



**RN-6713**

**B. Arch. - III (Sem. V) Examination**  
**May / June - 2010**  
**Building Material & Construction - V**

Time : 3 Hours]

[Total Marks : 100

**Instructions :**

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. Arch. - 3 (Sem. 5)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Building Material &amp; Construction - 5"/>	<input type="text"/>
Subject Code No. : <input type="text" value="6"/> <input type="text" value="7"/> <input type="text" value="1"/> <input type="text" value="3"/>	<input type="text"/>
Section No. (1, 2,.....): <input type="text" value="Nil"/>	<input type="text"/>
	Student's Signature

- (2) Figures on right indicate full marks.  
(3) Discussion based answers to be written point wise.  
(4) Support your answers with neat sketches.

- 1 (a) State true or false : 10
- Organic, metabolism, metamorphosis, bionic concepts have been used to construct large spanned fall structures.
  - TERI is an organization which helps architects to understand energy efficiency of materials.
  - A geodesic line is the shortest distance between two points on a curved surface.
  - When between two upright angles a family of paraboloid is suspended it is hyperbolic paraboloid.
  - Petronas towers is an example of rigid framed structure.
  - Tadao Ando's modern art museum has flat slab supported on Y columns.
  - Three column edge profiles for trusses are vertical edge, cornice edge, mansard edge, shells are broadly classified into single, double type.
  - The pre-stressed concrete beam experiences continuous state of tension.
  - Permanent anchorages are required in pre-tensioning technique.

- (x) Light weight concrete is used in in-situ construction.
- (b) Answer with appropriate sketch : **10**
- (i) Inverted catenary concept and its uses
- (ii) Folded plates on circular plan
- (iii) Lunes and sectors of a dome
- (iv) Kibitka and its elements
- (v) Tepee concept
- 2** (a) Explain the advantages of pre stressing over RC **10**  
technology. What are the materials generally needed for the same?
- (b) Based on your case studies suggest a suitable **15**  
design and layout for exhibition pavillion measuring  $15 \times 30$  meters (with suitable exhibition modules) for the purpose of exhibition of books. Sketch the plan, section and any one joinery detail maintaining proper proportions.
- OR**
- (b) Using thin shells or folded plate system, suggest **15**  
a roofing system for a community shed (for yoga/ mediation etc) measuring about 15 m radius (assume suitable data) show plan, section, with choice of materials and any one joinery detail.
- 3** (a) What are the distinct features of modular **10**  
construction technology? What are the application areas of the same?
- (b) Which are the different types of bracings possible **10**  
for tall structures? Discuss with sketches and an example.
- 4** (a) Mention different type of grid configurations for **10**  
space frame with sketches, also explain some complex geometries of the same.
- (b) What are shell structures. Discuss with sketches **10**  
the single and doubly curved shell.
- 5** Attempt any **three** : **15**
- (i) Geodesic dome
- (ii) Tree support in space grid structures
- (iii) Light weight concrete for pre cast components
- (iv) Principal components of suspension bridges.