Enrollment No.

**NAVRACHANA UNIVERSITY**
a UGC recognized University

**School:** School of Engineering and Technology
**Program/s:** B.Tech Civil Engineering
**Year:** 3rd **Semester:** 6th
**Examination:** End Semester Examination
**Examination year:** May - 2023

**Course Code:** CE306 **Course Name:** **Design of Structures II**
**Date:** 18/05/2023 **Total Marks:** 40
**Time:** 02:00 p.m. to 04:00 p.m. **Total Pages:** 01

***Instructions***

- *Use of IS: 800: 2007 and Steel table is permitted*
- *Assume suitable data if required, and mention the same*

| Q. No. | Details | Marks | COs* | BTL# |
|---|---|---|---|---|
| Q.1 | A steel column has to carry axial load of 800 kN load with moment of 40 kN-m along its major axis. The length of the column is 3.4 m. Considering k = 0.75, suggest suitable section considering only material strength check. Assume suitable data if required and mention the same. | 10 | CO3<br>CO2 | BT5 |
| Q.2 | Calculate minimum thickness required for base plate of size 600 x 600 mm for following details. Steel column size = ISMB300, Axial Factored load = 650 kN, Grade of concrete pedestal = M25, size of concrete pedestal = 700 x 700 mm. Assume suitable data if required. | 05 | CO3<br>CO4 | BT5 |
| Q.3 | Suggest suitable section for fixed beam, which is laterally supported over a span of 4 m carrying UDL of 25 kN/m over the entire span. Perform all required checks. Consider fy =300 MPa. | 10 | CO1<br>CO2 | BT5<br>BT4 |
| Q.4 | Suggest suitable angle section for truss member carrying axial load of 130 kN tensile load. Perform all required checks. Consider fy =300 MPa and fu=420 MPa. The length of the member is 1.3 m | 10 | CO2<br>CO4 | BT5<br>BT4 |
| Q.5 | Calculate ***only shear force*** considering the following data for gantry girder. Assume suitable data if required and mention the same.<br>• Weight of crane girder = 215 kN<br>• Crane Capacity = 250 kN<br>• Weight of crane = 30 kN<br>• Span of crane girder = 22 m<br>• Span of gantry girder = 6 m<br>• Wheel base = 2 m<br>• Hook approach = 1.5 m<br>• Weight of rail = 1 kN/m<br>• Fy = 250 MPa | 05 | CO3 | BT3 |
| | **OR** | | | |
| | What do you mean by castellated steel beam? Explain its advantages over rolled steel beams. | | CO1 | BT1 |

**************End of Question Paper**************