**18CE504**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **February, 2021** | **Civil Engineering** | | |
| **Fifth Semester** | **Design of Steel Structures** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer ANY FIVE Questions from the following.* | | | (5X10 = 50 Marks) |
| ***Note: 1. Using IS 800:2007 and Steel Tables is permitted.*** | | | |
| ***2. Assume any necessary suitable data if required.*** | | | |

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| 1. |  | A tie member of a roof truss consists of 2 ISA 100X75X8mm. The angles are connected to either side of a 10mm gusset plates and the member is subjected to a working pull of 300KN. Design the welded connections are made in the workshop. | 10M |
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| 2. |  | Design a lap joint between the two plates each of width 120mm, if the thickness of one plate is 16mm and the other is 12mm. The joint has to transfer a design load of 160KN. The plates are of Fe 410 grade. Use bearing type bolts. | 10M |
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| 3. |  | Design double angle tension member connected on each side of a 10mm thick gusset plate, to carry an axial factored load of 375KN. Use 20mm black bolts. Assume shop connection. | 10M |
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| 4. |  | A column 4m long has to support a factored load of 6000KN. The column is effectively held at both ends and restrained in direction at one of the ends. Design the column using beam sections and plates. | 10M |
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| 5. |  | Design a slab base for a column ISHB300@577N/m carrying an axial factored load of 1000kN. Use M20 for concrete foundation. | 10M |
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| 6. |  | A column section ISHB350@710N/m with two plates 450mmX20mm carrying a factored load of 3600KN. The column is to be supported on concrete pedestal to be built with M20 concrete. | 10M |
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| 7. |  | Design a simply supported beam of effective span 1.5m carrying a factored load of 360KN at mid span. Assume it is laterally supported beam. | 10M |
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| 8. |  | Design a laterally unsupported I beam with simply supported ends of effective span 6m subjected to a working load of 35KN/m inclusive of DL,LL &FF. | 10M |
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| 9. |  | Design a connection for a bracket which is connected in the plane of the flange of a column. The width of the flange of the column is 200mm. CO5 | 10M |
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| 10 |  | Design a seat angle connection for a beam [ISMB350@52.4Kg/m](mailto:ISMB350@52.4Kg/m) which transfers a factored end shear of 200kN to the flange of the column ISHB300@63kg/m. | 10M |

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