

SARVAJANIK UNIVERSITY

S-2025 Date: 02-05-25 Time: 01:30 PM to 04:30 PM

Regular / Backlog Exam

B. Arch - SEMESTER- 6 EXAMINATION**Course Code: BRAR12602****Total Marks: 180****Course Name: BUILDING TECHNOLOGY – IV****(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, Labeled Diagrams where ever applicable**

**Q.1. Answer as directed (All questions are compulsory)
– (2 marks each)****32 Marks**

- 1) Singly curved shells are similar to Non developable shells. (True / False)
- 2) Aluminum composite panel has a high temperature resistance. (True / False)
- 3) Double curvature structure is good for wind stability point of view. (True / False)
- 4) Dome is the perfect example of Anticlastic shell. (True / False)
- 5) Cable stayed structure uses compression & tension member to transfer load (True / False)
- 6) High Pressure Laminate panel is a type of manufactured timber made from thin sheets of substrates or wood veneer. (True / False)
- 7) Stability due to wind is crucial in tensile structure. (True / False)
- 8) Thermal Conductivity and Expansion are attributes of transmitting of Fire in materials. (True / False)
- 9) Castellated girders are used in earthquake zones. (True / false)
- 10) Specific Heat and Melting Point are attributes of Fire leading materials deterioration. (True / False)
- 11) _____ is produced by thoroughly mixing ground wood particles and heated thermoplastic resin.
- 12) When a sound is reflected off a wall or other solid surface, the returning sound waves reinforce the original sound and the phenomena is called the _____.
- 13) The velocity of sound in bricks is _____.
- 14) _____, _____, Sheet and Wired are the types of glasses used in Curtain wall glazing.
- 15) Plate girder are made from
 - a. Plates only
 - b. Plates & angle section
 - c. Only angle section
 - d. All kind of sections
- 16) For large span structure following system is used
 - a. Double layer two way grid
 - b. Single layer two way grids.
 - c. Single layer three way grid
 - d. Double layer & triple layer grids.

- Q.2. Answer as directed (Both questions are compulsory) 40 Marks**
– (20 marks each)
- 1.) Design a large span cable stayed roof structure having 20,000 square meter area. Choose plan of any shape, for a multipurpose gathering space. Decide a specific form stable against wind. Explain load transfer, draw plan, section, sketch showing dimension of structural members, approximate cross section, size & connection details at various joint as per your design. Explain material you choose.
 - 2.) Explain following terms along with load transfer and sketches (Any two)
 - a. Cable stayed structure
 - b. Suspension cable structure
 - c. Double layer three way space frames.
- Q.3. Write Short notes (Answer any three) – (16 marks each) 48 Marks**
- 1.) Explain 4 types of fabrics used in tensile structures.
 - 2.) Classify Singly Curve shells and Double curve shells with examples.
 - 3.) Difference between Glass transparent roofing and Acrylic Transparent roofing / Plexiglass.
 - 4.) Describe folded plate structures in details with neat sketches.
 - 5.) Explain 'Lightweight Insulating Concrete (LWIC) Roof Deck System'. Draw neat sketch of it and explain method of installation.
- Q.4. Explain in Detail (Answer any three) – (20 marks each) 60 Marks**
- 1.) Explain in detail the 'acoustical' considerations while designing the auditorium including the shape and form of the auditorium.
 - 2.) Enlist the types of Sound insulating techniques and explain any two in detail.
 - 3.) Consider Five Storied Shopping Complex having shops on two sides Of 3m Wide Corridor. Size Of Each Bay of Shop Is 4.5 m x 6 m x 4.5 m.
 - a) Design a Pressurized lobby / corridor with shops on two sides, Stair cabin and Lift of Size prescribed as per NBC along with indicating the escape route – Plan **(10 Marks)**
 - b) Draw the section of the same with location of Active and Passive Ventilation System – Plan **(10 Marks)**
 - 4.) A Ten Storied Building has a Basement Parking and 10 Floors and Terrace Area.
 - 1st Floor is Administration and Community Space
 - 2nd to 4th Floor is Restaurant
 - 5th to 7th is Office Space
 - 8 to 10th Floor is Residential Accommodation for Employees.
 - a) Design (draw and label diagram) Compartmentation for the Building at Site Level and Block level along with the service core. Draw section and elevation to explain the same. **(10 Marks)**
 - b) Draw the provisions of both Active and Passive Fire Fighting System for the same through Plan and Elevation. **(10 Marks)**