Indian Institute of Technology, Guwahati

ME 101 – Engineering Mechanics

Tutorial - 02

16th January 2014

Duration: 55mins; Total Marks: 80 @ 10 for each question

Problems 1 and 2 will be solved by the tutor at the beginning of the tutorial class. Students are supposed to solve problems 3 to 6 in the tutorial class and submit them before leaving. Problems 7 to 10 have to be solved as assignment and must be submitted in the following tutorial class.

(1) Calculate the force in BC, BD & ED of the loaded truss using method of section.

3 m

С

3 m

B

Prob. 1

-2 kN

(2) Determine the forces in members AB. AC and AD using method of joint.



- (4) Determine the force in member DG of the loaded truss using method of section.
- (5) The space truss shown is secured to the fixed supports at A, B and E and is loaded by the force L which has equal x- and y- components but no vertical z- components. Show that there is a sufficient number of members to provide internal stability and that their placement is adequate for this purpose. Next determine the forces in members CD, BC and CE using method of joint.



3 m



Instructions: All dimensions are in mm unless otherwise mentioned. Books and class-notes may be referred in 1 tutorial class.







(6) The lengthy boom of an overhead construction crane, a portion of which is shown is an example of a periodic structure- one which is composed of repeated and identical structural units. Use the method of sections to find the forces in members FJ and GJ.



(7) Determine the force and it's nature (tension/compression) for the inverted Howe roof truss shown. Solve by method of joint and method of section and compare the result.

Instructions: All dimensions are in mm unless otherwise mentioned. Books and class-notes may be referred in tutorial class.

(8) Identify the zero force member/s and determine the forces in the remaining members for the given truss using method of joints. Also find the member force in BJ by method of section and compare the results.



(9) The truss shown consists of nine members and is supported by two short links at each of the joints A, B and C. Determine the force in each of the members for the given loading. Solve by method of joint.



Instructions: All dimensions are in mm unless otherwise mentioned. Books and class-notes may be referred in tutorial class.

(10) For the given loading, determine the member forces in FG and GO with it's nature using method of section.



Prob. 10

Instructions: All dimensions are in mm unless otherwise mentioned. Books and class-notes may be referred in 4 tutorial class.