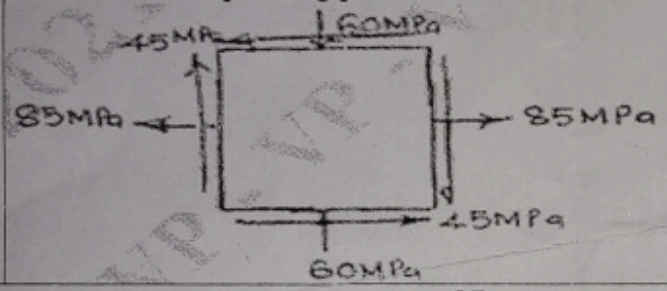
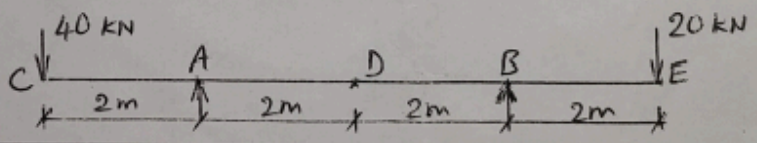
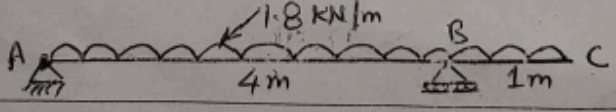
Vivekananda College of Engineering & Technology,Puttur [A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®] Affiliated to VTU, Belagavi & Approved by AICTE New Delhi			
CRM08	Rev 1.10	Civil	11/03/22

CONTINUOUS INTERNAL EVALUATION- 3

Dept: Civil	Sem / Div: 3 sem	Sub: Strength of Materials	S Code: 18CV32
Date: 16-03-2022	Time: 3.00-4.30 PM	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

QN		Questions	Marks	RBT	COs
		PART A			
1	a	An element is subjected to tensile stress of 120N/mm^{2}on the vertical plane and another compressive stress of 80N/mm^2 on the horizontal plane. Compute the normal & tangential stresses on a plane making an angle of 30^o anticlockwise with the vertical plane.	12	L3	CO2
	b	For a state of stresses with σ_X = 85 MPa (tensile) σ_Y = 60 MPa (compressive) with a shear stress of 45 MPa, determine the principal stresses and locate their planes. Also obtain maximum tangential stress and locate corresponding planes. 	13	L3	CO2
		OR			
2	a	A cast iron pipe has 200 mm internal diameter and 50 mm metal thickness and carries water under a pressure of 5 N/mm^2. Calculate the maximum and minimum intensities of circumferential stresses and sketch the distribution of circumferential stress intensity and the intensity of radial pressure across the section.	12	L3	CO2
	b	The inside diameter of thick cylinder is 200 mm. If the internal pressure is 8 N/mm^2 and maximum permissible stress in cylinder wall is 20 N/mm^2, what is the minimum thickness required?. If the internal pressure is to be increased to 12 N/mm^2 without exceeding maximum stress, what is the external pressure to be applied?	13	L3	CO2
		PART B			
3	a	Derive the moment curvature equation of deflection	12	L2	CO4
	b	Calculate slope at A and deflection at D for the overhanging beam shown. Take E=200 GPa and I = 50 x 10^6 mm^4 	13	L3	CO4
		OR			
4	a	Derive an expression for slope and deflection in a simply supported beam subjected to UDL throughout. Calculate the maximum slope & deflection	12	L2	CO4
	b	Find the deflection at the free end C of overhanging beam of rectangular cross section 80 mm x 100 mm. E = 210 GN/m^2 	13	L3	CO4

Prepared by: Prof. Shivarama M S

HOD: Dr. Anand V R