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

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[Contd...

- (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 technology. What are the materials generally needed for the same? **10**
- (b) Based on your case studies suggest a suitable design and layout for exhibition pavillion measuring 15×30 meters (with suitable exhibition modules) for the purpose of exhibition of books. Sketch the plan, section and any one joinery detail maintaining proper proportions. **15**
- OR**
- (b) Using thin shells or folded plate system, suggest 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. **15**
- 3 (a) What are the distinct features of modular construction technology? What are the application areas of the same? **10**
- (b) Which are the different types of bracings possible for tall structures? Discuss with sketches and an example. **10**
- 4 (a) Mention different type of grid configurations for space frame with sketches, also explain some complex geometries of the same. **10**
- (b) What are shell structures. Discuss with sketches the single and doubly curved shell. **10**
- 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.