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B.Tech. || CIVIL || 6thSem

DESIGN OF STEEL STRUCTURES -II (Reg)

Subject Code:BTCE-603A

Paper ID: 2015 Batch onwards.

Time allowed: 3 Hrs   Max Marks: 60

Important Instructions:

- All questions are compulsory
- Assume any missing data

Note: IS 800:2007 & SP6(1) are permitted in examination

PART A (10x2marks)

Q. 1.   Short-Answer Questions:

(a) How would you find economical depth of Gantry Girder?

(b) What are the various classes of steel Cross-Sections?

(c) Differentiate between Span and Bay?

(d) What do you mean by Roof Trusses?

(e) How would you explain in brief Curtailment of flanges?

(f) What are assumptions made for Plastic analysis?

(g) How would you explain in brief Mill Bent?

(h) How would you explain in brief the Portal Sway Bracings?

(i) What are the Various loads which are to be considered during the design of Gantry Girder?

(j) What are the advantages of the Plate Girder over the Trusses?

PART B (5×8marks)

Q. 2.   How would you define Plate girder? Describe Various Types of Stiffeners used in it   CO1
and explain Elements of a plate girder with neat diagram in detail.

OR

Design a Welded Plate Girder of span 20m to carry superimposed load of 30KN/m.
Avoid use of bearings and Intermediate Stiffeners. Use Fe410 Steel.

Q. 3.   Explain Step by Step design procedure for Column bracket in detail with required   CO2
checks.

OR

Design a foot Bridge for the following particulars:-

Type of Girder	N-Type Trusses
Span of Girder	24m c/c
Spacing of the Cross-Girder	3m c/c
Clear Walking width b/w main girders	3.5m
Live load	$8000 N/m^2$
Flooring	Wooden planks

Design the Cross-Girders, Timber planks, Top and Bottom chords and Raker.

Q. 4.   What is the difference between the Lateral and the Longitudinal Bracings for the   CO3
Mill Bent Discuss in detail the Utility and Design considerations for each?

OR

How would you Explain the step-wise procedure for the design of the Gantry girder,
also State the specifications which are to be used.

Q. 5.   A deck type plate girder Railway Bridge is to be constructed for a broad gauge   CO4
single track on the main line. The following data is available:

Effective span = 20m

c/c distance between plate girders = 3m

Dead load on each girder = 200L+620 N/m
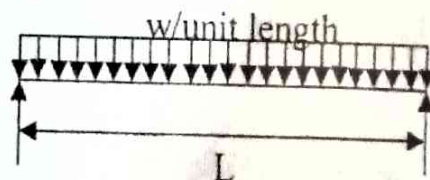
Dead load of track with sleepers = 6900 N/m

Lateral load = 8000 N/m

Design the superstructure of the bridge with welded plate girders.

OR

Explain the step-wise procedure for the design of the plate girder Railway Bridge,
also State the specifications which are to be used.

Q. 6.   Find out the Collapse Load for Simply Supported beam Subjected to udl as shown in   CO5
figure:

OR

What can you say about Bearing? Explain various types of it with their function in
detail.