GOVT. POLYTECHNIIC KORAPUT

ACADEMIC SESSION 2020-2021

SEMESTER- 6th

BRANCH - CIVIL ENGINEERING

SUBJECT – CONCRETE TECHNOLOGY

FACULTY NAME – MADHUSMITA DEHURI

Week no	Topic to be covered
1	**Concrete as a construction material:** 1.1 Grades of concrete. Advantages and disadvantages of concrete.
2	**Cement:** 2.1 Composition, hydration of cement, water cement ratio and compressive strength, fineness of cement, setting time, soundness, types of cement
3	**Aggregate, Water and Admixtures:** 3.1 Classification and characteristics of aggregate, fineness modulus, grading of aggregate,I.S.383 3.2 Quality of water for mixing and curing. Important functions, classification of admixtures, I.S 9103, accelerating admixtures, retarding admixtures, water reducing admixtures, air containing admixtures
4	**Properties of fresh concrete:** 4.1 Concept of fresh concrete, workability, slump test, compacting factor test, V-bee consistency test and flow test, requirement of workability,I.S.1199.
5	**Properties of hardened concrete:** 5.1 Cube and cylinder compressive strengths, flexural strength of concrete, stress-strain and elasticity, phenomena of creep and shrinkage, permeability, durability of concrete, sulphate, chloride and acid attack on concrete, efflorescence
6	**Concrete mix Design** 6.1 a) Introduction b) Data or input required for mix design. 6.2 Nominal mix concrete &design mix concrete. Basic consideration for concrete mix design, Methods of proportioning concrete mix – I.S Code method of mix design(I.S.10262)
7	**Production of concrete:** 7.1 Batching of materials, mixing of concrete materials, transportation, placing of concrete, compaction of concrete (vibrators), Curing of concrete, Formwork-requirements and types ,stripping of forms. (Concepts only)
8	**Inspection and Quality Control of Concrete** 10.1 Quality control of Concrete as per I.S.456, Factors causing the variations in the quality of concrete 10.2 Mixing, Transporting, Placing &curing requirements of Concrete as per I.S.456. 10.3 Inspection and Testing as per Clause 17 of IS:456. Durability requirements of Concrete as per I.S:456.
9	**Special Concrete** 11.1 Introduction to ready mix concrete, high performance concrete, silica fume concrete, shot-crete concrete or gunitting (Concepts only).
10	**Deterioration of concrete and its prevention:** 12.1 Types of deterioration, prevention of concrete deterioration, corrosion of reinforcement, effects and prevention

11	**Repair technology for concrete structures:** 13.1 Symptom, cause and prevention and remedy of defects during construction, cracking of concrete due to different reasons. Repair of cracks for different purposes, selection of techniques, polymer based repairs, common types of repairs.
12	Revision