 5    | 13        | Fine aggregate – sources, grading and properties                            |
| 5    | 14        | Coarse aggregate – grading, properties and tests                            |
| 5    | 15        | Bulking of sand and moisture content                                        |
| 6    | 16        | Water for construction – quality requirements and tests                     |
| 6    | 17        | Admixtures – classification, functions and applications                     |
| 6    | 18        | Introduction to concrete and ingredients of concrete                        |
| 7    | 19        | Water-cement ratio and workability of concrete                              |
| 7    | 20        | Batching, mixing, transporting and placing of concrete                      |
| 7    | 21        | Compaction and finishing of concrete                                        |
| 8    | 22        | Curing of concrete – methods and importance                                 |
| 8    | 23        | Properties of fresh concrete                                                |

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| 8  | 24 | Properties of hardened concrete                                          |
| 9  | 25 | Compressive strength and factors affecting strength                      |
| 9  | 26 | Tensile strength, flexural strength and modulus of elasticity            |
| 9  | 27 | Durability of concrete and permeability                                  |
| 10 | 28 | Nominal mix and Design mix – concepts                                    |
| 10 | 29 | Mix proportioning of concrete                                            |
| 10 | 30 | Numerical problems on concrete mix proportioning                         |
| 11 | 31 | Non-destructive testing of concrete                                      |
| 11 | 32 | Quality control during concreting                                        |
| 11 | 33 | Common defects in concrete and preventive measures                       |
| 12 | 34 | Timber – classification and structure                                    |
| 12 | 35 | Conversion, seasoning and preservation of timber                         |
| 12 | 36 | Defects in timber and tests on timber                                    |
| 13 | 37 | Paints, varnishes and distempers – constituents and uses                 |
| 13 | 38 | Glass, plastics and gypsum products                                      |
| 13 | 39 | Bitumen and bituminous materials – properties and applications           |
| 14 | 40 | Modern building materials – fly ash bricks, AAC blocks and geosynthetics |
| 14 | 41 | Sustainable and eco-friendly building materials                          |
| 14 | 42 | Selection of building materials for different civil engineering works    |
| 15 | 43 | Revision of Building Materials                                           |
| 15 | 44 | Revision of Concrete Technology and important numericals                 |
| 15 | 45 | Previous SCTE&VT questions, doubt clearing and class test discussion     |