

Total No. of Questions – [2]

Total No. of Printed Pages – [1]

G.R. No.

P118 -111(T2)

OCTOBER 2018 / IN - SEM (T2)
F. Y. M. TECH. (Structures) (SEMESTER - I)
COURSE NAME: (CVPB11181) Theory of Elasticity
(2018 PATTERN)

Time: [30 Minutes]

[Max. Marks: 10]

(*) Instructions to candidates:

- 1) Answer Q.1 OR Q.2, Q.3 OR Q.4
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed
- 4) Use suitable data where ever required

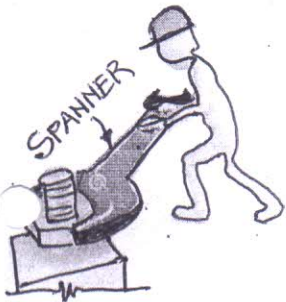
- Q.1) a) Show the stress and strain tensor for plane stress and plane strain conditions. [3 marks]
- b) Write a short note on boundary value problems of elasticity in solid mechanics. [3 marks]
- c) Compute Lamé's coefficients λ and μ for mild steel,
Given, $E = 2.1 \times 10^5 \text{ MPa}$, $\nu = 0.2$ [2 marks]
- d) Define the relations between elastic constants. [2 marks]

OR

- Q.2) a) Discuss the Generalized Hook's law with reference to the constitutive matrix for the given cases. Also discuss the number of elastic constants these cases would have. (i) anisotropic body,

- (ii) material with one plane of elastic symmetry and
(iii) homogeneous isotropic linearly elastic continuum [4 marks]

- b) Which is the simplest type of problem to be used for analyzing the spanner behaviour when it is tightening the nut-bolt? Why? [2 marks]



- c) Which of the following material is more elastic? [1 mark]
i) Rubber; ii) Glass; iii) Steel; iv) Wood

- d) The value of Poisson's ratio depends upon? [1 mark]
i) Nature of load, tensile or compressive
ii) Magnitude of load
iii) Material of the test specimen
iv) Dimensions of the test specimen

- e) In a composite body, consisting of two different materials.....will be same in both materials. [1 mark]
i) Stress; ii) Strain; iii) Both stress and strain; iv) None of these

- f) Theoretical value of Poisson's ratio lies between [1 mark]
i) -1 to 0.5; ii) 1 to 2; iii) 0.5 to 1; iv) None

!!==Wish you all the best==!!