Enrolment No._____

SARVAJANIK UNIVERSITY

Keep it blank	W-2024 Date: 25_03_2025 13_30 pm to 16_30 pm Remedial/Re-Exam	

B. ARCH - SEMESTER– III EXAMINATION

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

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

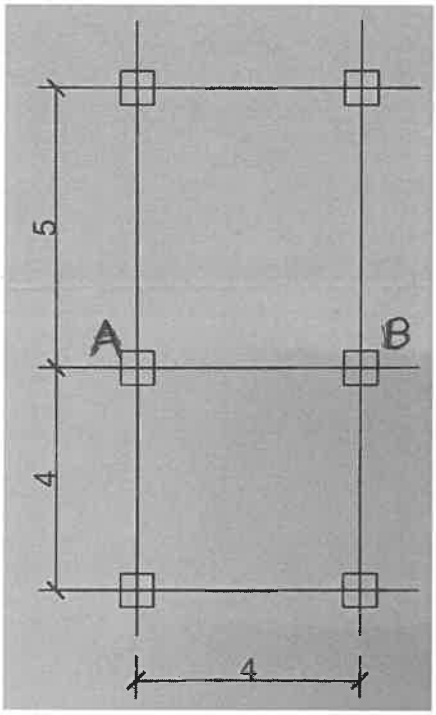
Instructions:

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 Sofit 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	Do as Directed: (ANY FOUR) 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.	**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]
	Attempt any Three questions out of four.	
Q-5.		
(A)	**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.**	[12]
(B)	**Do as directed**	[8]
	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** 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.**	
Q-6.	**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.**	[20]

Q-7.	**Design a short RCC column subjected to 3000 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 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]