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**CE-222 (CBCS)****B.E., III Semester**

Examination, December 2017

**Choice Based Credit System (CBCS)****Strength of Materials***Time : Three Hours**Maximum Marks : 60*

- Note:** i) Attempt any five questions out of eight questions.  
 ii) All questions carry equal marks.  
 iii) Assume data if any missing/required.

1. What do you understand by the term simple stress and strain? Also explain "Mohr's Circle" of stress and strain.
2. Deduce an expression for Pure Bending equation  

$$\frac{M}{I} = \frac{f}{y} = \frac{E}{R}$$
3. Deduce an expression for the stress distribution for simply supported beam having a circular cross-section.
4. What are various methods to determine slope and deflection of indeterminate beams? Explain any one in detail.
5. Deduce an expression for Euler's formula for axially loaded long column.

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6. What are various "Theories of failure"? Explain any two theory of failure.
7. What do you understand by "Pure torsion"? Also deduce an expression for pure torsion equation.
8. Write short notes on any four of following:
  - a) Shear Center
  - b) Unsymmetrical Bending
  - c) Principal Planes
  - d) Rankine's formula
  - e) Thin pressure Vessels

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