



SARVAJANIK UNIVERSITY

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S-2026 Date: 21-05-26 Time: 01:30 PM to 04:30 PM
Regular / Backlog Exam

3

B. ARCH. – II SEMESTER– III EXAMINATION

Course Code: BRAR12302

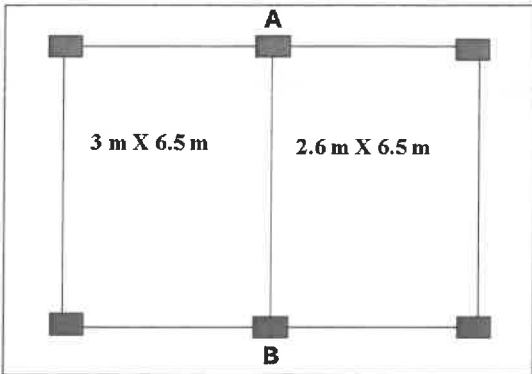
Total Marks: 180

Course Name: BUILDING TECHNOLOGY-I

Instructions:

1. Attempt all questions.
2. Make suitable diagrams/Sketches wherever necessary.
3. Use of a Nonprogrammable scientific calculator is permitted.
4. Use of IS: 456, IS:875: Part-I & Part-II are permitted.

Q1.	Attempt as mentioned	05 Marks
(A)	1. Average Indian requirement of water demand is _____ LPCD 2. Define Sewage 3. Define Grid Iron Pipe Network 4. _____ traps are used to prevent foul gases entering from public sewer to house drainage system. 5. Define Sewer	
(B)	Answer the following in short (3 Marks Each)	18 Marks
	1. What are the two typical methods of constructing ground floors? 2. Explain dead load and live load for floors 3. Methods of D.P.C. (Damp Proof Course) or D.P.M. (Damp Proof Membrane) 4. List the Circumstances under which Suspended ground floor are Constructed? 5. List the requirement of Plinth 6. Explain in brief the calculations in the quantity of concrete?	
(C)	Do as Directed (6 Marks each)	12 Marks
	1. Sketch and explain in brief the types of flat slabs 2. Sketch and explain in brief the types of Jack Arch Floor	
Q.2	Answer the following in Detail (ANY ONE)	14 Marks
A	Explain RCC as a material? Explain the characteristics/Principle of RCC Floors? Differentiate between one way slab and two-way slab in detail and support it with sketches where ever required? OR Explain the terminologies floor and flooring? Explain the essential requirements of good floor system. Enlist the criteria to select an appropriate floor covering material for a building and further explain the various categories of flooring material with a market survey?	
B	Enlist the layouts of water distribution system. Discuss any one in detail. OR What is a trap? Enlist type of traps according to their uses and discuss the general requirement of good traps	06 Marks
C	Design and draw a sketch of overhead water tank of 8000 liters with all its components. OR Draw a toilet layout of 1.5mts x 2.5mts x 2.5mts height in size showing all the plumbing and sanitary fixtures and fittings. (Scale 1:20)	15 Marks

Q.3.	Write Short Note on (ANY FOUR)	20 Marks								
	1. Waffle Slab 2. Ribbed Floor 3. Filler Slab 4. Reinforced Brick Floors 5. Precast Concrete Floor									
Q.4.	Design a beam 'AB'; of a 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. (All Dimensions are in meters) 	(30)								
Attempt any <u>three</u> questions out of the following four: Q5, Q6, Q7, and Q8.										
Q-5. (A)	A singly reinforced rectangular beam of 300 mm width and 600 mm effective depth is reinforced with 3 no.16 mm diameter bars at the bottom. Calculate the sagging moment of resistance. Use the grade of steel, Fe – 500, and the grade of concrete, M -25.	(12)								
Q-5. (B)	Fill in the Blanks: 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 _____. 3) The function of transverse reinforcements provided at right angles to the main reinforcement is to _____. <table><tr><td>a) Distribute the load.</td><td>b) Resist the temperature stresses.</td></tr><tr><td>c) Resist the shrinkage stress.</td><td>d) All of the above.</td></tr></table> 4) Design of R.C.C. simply supported beams carrying U.D.L. is based on the resultant B.M. at _____. <table><tr><td>A) Supports</td><td>B) Mid Span</td></tr><tr><td>C) Every Section</td><td>D) Quarter Span</td></tr></table>	a) Distribute the load.	b) Resist the temperature stresses.	c) Resist the shrinkage stress.	d) All of the above.	A) Supports	B) Mid Span	C) Every Section	D) Quarter Span	(8)
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c) Resist the shrinkage stress.	d) All of the above.									
A) Supports	B) Mid Span									
C) Every Section	D) Quarter Span									
Q-6.	Design a simply supported slab of 3.5 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.	(20)								
Q-7.	Design a short RCC column subject to 2800 KN design load. Considering $e_{\text{minimum}} = 0.05 D$. 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 450 mm X 450 mm size column, subjected to 2000 KN axial load. The allowable bearing capacity of soil is 210 KN/m ² , Use M20 & Fe -415 grades of materials. Draw your designed section showing reinforcement detailing	(20)								

