

BACHELOR OF ARCHITECTURE EXAMINATION, 2017
(B. Arch. 2nd year 2nd Semester)

SUBJECT: STRUCTURE FOR ARCHITECTS

Time : Three hours

Full Marks: 100

Instructions: Answer for 100 marks. Use sketches wherever necessary

01. Describe what you understand about 'Equilibrium of Structures'. Describe 'Stability of structures' in light of translational and rotational equilibrium of structures.
- Describe optimization in applied to structural analysis and design considerations in light of (a) Strength, (b) Functionality, (c) Economy and (d) Aesthetics. 25
02. If a number of Books are held together in a pressed condition, then each of them do contribute to the whole acting as a horizontal structural member. Explain this 'joint behaviour' and describe how this 'joint behavioural property' is utilized in a structural system. 25
- Describe where and why reinforcements must be provided in a cantilever beam. Also explain the recommended sequence of removal of props in a concrete cantilever slab after its casting and curing are over.
03. With suitable examples, describe 'Tension', 'Compression', 'Shear', 'Bending'.
With appropriate examples, describe 'Tensile' and 'Compressive' structures. Describe the principles of structural considerations for a typical 'Cable-stayed Bridge' and a 'Suspension Bridge'. With the help of appropriate sketches describe (in schematic way) how varieties of long-spanning architectural forms can be obtained using a combination of compressive and tensile members. 25
04. Using appropriate sketches, describe the basic principles of 'Post & Lintel' structures and 'Arcuated' structures
Describe 'Portals' and 'Vierendeel trusses'
Describe the principles of working of 'Pre-tensioned' and 'Post-tensioned' structures 25
05. Discuss the properties of materials in light of selection of the same for use in different types of structures and parts thereof in architecture. 25
06. Compare the role of an Architect with that of an Engineer in Building Design and Construction. 25
07. Write short notes on (any five) (5 X 5) = 25
- (i) Wind Bracing
 - (ii) Live Loads
 - (iii) Impact Loads
 - (iv) Shells and Vaults
 - (v) Shear Walls
 - (vi) Beams under Torsion
 - (vii) Synclastic and Anti-clastic shapes
 - (viii) Fazlur Rahman Khan's contribution in Structural innovations
 - (ix) Gusset and Splice plate in steel structure
 - (x) Interpretation of Spider's web from Structural angle of vision