

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: B.ARCH
BRANCH: ARCHITECTURE**

**SEMESTER : III
SESSION : MO/19**

SUBJECT: AR202 BUILDING CONSTRUCTION & CODES

TIME: 3 HOURS

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) What do you mean by “Safe Bearing Capacity”? What are the factors affecting bearing capacity of soils? Classify Foundations. [5]
- Q.1(b) “A site is bearing heavy and non-uniform load from the superstructure.” What type of foundation is required for the Site? Explain three different types with neat sketches. [5]
- Q.2(a) Sketch and explain “Grillage Foundation”. Differentiate between Shallow and Deep Foundations on distinct parameters. [5]
- Q.2(b) List down the causes of Foundation Failures. Explain any two of them with their remedial measures. [5]
- Q.3(a) What are the requirements of a good formwork? How to bring economy in formwork? Sketch the detail of formwork for an RCC Column. [5]
- Q.3(b) Explain Scaffolding, Shoring and Underpinning. In a multi storied structure where and when do you find application of Shoring and Scaffolding? How it is accomplished? [5]
- Q.4(a) “A mixed use high rise tower is proposed in the business district (very high land cost) of a City in India with composite climate” What smart construction materials and techniques (at least three) can be suggested to bring efficiency in energy and design? Explain the properties and application areas of such materials in the context of the proposed project. [5]
- Q.4(b) Sketch a residential plan with minimum areas as prescribed by NBC. (Minimum size, area, height clearly indicated). The components of residence along with staircase, a ramp, loft, mezzanine and parapet should also be indicated with the help of a section with minimum sizes and heights clearly indicated as per NBC. [5]
- Q.5(a) What is a Master Plan and Land Use Plan of a City? A five storied building is constructed on a 100m x 50m plot having ground coverage of 60% (option 1). Alternatively, a four storied building is constructed on the same plot with a 50% ground coverage (option 2). What is the ratio of FARs between option 1 and option 2? [5]
- Q.5(b) In a mixed use development on a 2.0 hectare (20,000 sqm) site with 2.0 FAR, the ratio of residential to commercial floor area is 3:2. The minimum parking (in ECS) needed per 100 sqm of residential and commercial floor area is 1 and 1.25 respectively. Considering full FAR utilization, calculate the total parking (ECS) required. [5]

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