CN5101 MODERN CONSTRUCTION MATERIALS

DETAILED SYLLABUS

UNIT I SPECIAL CONCRETES

Concretes, Behaviour of concretes – Properties and Advantages of High Strength and High Performance Concrete – Properties and Applications of Fibre Reinforced Concrete, Self compacting concrete, Alternate Materials to concrete on high performance & high Strength concrete.

UNIT II METALS

Types of Steels – Manufacturing process of steel – Advantages of new alloy steels – Properties and advantages of aluminium and its products – Types of Coatings & Coatings to reinforcement – Applications of Coatings.

UNIT III COMPOSITES

Types of Plastics – Properties & Manufacturing process – Advantages of Reinforced polymers – Types of FRP – FRP on different structural elements – Applications of FRP.

UNIT IV OTHER MATERIALS

Types and properties of Water Proofing Compounds – Types of Non- weathering Materials and its uses – Types of Flooring and Facade Materials and its application, concrete admixtures and construction chemicals.

UNIT V SMART AND INTELLIGENT MATERIALS

Types & Differences between Smart and Intelligent Materials – Special features – Case studies showing the applications of smart & Intelligent Materials.

REFERENCES

1. ACI Report 440.2R-02, “Guide for the design and construction of externally bonded RP systems for strengthening concrete structures”, American Concrete Institute, 2002.

2. Aitkens, High Performance Concrete, McGraw Hill, 1999

3. Ashby, M.F. and Jones.D.R.H.H. “Engineering Materials 1: An introduction to Properties, applications and designs”, Elsevier Publications, 2005.

4. Deucher, K.N, Korfiatis, G.P and Ezeldin, A.S, Materials for civil and Highway Engineers, Prentice Hall Inc., 1998.

5. Ganapathy, C., Modern Construction Materials, Eswar Press, 2015.

6. Mamlouk, M.S. and Zaniewski, J.P., Materials for Civil and Construction Engineers,

Prentice Hall Inc., 1999.

7. Santhakumar.A.R., Concrete Technology, Oxford University press, New Delhi, 2005.

8. Shan Somayaji, Civil Engineering Materials, Prentice Hall Inc., 2001

9. Shetty M.S, Concrete Technology: Theory and Practice, S.Chand & Company Ltd., 2005.

OBJECTIVES

To study and understand the properties of modern construction materials used in construction such as special concretes, metals, composites, water proofing compounds, non weathering materials, and smart materials.