

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID-SEMESTER EXAMINATION MO/2025)

CLASS: B.ARCH.
BRANCH: ARCHITECTURE

SEMESTER : 3RD
SESSION : MO/2025

SUBJECT: AR202 BUILDING CONSTRUCTION & CODES

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions, each of 5 marks and a total of 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper, etc., if applicable, will be supplied to the candidates
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Q.1(a)	Explain the concept of bearing capacity of soil with the help of the load vs settlement curve. Classify Foundations.	[2]	CO C01 & CO2	BL Understand and Remember
Q.1(b)	Differentiate between End-bearing Piles and Friction Piles. Given the size of a column as 300 mm x 300 mm and a soil bearing capacity of 200 kN/m ² . Assume the concrete grade of M25 and the total load on the column as 500 kN. If the self-weight of the footing is taken as 10% of the total load, calculate the required area of the footing.	[3]	CO2	Understand and Analyse
Q.2(a)	Explain Formwork. How do you bring the economy into the construction cost through Formwork?	[2]	CO2	Understand
Q.2(b)	In the situation mentioned below, what kind of foundation is found suitable? Explain with the sketch: i) Where the soil is collapsible at upper levels. ii) Where a basement is required. iii) Where the edge of the footing cannot be extended beyond the property line. iv) To achieve economy in the cost of pile work. Explain foundation failure due to “Drag Down and Heave” and “Liquefaction”.	[3]	CO1 & CO2	Understand and Analyse
Q.3(a)	What is a Cassion-type foundation, and where is it used? Briefly explain the significance of the water-cement ratio in the strength of concrete.	[2]	CO2	Understand and Analyse
Q.3(b)	Explain the following: a) Load-bearing and Non-load-bearing Structures, b) Curing. When concrete is poured into the formwork, the amount of load acting is appreciably higher than the design loads of the structure. To avoid collapse, what temporary structures can be installed on-site? Explain its type with sketches.	[3]	CO1 & CO2	Understand
Q.4(a)	Define a High-Rise Building as per the NBC and Emporis Standards. List different types of high-rise structural systems with an example for each.	[2]	CO3	Understand
Q.4(b)	Explain the term “Underpinning”. Discuss any two methods with sketches. Sketch the details of the Formwork of an RCC Column (Square).	[3]	CO2	Understand
Q.5(a)	What are Admixtures and Super Plasticizers? Give examples. Explain its significance and use in concrete.	[2]	CO3	Understand
Q.5(b)	Explain the following: a) Litracon, its working principle, & application areas. b) Thermoplastic Composites, their types, & uses.	[3]	CO2 & CO3	Understand