# SCHOOL OF PLANNING AND ARCHITECTURE, VIJAYAWADA

SEMESTER END EXAMINATIONS (SUPPLEMENTARY) DECEMBER - 2016

## B. ARCH IV YEAR VII SEMESTER

## THEORY OF STRUCTURES (TS-7)

**Maximum Marks – 100** **Time –3 Hours**

*a) Answer any Four out of 1 to7 questions.*
*b) Question No.8 is compulsory and answer any four out of six sub questions.*
*c) Draw neat sketches wherever necessary.*

Q1. Explain in detail the classification of Tall building' structural systems. **(20M)**

Q2. Find the design load for an interior column of ground floor of an eight storeyed building using the following data **(20M)**

(i) Height of each floor = 3.5m
(ii) Spacing of Columns c/c = 4.0m
(iii) Live load on roof = 2.0 KN/$m^2$
(iv) Live load on each floor = 3.0 KN/$m^2$
(v) Thickness of R.C.Slab = 120mm
(vi) Dead weight of floor finish = 1.5 KN/$m^2$
(vii) Weight of wall and beam = 12 KN/m

Q3. Explain and sketch the following structural forms **(20M)**

(i) Arch
(ii) Vault
(iii) Dome
(iv) Hyperbolic paraboloid
(v) Folded Plate

P.T.O

Q4. Explain the following: **(20M)**
(i) The general method of structural analysis of shells
(ii) Structural design of shells by working stress method

Q5. Explain in detail the general classification of shells with neat sketches **(20M)**

Q6. A pretensioned, T-section has a flange 1200mm wide and 150mm thick. The width and depth of the rib are 300mm and 1500mm respectively. The high tensile steel has an area of 4700 $mm^2$ and is located at an effective depth of 1600mm. If the characteristic cube strength and tensile strength of steel are 40 $N/mm^2$ and 1600 $N/mm^2$ respectively, calculate the flexural strength of the T-section. **(20M)**

Q7. a) Explain the advantages and disadvantages of Folded-plate structure. **(20M)**
b) What are the assumptions for the analysis of folded plates?

Q8. Write short notes on any FOUR of the following: **(4x5= 20M)**

a) Advantages and disadvantages of shells
b) Virendeal truss
c) Devices used for tensioning steel
d) Long span structures
e) Differences between pre-stressing and post-tensioning
f) Principle of folding

******