

SIR C.R.REDDY COLLEGE OF ENGINEERING, ELURU
DEPARTMENT OF CIVIL ENGINEERING
II Year First Semester, Academic Year 2018-19

I -Assignment

Subject: R16-21013, Strength of Materials-I, Mr. K.Srinivasa Rao

BATCH – 1

1. State the assumptions in theory of simple bending and derive the governing formula.
2. Deduce the total extension of a uniformly distributed tapering rod of diameter 'd' and 'D' over a length of 'L', when the rod is subjected to an axial load 'P'.
3. Determine the % change in volume of a steel bar 7.6cm² section 1m long when subjected to an axial compressive load of 20KN. What change in volume would a 10cm cube of steel suffer at a depth of 4.8KM in sea water
4. A simply supported beam 6m long carrying a load of 40kn/m, 20kn/m and 10kn/m acting over a length of 2m, 2m to 4m and 4m to 6m from the left support respectively draw the SFD & BMD.
5. Compare the behavior of mild steel, high strength steel, copper, brass, aluminium, cast iron and concrete when subjected to load test failure.

BATCH - II

6. Derive the relation between E, K & G.
7. Draw the stress-strain diagram for mild steel, indicate salient points and define them.
8. The following results were obtained in a tensile test of mild steel specimen of original diameter 20mm and a gauge length of 40mm. at the limit of proportionality the load was 80KN and the extension was 0.048mm. the specimen yielded at a load of 85KN and the maximum load withstood was 150KN. When the two broken parts were fitted together the length between the gauge marking was found to be 55.6mm and the minimum diameter at the neck was 15.8mm. calculate,
 - 1) Modulus of Elasticity
 - 2) Stress at limit of proportionality
 - 3) Yield stress
 - 4) Ultimate stress
 - 5) % elongation in length
 - 6) % reduction in area
9. State the assumptions in theory of simple bending and derive the governing formula.
10. A simply supported beam 10m long carrying a UDL of 5kN/m over a length of 5m from a left support and concentrated load of 50KN acting at 3m from right support. Draw the SFD BMD and insert the principal values.
