Code No: R1622012 **R16** SET - 1

II B. Tech II Semester Regular Examinations, November - 2018
STRENGTH OF MATERIALS-II
(Civil Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1 a) Define (i) principle stress and (ii) principal planes. Explain their uses.
b) What do you meant by strength of a shaft?
c) What are the classifications of columns?
d) Define slenderness ratio
e) Define shear centre. What is the importance of shear centre?
f) Write the types of trusses?

PART-B

2 a) Show that in a strained material subjected to the two- dimensional stress, the sum of the normal components of the stresses on any two mutually perpendicular planes is constant.
b) Write short note on Mohr’s Circle of stress.

3 a) When a circular shaft is subjected to torsion, show that the shear stress varies linearly from the axis to the surface?
b) In torsion, a hollow circular shaft is preferred to a solid circular shaft. Justify the statement.

4 a) Explain the assumptions made in the Euler’s column theory. How far are the assumptions valid in practice?
b) Define the slenderness ratio. State the limitations of the Euler’s formula.

5 Prove that an eccentric load causes a direct stress as well as bending stress.
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6 a) A cantilever of length 1m carries a point load of 2000 N at the free-end. The cross-section of the cantilever is an unequal angle of dimensions 100mm by 60 mm and 10mm thick. The small leg of the angle (i.e., 60 mm) is horizontal. The load passes through the centroid of the cross-section. Determine:

(i)Position of neutral axis and

(ii) The magnitude of maximum stress up, at the fixed section of the cantilever.

b) How will you find the resultant stress in unsymmetrical bending?

7 Using the method of joints determine the forces in all the members of pin jointed plane truss shown in below figure