Roll No……..….. **Total No. of Printed Pages: 2**
Total No. of Questions: [09]

B Tech (Civil Engg.) (Semester – 7th)
DESIGN OF STEEL STRUCTURES-II
Subject Code: BCIE1732
Paper ID: [110721]

Time: 03 Hours **Maximum Marks: 60**
Instruction for candidates:
1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:
a) Define the different types of geosynthetics.
b) What is a foot bridge?
c) What is gantry girder?
d) What is bracket connection? Describe in brief.
e) What is the function of sway bracing?
f) List the items that are to be considered while planning and designing an industrial building
g) What is the difference between stringer and cross girder?
h) Write a short note on single track Railway Bridge.
i) How are the rolled steel beams classified?
j) What is the role of cross girders in steel structures?

Section – B **(5 marks each)**

Q2. Write a short note on:
(a) Portal Sway Bracing
(b) Cross Girders and main girders with welded joints

Q3. ISMB 350@ 524 N/m is to join a column ISHB 300@ 588 N/m. The beam has to transmit an end reaction of 230 kN. Design a stiffened seat connection.

Q4. Explain the design procedure of Mill bent for an industrial building.

Q5. Derive the expression for the economical depth of a plate girder. Assume moments are resisted by flanges only.

Q6. Design a suitable bearing for a foot bridge having a clear roadway of 12m and effective span of 25m.

Section – C **(10 marks each)**

Q7. Design a Gantry girder without lateral restraint along its span, to be used in an industrial building carrying a 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.

Approximate minimum approach of crane hook to the gantry girder = 1.2 m.
Wheelbase= 3.5 m.
CIC distance between gantry rails = 15 m.
Span of gantry girder= 7.5 m.
Self-weight of rail section = 300 N/m.
Yield stress of steel = 250MPa.

Q8. 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.

Q9. Differentiate between Deck type and through type truss bridges. Show various parts of truss bridge with the aid of a diagram. Explain the design procedure of stringers.