

**CIVIL ENGINEERING DEPARTMENT  
NIT - RAIPUR**

Semester – 1<sup>st</sup> & 2<sup>nd</sup> Semester B.Tech ( Common for All Branches)

Subject – Basic Civil Engg. & Basic Mechanical Engg. Code – 0020111CI

Total Theory Periods – 35 Total Tut Periods - 10

Total Marks in End Semester Exam – 35+35

Minimum number of class tests to be conducted - 2

**UNIT – I**

**BUILDING MATERIAL (Marks 15)**

**Bricks** :Composition of good brick earth, Classification of bricks , Qualities of good brick, field test & Laboratory test Performed on bricks.

**Cement**: Basic materials and Manufacturing process of Portland cement, Distinctions between Ordinary Portland Cement, Pozzolana Cement and Slag Cement, Tests on cement, Initial setting, final Setting , Consistency and Soundness test.

**Stone**: Classifications of stone, Qualities of good building stone, Important stones and Uses of stone.

**Concrete & Reinforcement**: Composition of concrete, Manufacturing process of concrete, Grades of concrete, Water-Cement ratio, Workability. Slump cone test, Different type of steel suitable for reinforcement, Properties of steel

**UNIT – II**

**SURVEYING AND LEVELLING (Marks 10)**

**Surveying** : Principle of chain surveying, Instruments used in chain surveying, Offsets, Methods of Direct Ranging, Compass survey, Traverse, Whole circle bearing, FB & BB, Meridian and types of meridian, calculation of included angles,

**Levelling**: Definitions, objects of levelling , Various parts of a Dumpy level, Temporary adjustments, Fly levelling Reciprocal levelling, profile levelling ,Level field book. problems on levelling. Use of automatic level.

**UNIT – III**

**BUILDING CONSTRUCTION (Marks 10)**

**Brick Masonry & Stone Masonry**: Types of bonds in brick masonry, types of stone masonry, rubble masonry and ashlar masonry

**Plastering, Pointing and Flooring**: Definition, Purposes and various types of mortar used in construction. Different types of floor and their construction.

**Foundation**: Necessity of foundations, Types of foundations, Sketches of various types of foundation.

**BOOKS RECOMMENDED**

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| 1. Comprehensive Basic Civil Engineering | B.C. Punmia   |
| 2. Basic Civil Engineering               | Ramamurtham   |
| 3. Surveying Volume –I                   | B.C. Punmia   |
| 4. Building Material                     | S.C. Rangwala |
| 5. Surveying                             | N Basak       |

**PRACTICALS**

1. To determine the Water absorption capacity of bricks
- 2 To determine the Compressive strength of bricks
- 3 To determine the Initial setting time of cement by Vicat apparatus
- 4 To perform slump test and 7 days compression test.
5. To use fly levelling and find elevation of a point.
- 6 To determine the distance between two given points and also take the offsets by using metric chain.
- 7 To survey (six cornered) irregular field via chain survey and determine its area.
- 8 To survey a closed traverse with the help of a prismatic compass. (five points)
- 9 To perform profile levelling of about 100m long straight line
- 10 To determine the elevation difference between two given points by reciprocal levelling.