SARVAJANIK UNIVERSITY

Keep it blank	W-2025 Date: 02-12-25 Time :09:30 AM to 12:30 PM Regular / Backlog Exam	

B. ARCH II - SEMESTER– III EXAMINATION

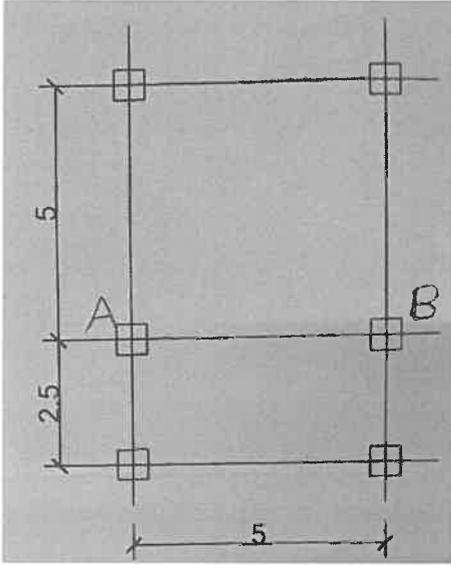Course Code: BRAR12302   **Total Marks: 180**

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)	
A	**Fill in the Blanks:** 1. W.C. having _____ type of trap can be hung on the wall 2. Domestic sewer line is connected to municipal sewer line through ____ _____ traps 3. Full Form of PCC is Plain Cement Concrete (True or false) 4. Aggregates, sand and cement are main components of _____. 5. Reinforcement Bar Size can Vary From _____ in size.	(05)
B	**Do as Directed:** 1. Define Sewer 2. Define Sewage 3. Define Traps 4. Define Fine aggregates. 5. List and explain in brief the two methods of casting on concrete Structures. 6. List any 5 Building Construction Steps 7. Define floors? 8. Explain live load for floors. 9. What is form work? 10. Methods of D.P.C. or D.P.M.	(30)
Q.2	Answer the following	
A	Enlist the layouts of water distribution system. Discuss any one in detail. OR Define factors that should be considered at the time of selection of any pipe material.	(06)
B	Compare one way spanning and two way spanning RCC slabs OR List the types of ground floors. Explain all the construction methods of ground floors with all its components. Enlist the guidelines for erecting ground floor.	(14)
Q.3.	Answer the following	
A	Design and draw a sketch of overhead water tank of 10000 liters with all its components. Volume of tank=1000lit=1cu.mt (without free board) 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)
B	**Do as Directed: (ANY FOUR)** 1. Write a Short Note on Concrete jack arch floor 2. Write a Short not on Precast concrete floors	(20)

	3. Write a Short not on Ribbed floor 4. Short Note on Types of Flat slab 5. List the requirements of a good formwork.	
Q.4.	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. FIG: 4 all dimensions are in Metre	30
Q-5.	Attempt any Three questions out of four.	
(A)	A singly reinforced rectangular beam of 330 mm width and 650 mm overall depth is reinforced with 4 no.16 mm diameter bars at the bottom. Calculate the sagging moment of resistance. Use the grade of steel, Fe – 415, and the grade of concrete, M -25.	12
(B)	Do as directed	8

	1. The maximum area of tension reinforcement in the slab shall not exceed _____of Ag for Fe 250 grade steel.
	2. The values of the partial safety factor should be taken as _____ for concrete.
	3. Distribution reinforcement in a simply supported slab is provided to distribute.
	    a. load
	    b. temperature stress
	    c. shrinkage stress
	    d. all of the above.
	4. The values of the partial safety factor should be taken as _____ for steel.	

Q-6.	Design a rectangular, simply supported slab of 4.2 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.	20
Q-7.	Design a short RCC column subjected to 2500 KN design load. consider emin =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 350 mm X 350 mm size column, subjected to 1300 KN load. The allowable bearing capacity of soil is 200 KN/m2, Use M20 & Fe -415 grades of materials. Draw your designed section showing reinforcement detailing	20