



UG-6712

B. Arch. III (Sem. V) Examination

May/June - 2012

ARC - 502 : Building Materials & Construction  
Technology-V

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवही पर अवश्य कभवी.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
B. Arch. III (Sem. V)

Name of the Subject :  
ARC - 502 : Buildi. Mater. & Constr. Techn.-V

Subject Code No. : 6 7 1 2 Section No. (1, 2,.....) : Nil

Seat No. :  
[ ] [ ] [ ] [ ] [ ] [ ]

Student's Signature

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

- 1 (a) State true or false. 10
- (1) One module equals 50 cms.
  - (2) No permanent anchorages are required for pretensioned elements.
  - (3) Geodesic construction works on the principle of lunes and sectors of the hemisphere.
  - (4) High yield strength steel cables should be used in post tensioning.
  - (5) Light weight concrete is preferably used in in-situ construction.
  - (6) The pre - stressed concrete beam experiences continuous state of tension.
  - (7) Flexural system consists of straight line like arrangement of members like beam, girders etc.
  - (8) Surface structures are the examples of form resistant structures.

- (9) Three column edge profiles for trusses are vertical edge, cornice edge, mansard edge, shells are broadly classified into single, double type.
- (10) Traditional method of building domes by radials is used in construction of geodesic domes as well.
- (b) Answer with appropriate sketch. **10**
- (1) Portal frames.
  - (2) Hyperbolic paraboloid.
  - (3) Teepee tents.
  - (4) Simple military tent.
  - (5) Synclastic surface as a shell structure.
  - (6) Shape of catenary.
  - (7) Short barrel shell with stiffened ends.
  - (8) Single masted cable stayed structure.
  - (9) Triodetic connector for space frame joineries.
  - (10) Bending moment diagram of simple post and beam.
- 2** (a) Discuss the method and advantages of using shell structures in construction practices. **10**
- (b) What do you understand by pre-stressing ? Discuss in detail with beam cross section. Also discuss the advantages of using this technique. **10**
- OR**
- (b) Compare pre-tensioning with post-tensioning. How does post tensioning ensure better efficiency ? **10**
- 3** (a) Out of any roofing system studied in your group, suggest a roofing system for an exhibition (for books, computer accessories etc.) Each pavilion measuring about 15m×30m (assume suitable data) show plan, section, with choice of materials and any one joinery detail. **15**
- (b) Draw neat sketches and explain the basic features. **15**
- (1) Two bay symmetrical pitch lattice steel cantilever (umbrella) roof.
  - (2) Lamella type metal dome.
  - (3) Details of corrugated steel cladding over the lattice roof truss with north light provision.

- 4 (a) Write short notes on. (any three) 15
- (1) Prestressed concrete double T beam.
  - (2) Light weight precast hollow units for roofing/flooring.
  - (3) Principle of cable stayed structures.
  - (4) Light weight concrete for pre cast components.
- (b) Write short notes on. (any three) 15
- (1) Metal joinery system for geodesic domes.
  - (2) Single layered grid configuration. (any one)
  - (3) Advantages of geodesic domes.
  - (4) Principal components of suspension system.
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