Sanjay Ghodawat University, Kolhapur

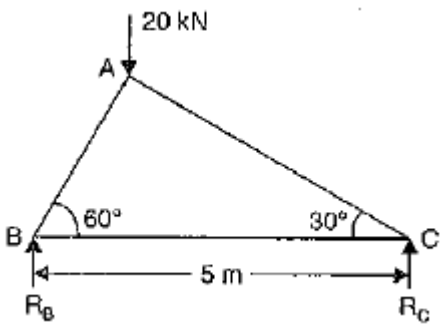
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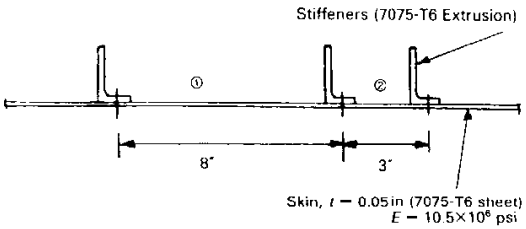
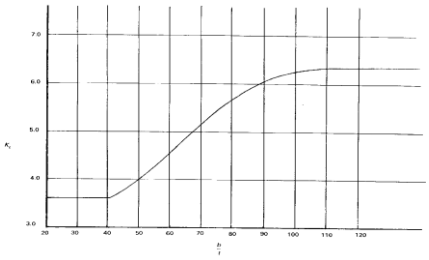
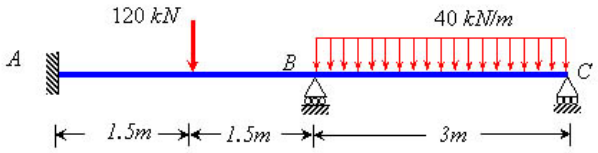
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EXM/P/09/00

Year and Program: TY B.Tech	**School of Commerce and Management**	**Department: Aeronautical Engineering**
Course Code: AET302	**Course Title: AIRCRAFT STRUCTRE II**	**Semester : VI**
Day and Date: Monday 07.06.2021	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions are compulsory.

Q.1		**Answer/Solve the following (any Two)**	**Marks**	Bloom's Level	CO
	a)	Find the forces in the members AB, AC and BC of the truss shown in the Fig. 	8	4	CO1
	b)	What do you mean by truss and explain different types of trusses?	8	2	CO1
	c)	Plot a V-n diagram for the following flight data at sea level. Gross weight = 215912 kg; Wing area = 359.53 m^2; Max positive Lift Coefficient = 1.91; Max negative Lift Coefficient = -1; Max positive Load Factor = 2.54; Max negative Load Factor = -1.27; Design Cruise Velocity = 190m/s; Design Dive Velocity = 219.5m/s.	8	5	CO2
Q.2		**Answer/Solve the following (any two)**			
	a)	Derive the expression for potential energy of thin plate subjected to bending and twisting using energy method.	8	3	CO3
	b)	Assuming allowable crippling stress of stiffeners = 25000psi. Find the effective width.	8	5	CO4

		 			
	c)	Analyze the continuous beam shown in Figure by the Clapeyron three moment equation. Draw the shear force and bending moment diagram. 	8	5	CO4
Q.3		**Answer/Solve the following (any two)**			
	a)	A SAE 1045 steel rod (σ_{ys} = 309.9 MPa) of 80 mm diameter is subjected to a bending moment of 3 kNm and torque T. Taking Factor of safety as 2.5, find the maximum value of torque T that can be safely carried by rod according to: (i)Maximum normal stress theory, (ii)Maximum shear stress theory.	9	4	CO5
	b)	A bolt is subjected to an axial pull of 8 kN and a transverse shear force of 3 kN. Determine the diameter of the bolt required based on (i)Maximum principal stress theory, (ii) Maximum shear stress theory. Take elastic limit in simple tension = 270 N/mm^2. Poisson's Ratio = 0.3. Adopt a factor of safety = 3	9	4	CO5
	c)	Write short notes on (i) leading edge repair, (ii) spar repair	9	2	CO6

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