

SARVAJANIK UNIVERSITY

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W 2024, Date: 25-03-2025
 13:30 p.m. to 16:30 p.m.
 Remedial / Re-exam ✓

B. ARCH - SEMESTER- III EXAMINATION

Course Code: BRAR12302

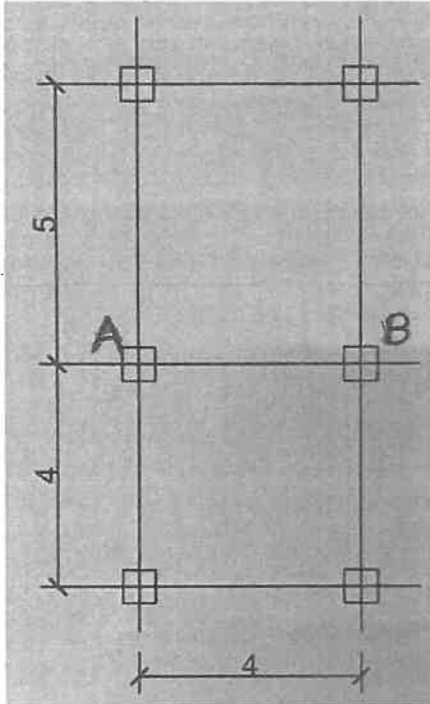
Total Marks: 180

Course Name: Building Technology I-Construction, Structure and Services

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q1.	Answer the following (Compulsory)	
	Fill in the Blanks: 1. W.C. having ___ type of trap can be hung on the wall 2. Average Indian requirement of water demand is ___ LPCD 3. CFRP is the full form of _____. 4. Form work can be removed in _____ for Beam and Soffit after Curing. 5. _____ are Structural properties of concrete.	(05)
	Do as Directed 1. Define Sanitation 2. Define Sewer 3. Define Garbage 4. Explain live load for floors. 5. What is form work? 6. Methods of D.P.C. or D.P.M. 7. Define coarse aggregates. 8. List and explain in brief the four 4 essential phases for construction process. 9. Define floors? 10. Explain in brief the RMC (Ready Mix Concrete Plant)	(30)
Q.2	Answer the following	
A	What is a trap? Enlist type of traps according to their uses and discuss the general requirement of good traps OR Enlists the ground water sources and surface water sources. Explain one in detail.	(06)
B	Distinguish between one way spanning and two way spanning RCC slabs OR What is the difference between cast in situ concrete floors and precast concrete floors? Enlist various types of concrete floors and explain Flat Slab in detail.	(14)
Q.3.	Answer the following (With Options)	
A	Design and draw a sketch of underground water tank of 20000 liters with all its components. OR Define factors that should be considered at the time of selection of any pipe material.	(15)

B	<p>Do as Directed: (ANY FOUR)</p> <ol style="list-style-type: none"> 1. Explain the essential requirements of good floor system. 2. Write a Short Note on Concrete jack arch floor 3. Compare pre-tensioning and Post tensioning 4. Short Note on Filler slab 5. Explain the methods of D.P.C. or D.P.M 	[20]
Q.4.	<p>Design a beam 'AB'; of a school building, given in fig. 4. Use M-20-grade concrete and Fe- 415-grade steel. The live load on a slab is 2 KN / sq.m. Draw your designed section showing reinforcement detailing.</p>  <p style="text-align: center;">FIG: 4 all dimensions are in Metre</p>	[30]
Attempt any Three questions out of four.		
Q-5.		
(A)	<p>A singly reinforced rectangular beam of 230 mm width and 450 mm overall depth is reinforced with 4 no.12 mm diameter bars at the bottom. Calculate the sagging moment of resistance. Use the grade of steel, Fe - 250, and the grade of concrete, M -15.</p>	[12]
(B)	<p>Do as directed</p> <ol style="list-style-type: none"> 1. The shear reinforcement in R.C.C. is provided to resist _____. 2. In a singly reinforced beam, the effective depth is measured from its compression edge to_____. 3. Shear carrying capacity of bent-up bars is_____ 4. Spacing of stirrups in a rectangular beam is <ol style="list-style-type: none"> a. kept constant throughout the length. b. decreased towards the centre of the beam. c. increased at the ends. d. increased at the centre of the beam. 	[8]
Q-6.	<p>Design a rectangular, simply supported slab of 3.2 m, effective span. If the grade of steel is Fe-415 and that of concrete is M-20. The slab panel is a part of the residential building. Draw your designed section showing reinforcement detailing.</p>	[20]

Q-7.	Design a short RCC column subjected to 3000 KN design load. consider $e_{min} = 0.05 D$ Take M 20 & Fe-415 grades of materials. Draw your designed section showing reinforcement detailing.	[20]
Q-8.	Design an RCC isolated sloped footing for a 500 mm X 500 mm size column, subjected to 2600 KN load. The allowable bearing capacity of soil is 240 KN/m², Use M20 & Fe -415 grades of materials. Draw your designed section showing reinforcement detailing	[20]

