

## **BA5070 SMART MATERIALS, TECHNIQUES AND EQUIPMENTS FOR INFRASTRUCTURE**

### DETAILED SYLLABUS

#### **OBJECTIVE**

To give an exposure on the advanced materials, techniques and equipments used in infrastructure industry.

#### **UNIT I SPECIAL CONCRETES**

Concrete -Behavior of concrete - High strength and high performance concrete - Fibre reinforced concrete - Self compacting concrete - Bacterial concrete -Reactive powder concrete - Ready mix concrete -Geopolymer concrete -Alternative materials for concrete.

#### **UNIT II METALS**

Steels - New alloy steels - Coatings to reinforcement - Cold formed steel -Aluminum and its products -Applications. Composites: Plastics - Reinforced polymers- FRP -Applications. Smart and intelligent materials: smart and intelligent materials for intelligent buildings - Special features.

#### **UNIT III ADVANCED CONSTRUCTION TECHNIQUES**

Sub structure construction: Box jacking- Pipe jacking- Under water construction of diaphragm walls and basement- Tunnelling techniques-Cable anchoring and grouting- Driving diaphragm walls, sheet piles, laying operations for built up offshore system- Shoring for deep cutting- Large reservoir construction -Trenchless technology.

#### **UNIT IV SUPERSTRUCTURE CONSTRUCTION FOR BUILDINGS**

Vacuum dewatering of concrete flooring- Concrete paving technology- Techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections -Launching techniques suspended form work -Erection techniques of tall structures, large span structures- Launching techniques for heavy decks -Inset pre-stressing in high rise structures, aerial transporting, handling, erecting lightweight components on tall structures.

#### **UNIT V CONSTRUCTION OF SPECIAL STRUCTURES**

Erection of lattice towers and rigging of transmission line structures- Construction sequence in cooling towers, silos, chimney, sky scrapers, bow string bridges, cable stayed bridges - Launching and pushing of box decks -Advanced construction techniques of offshore structures- Construction sequence and methods in domes and prestress domes -Support structure for heavy equipment and conveyor and machinery in heavy industries -Erection of articulated structures, braced domes and space decks. Demolition Techniques -Advanced techniques and sequence in demolition and dismantling.

## Diploma, Anna University-UG, PG., HSC & SSLC

*Notes*  
*Syllabus*  
*Question Papers*  
*Results and Many more...*

Available @  
[www.AllAbtEngg.com](http://www.AllAbtEngg.com)

### REFERENCES

1. Jerry Irvine, "Advanced Construction Techniques", C.A. Rocketr, 1984
2. Patrick Powers, "Construction Dewatering: New Methods and Applications", John Wiley & Sons, 1992
3. Robertwade Brown, "Practical foundation Engineering handbook", McGraw Hill Publications, 1995.
4. Sankar S.K. and Saraswathi. S, "Construction Technology", Oxford University Press, New Delhi, 2008.