Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **18CE3022** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ADVANCED STEEL DESIGN** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

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| **Q. No.** |  | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Write short notes on the following:   1. Failure modes of column. 2. Lateral torsional buckling. | CO6 | 16 |
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| 2. |  | Analyse the lateral torsional buckling capacity of laterally unrestrained column section ISHB 400, Length of column 5m. | CO3 | 16 |
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| 3. |  | Design a welded stiffened seat connection to join ISMB 300 with a column section ISHB 400. The beam transmits an end reaction of 400Kn due to factored loads. | CO4 | 16 |
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| 4. |  | Analyse the truss for the following data  Determine the critical loads on the pitched roof truss for the following data  Height of the column –7.5m  Span of the truss - 18m  Height of the truss - 3m  Spacing of the truss - 4.5m  Spacing b/w purlin - 1.5m c/c  Assume the roof covered with GI sheets and the building located in Delhi. | CO3 | 16 |
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| 5. |  | Derive the shape factor for the following section   1. Rectangular section. 2. Tee section. | CO2 | 16 |
|  |  |  |  |  |
| 6. |  | A three story steel building is located in seismic zone III on hard soil. The framing system of the building is special moment-resisting frame without brick masonry infill panels. Find the base shear and its distribution along the height of the building. Column sections: ISHB 450 @872N/m, Beam sections: ISMB 400 @616 N/m Slab: 100mm thick RCC slab on all floors. Size of building 25x25m, Height of each floor - 3m, Live load - 3kN/m2. Assume the relevant data. | CO3 | 16 |
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| 7. |  | Analyse the Axial compression load carrying capacity of welded plate girder column section in a pre-engineered building. Length of the column is 6m. Assume the column is fixed at both ends.  Width of flange – 300mm  Thickness of flange – 12mm  Depth of web – 450mm  Thickness of web – 10mm | CO3 | 16 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. |  | Two channels of 180mmx80mm section with bent lips are connected with webs to act as beam. The thickness of the plate is 2.5mm and the depth of the lip is 25mm. The beam has an effective span of 6m. Determine the load carrying capacity of beam. Take fy-235N/mm2. | CO2 | 20 |