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Total No. of Questions : 18

B.Tech. (CE) (2012 to 2017) (Sem.–7)

DESIGN OF STEEL STRUCTURES-II

Subject Code : BTCE-801

M.Code : 71859

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.**
4. **Assume missing data.**

SECTION-A

Answer briefly :

1. List specifications for the design of fillet weld.
2. What is gantry girder? Draw a neat sketch of any gantry- girder.
3. What are the different modes of failures of a plate girder?
4. Write Fuller's formula. Indicate the meaning of various notations used.
5. What is meant by transverse bents?
6. Define efficiency of Joint.
7. What is difference between riveted plate girder and welded plate girder?
8. Explain Stringer?
9. What is the purpose of bearing in bridges?
10. What do you mean by economical span length with reference to bridges?

SECTION-B

11. ISMB 350@ 540 N/m is to join a column ISHB 300@ 588 N/m. The beam has to transmit end reaction of 250 kN. Design a stiffened seat connection.
12. Differentiate between Deck type and through type truss bridges. Show various parts of truss bridge with the help of a diagram.

13. 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.

14. Discuss the various functions of bearing?

15. Derive the expression for the economical depth of a plate girder. Assume moment is resisted by flanges only.

SECTION-C

16. 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 = 250 kN.

    Self-weight of crane girder excluding trolley = 200 kN.

    Self- weight of trolley, electric motor, hook etc = 50 kN.

    Approximate minimum approach of crane hook to the gantry girder = 1.2 m.

    Wheel base= 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.

17. Design a railway bridge for following data :

    Type of bridge = Deck type plate girder bridge.

    Span = 16m between centers of bearings.

    Gauge - broad, single track, main line.

    Distance between centers of plate girders = 2 m.

18. Explain the following :

    a) Portal sway Bracing

    b) Mill bent

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.