

www.FirstRanker.com

www.FirstRanker.com

|--|

Total No. of Pages : 03

Total No. of Questions : 09

B.Tech.(CE) (2011 Onwards) (Sem.–7,8) DESIGN OF STEEL STRUCTURES-II Subject Code : BTCE-801

Time: 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1. Answer briefly :

- (a) List specifications for the design of fillet weld.
- (b) What is bracket connection? Describe in brief.
- (c) What is gantry girder? Draw a neat sketch of any gantry girder.
- (d) What is meant by transverse bents?
- (e) What is the role of cross girder in steel structures?
- (f) Write a short note on single track Railway Bridge.
- (g) Define efficiency of Joint.
- (h) What is bearing rocker and roller? Describe in brief their utility.
- (i) What is difference between riveted plate girder and welded plate girder?
- (j) What is difference between lateral and longitudinal bracing?



www.FirstRanker.com

SECTION-B

Q2. Design a bracket connection to transfer an end reaction of 225 kN due to factored loads as shown in figure 1. The end reaction from the girder acts at an eccentricity of 300 mm from the face of the column flange. Design bolted joint connecting the Tee-flange with the column flange. Steel is of grade Fe 410 and bolts of grade 4.6.



- Q3. Differentiate between Deck type and through type truss bridges. Show various parts of truss bridge with the help of a diagram.
- Q4. Determine the flexural design strength of plate girder having simply supported connection and continuous lateral support. Flange: 650×50 mm, web: 2000×12 mm, span 16 m and only flanges resist bending moment.
- Q5. Write short note on :
 - (a) Portal Sway Bracing
 - (b) Cross Girders and main girders with welded joints.
- Q6. Derive the expression for the economical depth of a plate girder. Assume moment is resisted by flanges only.



www.FirstRanker.com

SECTION-C

Q7. Design a simply supported gantry girder to be used in an industrial building carrying an electric overhead travelling crane for the following data :

Crane capacity: 200 kN

Self weight of crane girder excluding trolley : 200 kN

Self Weight of trolley, electric motor, hook etc. : 40 kN

Minimum approach of crane hook: 1.2 m

Distance between c/c of wheels: 3.5m

Distance between c/c of gantries: 16.0 m

Span of gantry girder: 8.0 m

Self Weight of rails: 300 N/m

Diameter of crane wheels: 150 mm

Grade of steel: Fe 410

- ercom Q8. A plate girder with Fe 410 steel plates is having 12mm × 1800 mm web plates and 75 mm \times 550 mm flange plates. Determine the design flexural strength, if unrestrained length is 10 m.
- Q9. Design foot bridge for following data:

Type of girder : lattice type.

Span of girder = 15 m C/C of bearings.

Cross girders to be spaced at 1.8 m centres.

Clear walking width between main girders = 2m.

Pedestrian load = 4 kN/m^2 .

Flooring of timber planks supported on cross girders.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

3 M - 71859