

[5926]-155

T.E. (Mechanical Engineering)
COMPUTER AIDED ENGINEERING
(2019 Pattern) (302050) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates.

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Figures to the right side indicate full marks.
- 3) Draw neat diagram wherever necessary.
- 4) Assume suitable data, if necessary.

Q1) a) Figure shows the stepped bar subjected to load P_1 (at center) and P_2 using 1-D element. [9]

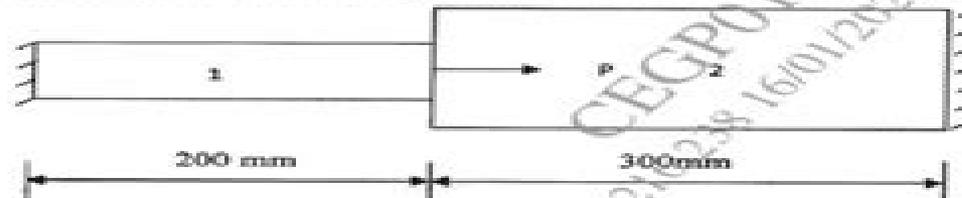
$E = 200 \text{ GPa}$, $P_1 = 50 \text{ kN}$, $P_2 = 20 \text{ kN}$. Find

- i) Nodal displacement
- ii) Stresses in each element



b) An axial load $P = 300 \times 10^3 \text{ N}$ is applied at 20°C to the rod as shown in figure. The temperature is then raised to 60°C . [8]

- i) Assemble the K and F matrices
- ii) Determine the nodal displacement and element stresses



P.T.O.

Computer Aided Engineering Mathematics

DJ Losen



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