



DURGAPUR INSTITUTE OF ADVANCED TECHNOLOGY & MANAGEMENT

PC-ME602 Assignment

Assignment 1 18/04/2023

1. What are the three basic modes of failure of mechanical components?
2. What is the factor of safety? Why is it necessary to use the factor of safety?

Assignment 2 19/04/2023

1. Why is a taper provided only on one side? What are the advantages of a cotter joint?
2. What are the advantages of a knuckle joint?

Assignment 3 20/04/2023

1. 'When a thick leather belt is bent, cracks appear on the outer surface while folds on the inner side.' Why?
2. Give examples of mechanical components that fail by yielding.

Assignment 4 21/04/2023

1. What are the important theories of elastic failures?
2. State maximum principal stress theory of failure.

Assignment 5 25/04/2023

1. Two rods are connected by means of a cotter joint. The inside diameter of the socket and outside diameter of the socket collar are 50 and 100 mm respectively. The rods are subjected to a tensile force of 50 kN. The cotter is made of steel 30C8 ($S_{yt} = 400 \text{ N/mm}^2$) and the factor of safety is 4. The width of the cotter is five times its thickness. Calculate :
 - (i) width and thickness of the cotter on the basis of shear failure: and
 - (ii) width and thickness of the cotter on the basis of bending failure.



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