Enrolment No._____

SARVAJANIK UNIVERSITY

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

B. Architecture - SEMESTER– 5 EXAMINATION

Course Code: BRAR12502 **Total Marks: 180**

Course Name: Building Technology III – Advanced Construction, Structure & Services

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Draw Illustrations, Sketches, Labelled Diagrams where ever applicable

Q1.	**Answer the following (Compulsory) Attempt Any 18 (18 x 2)**	
	As Directed -- State True or False / Fill in The Blanks	**36 Marks**
1	Mechanism of Vertical Transport are Traction , Hydraulic, Pneumatic Systems. (True or False)	2 Marks
2	Dumb Waiters and Trolleys Lifts are used in Restaurants and Shops respectively. (True or False)	2 Marks
3	The first Patent for Lift was Filed in 1859 by Archimedes (True or False)	2 Marks
4	Travelator is used for Vertical Transportation (True Or False)	2 Marks
5	In Sky Scrapers Evacuation Life , Fire Lift and Passenger Lifts all are Compulsory. (True / False)	2 Marks
6	Core & out rigger system alone is enough for any tall building for resisting lateral load. (True/ False)	2 Marks
7	To resist lateral load in a tall building, structural systems are put at periphery . (True/ False)	2 Marks
8	Tall building is oriented in a direction perpendicular to wind to get maximum benefit . (True/ False)	2 Marks
9	Concentrically braced frame system works best in wind zone . (True / False)	2 Marks
10	In belt truss system core is also connected . (True / False)	2 Marks
11	Eccentrically braced frame system works best in wind zone . (True/ False).	2 Marks
12	As height of building increases sway Increases (True / False)	2 Marks
13	Service Core is meant for Vertical Circulation and Functional Purposes (True or False)	2 Marks
14	Land Reclamation is done to construct building on land under sea or lake beds. (True or False)	2 Marks
15	The short Form of Council which defines category of Tall Buildings is CTCUB (/ True / False)	2 Marks
16	Rehandling Method is used for Land Reclamation Method (True or False)	2 Marks

17	The point on the Ground Vertically above the Focus is not Called Epicenter . (True or False)	2 Marks
18	At perimeter of a building max bending stress occurs so cant use cantilever. (True / False)	2 Marks
19	Full storey Trusses can be staggered in odd & even floors and slabs are used as diaphragm to transfer load. (True / False)	2 Marks
20	Box Jacking is Used for Providing Larger Span for Underground tunneling. (True / False)	2 Marks
Q.2	**Explain In Brief With Sketches (ANY SIX) 6 X 6 = 36**	**36 Marks**
i)	What is interactive system ? why it is used ? explain with sketches .	6 Marks
ii)	Explain diagrid system used in a tall building.	6 Marks
iii)	Why tube system is used in a tall building ? what are its benefits?	6 Marks
iv)	Explain diaphragm action of slab in a tall building with example.	6 Marks
v)	Explain bundled tube system ? why it is advantageous ?	6 Marks
vi)	Why orientation of building in plan with reference to wind direction is very important in a tall building ?	6 Marks
vii)	Explain how truss system works in a lateral load…?	6 Marks
viii)	What is the difference between natural frequency & forced frequency ?	6 Marks
Q.3.	**Explain any THREE questions out of the Following (18 x 3 = 54)**	**54 Marks**
i)	Explain the behavior of load-bearing structures in earthquakes. How it can be rectified so that the building is safe in an earthquake?	18 Marks
ii)	What is a soft storey? give practical examples of soft stories in a building. Why and how a building with a soft storey can fail in an earthquake? To resist earthquakes for a soft storey, how the building should be designed?	18 Marks
iii)	Discuss Factors affecting the design of reinforced concrete buildings in an earthquake zone along with shear walls…?	18 Marks
iv)	How a building without uniform mass behaves during an earthquake? what measures one can take to correct it…?	18 Marks
	ATTEMPT ANY THREE OUT OF FOUR (18 x 3 = 54)	**54 Marks**
Q4) I)	**Consider a Hall of a G + 6 Shopping Mall with approximate Area of 5.8 m x 9.5 m x 9.5 m. Provide Airconditioning For the Same with the Following Considerations :**	**18 Marks**
a)	Which Typology of System of Airconditioning Will you suggest?? Give Reason for the Same and Justify your selection based on Typology of Space and Climatic consideration.	6 Marks

b)	Draw / Sketch a Labelled Wall Section and Roof Plan showing the Distribution Channels / Ducts for the AC / HVAC System selected along with placement of Machines / Equipment.	6 Marks
c)	Suggest the Foyer Design in such a manner that in absence of Active Airconditioning the space can be Cooled with Passive means / Ventilation systems.	6 Marks
Q4 II)	**Consider an Entrance lobby of Size 36 m x 46 m of an Airport where you have to provide Vertical Transportation or Automated Transportation.**	**18 Marks**
a)	Which Typology of Vertical / Automated Transportation would you suggest for passengers with luggage if the Airport is Three Storied . Give Reason for your answer.	6 Marks
b)	Draw a labelled diagram with dimensions (Section & Plan) of the Typology of Vertical Transport selected .	6 Marks
c)	State which type of Lifts are best for Physically Challenged People for Vertical Transportation. Sketch / Draw a small foyer for which facilitates the same in an Airport.	6 Marks
Q4 III)	Design an affordable 4 bhk house in flood prone zone and explain with either plan or sectional elevation regarding its design for the following three methods. **(6 x 3 = 18)** 1.) Elevation 2.) Floodwall 3.) Dry Flood proofing	**18 Marks**
Q4 IV)	Design a central service core for 5 Stretchers Lift, 5 Passenger Lift, Regular stair case, Fire staircase & various services shafts according to 100 stories commercial tall tower requirement.	**18 Marks**
	1) Draw plan with requirements mention above	6 Marks
	2) Draw elevation to explain/show type of structural systems you have selected.	6 Marks
	3) Draw schematic diagram to show load transfer from super structure to sub structure.	6 Marks