

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Calculate the strength of a 20 mm ϕ rivet in a lap joint connecting plates of 20mm thickness. take max bearing stress = 100N/mm^2 & shearing stress = 300N/mm^2 .
- Q.4 Design a rectangular beam simply supported over a clear span of 6.5 m and subjected to a U.D.C. of 24 kN/m. use M15 conc. mix and Fe₂₅₀ mild steel.
- Q.5 Design an R.C.C. Slab to carry a U.D.C of 6KN/m^2 inclusive of its own weight on an effective span of 4m simply supported. Adopt M15 concrete.
- Q.6 Design a column to carry a load of 500 KN, Height (effective) of the col. is 8 m, one side of the column is restricted to 30 cm. use M15 conc & steel Fe415.
- Q.7 Calculate the load carrying capacity of a tension member consisting ISMT 150:-
- (a) Riveted to 10 mm THK. Gusset plate
 - (b) Riveted to 10 mm THK, Gusset Plate using 16 mm rivet.

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5th Sem. / Arch. Asstt

Subject : Structure Systems and Design

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) Cable.
 - b) Roof truss.
 - c) Post and beam.
 - d) Portal frame.
 - e) Folded plates.
 - f) Vaults.
 - g) Air Supported structure.
 - h) P.C.C.
 - i) Over hang Beam.

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- j) Crippling.
- k) Reaction.
- l) Composite section.
- m) Net effective area.
- n) Web.
- o) Power driven shop rivet.
- p) Strut.
- q) Eusset plate.
- r) Effective length.

SECTION-B

Note: Short answer type questions. Attempt any ten parts
10x4=40

- Q.2
- i) What are deformed and twisted bars and what are their advantages?
 - ii) Write notes an "under-reinforced beams".
 - iii) What are the usual assumptions made in define of R.C.C. beam?

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- iv) Why shear reinforcement is provided?
- v) State the reasons for providing distribution steel in slabs?
- vi) What are different types of R.C.C. Columns?
- vii) Explain different types of Welded joints?
- viii) Draw neat sketches of single rivetted double cover Butt joint & single rivet lab joint.
- ix) Write notes on 'Pneumatic structure'.
- x) Write dis-advantages of steel structures?
- xi) Explain the efficiency of raveted joint??
- xii) What are doubly reinforced beams?
- xiii) How will you fix up effective span?
- xiv) What are the advantages of R.C.C?
- xv) Find the safe load which a 4500 mm² square P.C.C . column 4.5m long (effective) can carry if it is reinforced with 6-22mm ϕ steel.

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