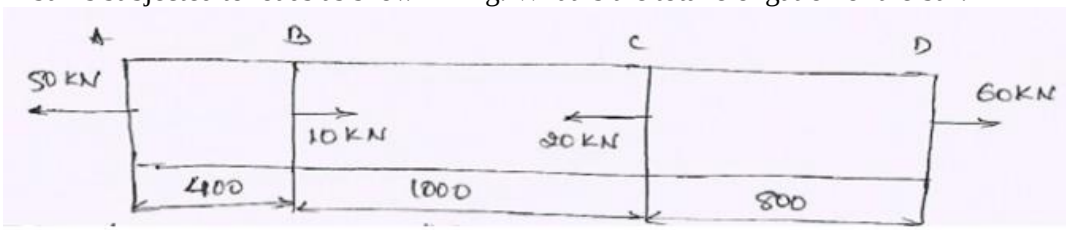
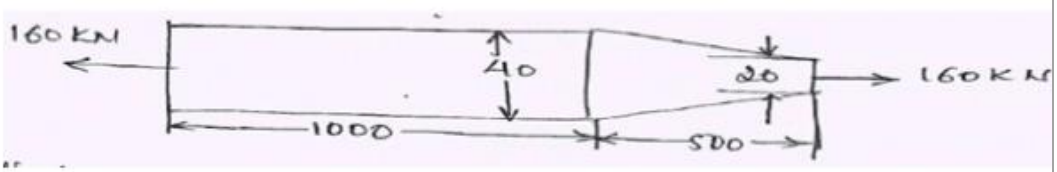
USN

Internal Assessment Test I

Sub:	MECHANICS OF MATERIALS					Sub Code:	18ME32	Branch:	ME
Date:	10/09/2020	Duration:	90 min's	Max Marks:	50	Sem / Sec:	3rd A & B		OBE

		MARKS	CO	RBT
1	A tensile test was conducted on a mild steel bar. The diameter and the gauge length of bar was 3cm and 20cm respectively. The extension was 0.21mm. What is the value to strain?	2	C01	L3
2	A rod 200cm long is subjected to an axial pull due to which it elongates about 2mm. Calculate the amount of strain?	2	C01	L3
3	A member which does not regain its original shape after removal of the load producing deformation is said _____	2	C01	L2
4	The body will regain it is previous shape and size only when the deformation caused by the external forces, is within a certain limit. What is that limit?	2	C01	L2
5	The slope of the stress-strain curve in the elastic deformation region is _____	2	C01	L2
6	Two vertical rods one of steel and the other of copper are each rigidly fixed at the top and 500mm apart. Diameters and lengths of each rod are 20mm and 4m respectively. A cross bar fixed to the rods at the lower ends carries a load of 5kN, such that the cross bar remains horizontal even after loading. Take Es = 210 GPa and Ec = 100 GPa. Stresses in copper and steel rod are _____ & _____ respectively.	10		
7	A bar is subjected to loads as shown in fig. What is the total elongation of the bar? 	10		
8	A steel rod of 3 cm diameter is enclosed centrally in a hollow copper tube of external diameter 5 cm and internal diameter of 4 cm. The composite bar is then subjected to an axial pull of 45000 N. If the length of each bar is equal to 15 cm, then stresses in steel rod and copper tube are _____ MPa & _____ MPa respectively. Take Es = 210 GPa and Ec = 110 GPa	10		
9	1.5 m long steel bar is having uniform diameter of 40 mm for a length of 1 m and in the next 0.5 m its diameter gradually reduces from 40 mm to 20 mm as shown in fig. The bar is subjected to a tensile load of 160 kN and E = 200 Gpa. The total elongation of the bar is _____ ? 	10		

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ANSWER KEY

Q. No.	Answer
1	0.00105
2	0.001
3	Plastic
4	Elastic limit
5	Elastic modulus
6	5.35 MPa & 10.61 MPa
7	1.719 mm
8	41.77 MPa & 21.88 MPa
9	1.2372 mm