

BACHELOR OF ARCHITECTURE EXAMINATION, 2018
(B. Arch. 2nd year 2nd semester)

Subject: STRUCTURE FOR ARCHITECTS

Time: 3 hours

Full Marks: 100

Instructions: Answer for 100 marks. Use sketches wherever necessary

01. Citing a few examples, describe in brief the history of development of knowledge in structural principles in early civilizations.
Describe how Nature acts as a store-house of learning on structural principles that can very well be utilized in building and other structures. Elucidate with appropriate examples. **25**
02. With appropriate examples and relevant sketches describe the different types of loads including their effects that a building structure is often subjected to. Describe the special characteristics of 'Skew Grids' and 'Rectangular Grids' in terms of dispersal of loads by a large plate. Discuss how these lower the depths of a floor plate. **25**
03. With suitable examples and appropriate sketches describe the typologies, properties and behavior of various natural and artificial materials used for building structures. Describe the basic principles of designing skyscraper constructions as propounded by Fazlur Rahman Khan. **25**
04. In reference of structural behavior of various structural systems and classical and modern examples of Architecture, describe the purpose of optimization of a structural system when an Architect attempts to arrive at a judicious balance among apparently conflicting issues including equilibrium, stability, strength, aesthetics and economy. **25**
05. With suitable sketches describe in brief: (a) Tension, (b) Compression, (c) Shear, (d) Torsion and (e) Simple Bending. Using appropriate sketches describe detailing for stranded wire rope structures at foundation, at supports, at the interface of the cables and the fabric. Furnish a few sketches on variations of Tensile cable structures. **25**
06. Describe the structural principles of (a) Trabeated and (b) Arcuated constructions. Describe the behavior of (a) Beams, (b) Vierendeel girders, (c) Trusses, (d) Arches, (e) Vaults, (f) Domes.
Citing examples from every-day experiences, describe the fundamental principles of (1) Pre-Tensioning and (2) Post-Tensioning of structures. **25**