

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(MID SEMESTER EXAMINATION)**

**CLASS: B.TECH  
BRANCH: CIVIL**

**SEMESTER: III  
SESSION : MO/2019**

**SUBJECT : CE201 SOLID MECHANICS**

**TIME: 2 HOURS**

**FULL MARKS: 25**

**INSTRUCTIONS:**

1. The total marks of the questions are 25.
2. Candidates may attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.

- 
- Q1 (a) What is Saint Venant's Principle? [2]  
Q1 (b) What is the difference between Engineering stress strain curve and True stress strain curve? [3]
- Q2 (a) What do you mean by Proof stress? [2]  
Q2 (b) Derive the general expression for thermal stress for a partially restricted bar subjected to increase in temperature. [3]
- Q3 Draw the Bending Moment diagram for the cantilever beam subjected to uniformly varying load as shown in Figure: 1 [5]

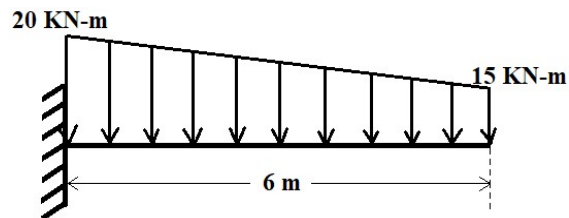


Figure: 1

- Q4 Consider the cantilever beam from Figure: 01 with a square cross section of area 40000 sqmm and show the shear stress variations throughout the cross section of the beam at the fixed support. [5]
- Q5 Derive the general Torsional Equation for a circular shaft subjected to torsion on one end and fixed on the other end. [5]

: : : : : 23/09/2019 : : : : : E