

Internal Assessment Test III

Sub:	MECHANICS OF MATERIALS					Sub Code:	18ME32	Branch:	ME	
Date:	11/12/2020	Duration:	90 min's	Max Marks:	50	Sem / Sec:	3 rd A & B		OBE	
								MARKS	CO	RBT
1	Find the thickness of metal necessary for a cylindrical shell of internal diameter 160 mm to withstand an internal fluid pressure of 8 MPa. The maximum allowable or permissible or hoop stress in the section is not to exceed 35 MPa.							8	CO2	L3
2	A thick cylinder with internal diameter 80 mm and external diameter 120 mm is subjected to an external pressure of 40 MPa, when the internal pressure is 120 MPa. The circumferential and radial stress at external and internal surfaces of the cylinder are...							10	CO2	L3
3	A thin cylinder, 3 m long and 1 m in diameter with 10 mm thickness is filled completely with a fluid at a pressure of 3 MPa. Circumferential and longitudinal stresses induced in the cylinder are..... &.....							5	CO2	L3
4	A thin cylinder, 3 m long and 1 m in diameter with 10 mm thickness is filled completely with a fluid at a pressure of 3 MPa. Change in length and diameter of the cylinder are..... &..... respectively							8	CO2	L2
5	An I section 200 mm × 300 mm has web thickness 10 mm and flange thickness 10 mm carries a shearing force of 10 kN at a section. The max shear stress induced in the section is MPa.							9	CO3	L3
6	A beam of T section has flanges 100 mm × 20 mm and web 200 mm × 12 mm is subjected to a vertical shear force of 200 kN. The maximum shear stress in the section is MPa							5	CO3	L3
7	A cantilever beam of T section has flanges 100 mm × 20 mm and web 200 mm × 12 mm is subjected to a bending moment of 2.5 Nm. The compressive bending stress in the section is MPa							5	CO3	L3

CI

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HOD

ANSWER KEY

Q. No.	Answer
1	20.96 mm
2	Internal surface - 168 MPa & 120 MPa, External surface - 88 MPa & 40 MPa
3	150 MPa & 75 MPa
4	0.42858 mm & 0.6071 mm
5	3.788 MPa
6	105.8 MPa
7	642.86 MPa