4009 - CONSTRUCTION-II

Teaching Schedule Per Week			Progressive Assessment	Examination Schedule (Marks)			
				Theory		Practical Ex.	Total
Lectures	Practical	Credits					
3	0	3	25	3Hrs	100	0	125

Pre-requisite	Source	Semester	Theory	Test	Total	TW	PR	Gr Total
4004	CVL		75	25	100	–	–	100

RATIONALE: - This course includes advanced methods of construction and use of construction equipment, in continuation of CONSTRUCTION I. The student shall learn- Advanced / Special types of foundations and methods of construction. Special items of construction and methods. Use of construction machinery.

COURSE CONTENTS	Hrs	Mks
1. FOUNDATIONS Necessity, requirements. De-watering techniques during excavation for construction. Timbering of trenches. Foundations in black cotton soil and in made up ground.	9	18
2. TYPES OF FOUNDATIONS Isolated-footing, combined footing, plinth beams, strap footing. Grillage-foundation, necessity, construction details. Raft foundation, necessity, construction details.	9	18
3. PILE FOUNDATIONS Necessity, types of piles-timber, steel, concrete, pre-cast and cast in situ, bearing piles and friction piles. Brief methods of construction of cast in situ piles, cased and uncased piles. Brief methods of pile driving equipment and method of a pre-cast pile: Racker, fender, guide piles (in brief).	7	15
4. CAISSONS Open, pneumatic, single, twin and multiple wells, cutting edge, curb and steining, well sinking. Observation and corrections for tilts and shift, sinking of pneumatic caissons.	3	8
5. SPECIAL ASPECTS OF CONSTRUCTION Shoring. Underpinning. Retaining walls. Principles of taking loads. Uses. Dampness, sources and effects. Waterproofing of terraces, parapets, at plinth level. Preventive measures in avoiding dampness. Damp proofing of floors at plinth level. Waterproofing of slabs terraces and toilets. Anti-Termite measures (I. S. specification). Fire proofing- Use of fire resisting materials in different components of the building. Planning to minimise fire hazards in multi-storeyed and public buildings. Acoustics in buildings -Use of acoustic material in construction. Acoustical defects and remedial measures. Basement construction –Location, suitability. Construction of walls and floors. Lighting and ventilation. Damp prevention. Cofferdams-Earthen. Sheet piles. General idea of pre-stressed concrete construction. Partition walls-Use of hollow blocks. Use of reinforcement for partition walls. Other materials for partitions.	12	25
6. CONSTRUCTION MACHINERY Component parts, general idea of working, capacity and situations where used, of following equipment –Derricks, shears, cranes, hoists & pulley- blocks. Cable ways and belt conveyor. Stone crusher and granulators. Tractor, bulldozer, scraper, drag-line, grader, dumper, ripper, power-shovel. Compressor and pneumatic tools. Hydraulic jacks. Pre-stressing jacks. Concrete mixers and vibrators. Batching-plant.	8	16
Total	48	100

Note -It is suggested to take students for one or two field visits to show them the construction machinery. Goa shipyard may be visited where most of the machinery are available to see.