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.

Q1.	Answer the following.	34 Marks
	1. The main goal of _____ to create comfortable indoor environment by raising comfort zone by heating in "colder climate" or "cooler region"	
	2. A _____ is the structural barrier between the interior and exterior of a building. It is responsible for maintaining climate control within the interior of a building.	
	3. Define hi-tech material.	
	4. Define Energy surplus building.	
	5. In _____ construction technique the columns are fabricated up to half height of the building.	
	6. Bond breaker and lifting collars are used in _____ construction technique.	
	7. Casting of plunge column is to be done first in the Top-Down construction technique (True or False)	
	8. Free form type of construction can be constructed by using of Slip form work construction technique (True or False)	
	9. Define Digital Fabrication.	
	10. Pneumatic structures require _____ to achieve designed form.	
	11. Ar. _____ had used the term "Parametric" for the first time.	
	12. Define Propagation-based systems in Parametric architecture.	
	13. List down types of computation design.	
	14. Intelligent buildings offer higher levels of _____ & _____.	
	15. Define Intelligent Building.	
	16. What are thermal breaks / insulations?	
	17. What are examples of renewable energy?	
Q.2	Answer in brief (Attempt Any Six)	36 Marks
	1. Define transparent wood.	
	2. Explain Carbon fiber & liquid granite.	
	3. What is Green Building and green building rating system? What are the features that makes a building green?	
	4. What is the Lift slab construction technique and explain why it evolved?	

	5. What are the advantages and disadvantages of Bottom-Up construction technique? 6. Enlist components of pneumatic structures. Explain with sketches. 7. Explain in detail "Algorithmic Design". 8. Enlist use of digital fabrication and explain anyone in detail.	
Q.3. (A)	**Answer the following (Attempt Any Four)**	**40 Marks**
	1. What are the attributes of sustainable building design? Explain building energy efficiency in detail. 2. Discuss in detail with sketch about "Top-Down Construction techniques" 3. Explain Generative Design & Biomimetic Design with sketches. 4. Differentiate "Air inflated" and "Air Supported" structures with sketches. 5. Discuss the components of CCTV (closed circuit T.V.) along with its application potential in designing the security system.	
Q.3. (B)	**Answer in Details. (Attempt Any Two)**	**30 Marks**
	1. What do you mean by BEMS? What does BEMS attempt to control? 2. Explain "Digital Architecture". Enlist types and explain any 3 in detail with sketches. 3. Discuss in detail with sketch about "Slip form work Construction techniques"	
Q.4.	**Answer the following (Attempt Any Two)**	**40 Marks**
	1. Design a playing maze for 25 children using concept of pneumatic architecture. (Plans, Sections, Elevations with annotations) 2. Explain with the example intelligent building and identify the intelligent factor of the Building. Explain the two parameter in detail. 3. Attributes of building Envelope to achieve sustainability through passive cooling strategies. Use sketches to explain.	