SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR 40

ROLL No: | | | | | | | | | | | | |

Total number of pages:[2]
Total number of questions: 06

B.Tech. || CE || 7th Sem

Design Of Steel Structures II

Subject Code: BTCE-801

Paper ID:

Time allowed: 3 Hrs **Max Marks: 60**

Important Instructions:

- **All questions are compulsory**
- **Assume any missing data**
- **Use of codes IS 800:2007 and SP6 (1) handbook is allowed.**

PART A (2×10)

Q. 1. Short-Answer Questions:

a) What are you understand by Flange area Method.
b) What is Intermediate Stiffners?
c) Describe the formulae to check the deflection in gantry girder?
d) Explain Hudsons formulae for estimating the dead load in bridges?
e) How can you classify the various types of cranes according to CMAA?
f) What is a Mill Bent and how it behaves under the varying Bending Moment conditions?
g) How would you give the economic proportion of the Foot Bridges?
h) What is function of sway bracing?
i) Mention different types of bearings used & write the purpose of providing bearings
j) What are your comments for "No allowance for impact is to made foot bridges" Give your Comments.

PART B (5×8marks)

Q-2 Design a Gantry girder as laterally supported beam to be used in an industrial building carrying a hand operated travelling crane for the following data :- CO1

Crane capacity	50KN.
Self weight of crane girder excluding trolley	40KN
Self weight of trolley	10KN
Approximate minimum approach of crane hook to the gantry girder	1.0m
Wheel Base	3 m
C/c distance between gantry rails	14m
C/c distance between Coulmn	5.5
Self weight of rail section	300N/m
Yield stress of steel	250N/m

OR

Explain in detail the step-wise procedure for the design of gantry girder and also state the specifications which are to be used? CO1

Q-3 Design a foot bridge for the following particulars :- CO4

Type of Girder	N-type trusses
Span of girders	15 m c/c
Spacing of cross girders	2.20 m c/c
Clear walking width between main girders	3 m
Live load	4.0 KN/m^2

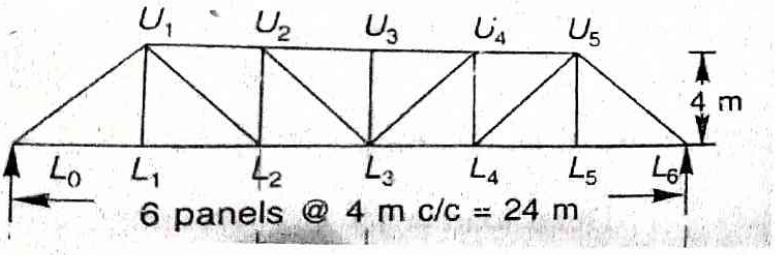
Flooring: Timber planks on cross girders

Design the timber planks, cross girders, rakers, central top chord and bottom chord members.

OR

(a) How dead loads in bridges can be estimated?

(b) An open web girder bridge consists of two pratt type trusses as shown in fig. The span of the truss is 24 m c/c of bearings. The bridge supports an equivalent uniformly distributed live load of 175KN/m run. The dead load transmitted to each truss inclusive of self weight is 15 KN/m. Calculate the design forces in the members U_2U_3, U_2L_3 and L_2L_3. Assume the impact factor to be 14%. CO4



Q.4 Design a weled plate girder 24m in effective span and simply supported at the two ends.it carries a uniformly distributed load of 100kn/m. CO2

OR

Describe in Detail :-

a)Various Types of Stiffeners used in the Plate Girders.

b)Curtailment of Flanges. CO2

Q. 5 Write a note on the following :-

a)Rocker Bearing and Roller Bearing.

b)Portal and Sway Bracings. CO3

OR

Write the Stepwise design procedure of rocker bearing for any plate girder. CO3

Q. 6 What is the difference between the Lateral and the Longitudinal Bracings for the Mill Bent Discuss in detail the Utility and Design considerations for each? CO3

OR

A Through type Highway steel bridge 48m span is supported on two N-girders each consisting of 10 bays of 4.8 m each,the height of the girder being 4.8m.DL of the bridge including self weight of two N-girders is 90KN/m and rolling load on the bridge ,to be carried by the two girders is equivalent to 100KN/m. Design the top and bottom chords at the fifth panel of the bridge and diagonal member in the third bay from left. CO3