Enrolment No._____

SARVAJANIK UNIVERSITY

W-2024 Date: 22-11-24 Time: 09:30 am to 12:30 pm
Regular and Exam

B.Arch.-IV - SEMESTER– VII EXAMINATION

Course Code: BRAR12702 **Total Marks: 180**

Course Name: High-Tech Structures & Performance Analysis

Instructions:
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q-1. Do as Directed (Attempt All) **34 Marks**

1. Orientation of the Shorter face of the building should be _____to prevailing wind direction to take maximum advantage of wind for cross ventilation & air circulation
2. The main goal of _____ to create comfortable indoor environment by raising comfort zone by heating in "colder climate" or "cooler region"
3. Surplus energy present in Net Zero Energy Building will be considered as a waste of energy. (say True / False)
4. Define Energy surplus building
5. _____ invented the Lift slab construction technique.
6. _____construction technique is a combination of cast-in-situ and pre-cast construction
7. Casting of plunge column piles is the first construction sequence in Top-Down construction technique (say True/False)
8. Wall thickness can be reduced during the construction in _____ construction technique
9. The term "digital architecture" was coined by Ar. _____ for the first time.
10. Air-domes are "Air Inflated Structures." (say True/False)
11. Define Pneumatic Structure.
12. Can "parametric architecture" be called "Digital architecture"? (say True/False)
13. Enlist system components for Pneumatic structures.
14. Intelligent buildings offer higher levels of _____ and _____
15. _____ cost can be reduced in intelligent buildings by _____ infrastructure & hardware.
16. Define Intelligent Building
17. What are thermal breaks / insulations?

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Q-2 Answer the following in brief (Any Six) **36 Marks**

1. What are the benefits of green building design?
2. What is Low E Glass? Explain in detail
3. What is Glass fiber reinforced concrete? Explain it.
4. Explain about the precaution required for lift slab construction technique
5. What are the Advantages and disadvantages of slip form work construction technique
6. Enlist components of pneumatic structures. Explain with sketches.
7. Enlist advantages & disadvantages of pneumatic structures.
8. Explain in detail "Air inflated structures" with diagrams.

Q-3 (A) Answer the following in detail (Any Four) **40 Marks**

1. What are the attributes of sustainable building design? Explain any one in detail.
2. Write a short note on: Net Zero Energy Building
3. Write short note on Hi - Tech materials. Explain any 3 in detail.
4. Discuss briefly the steps taken for design and implementation of perimeter security planning.
5. Discuss the components of CCTV (closed circuit T.V.) along with its application potential in designing the security system.

(B) Answer the following in detail (Any Two) **30 Marks**

1. Discuss in detail with sketch about "Lift slab Construction techniques"
2. Differentiate between "Air Supported" and "Air inflated" structures. Explain installation process of pneumatic structures.
3. What do you mean by BEMS? What does BEMS attempt to control?

Q-4 Answer the following with sketch (Any Two) **40 Marks**

1. Design a convention center using concept of digital architecture. (Plans, Sections, Elevations with annotations)
2. Explain with the example of intelligent building and identify the intelligent factor of the building. Explain any two parameters in detail
3. Explain in detail about various attributes of building Envelope to achieve sustainability through passive heating strategies.