EM Assignment-2 Section-A & C (1)

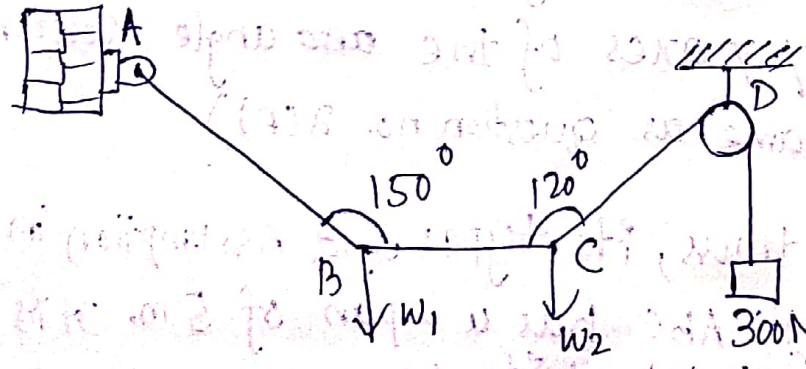
Short question

(1) (a) Define Kinetics & Kinematics.
(b) Define Composition & resolution of forces.
(c) Define Parallelogram law of forces.
(d) What is Moment and its types.
(e) State Lami's theorm.
(f) Difference between like and unlike parallel forces.
(g) The C.G. of an equilateral triangle with each side (a) is _____ from any of three sides.
(h) State Parallel Axis theorm.

6-mark question

(2) (a) Two forces act at an angle of 120°. The bigger force is of 40N and the resultant is perpendicular to the smaller one. Find the smaller force.

(b) A light string ABCDE whose extremity A is fixed, has weights W_1 & W_2 attached to it at B and C. It passes round a small smooth peg at D carrying a weight of 300N at the free end E as shown in fig.

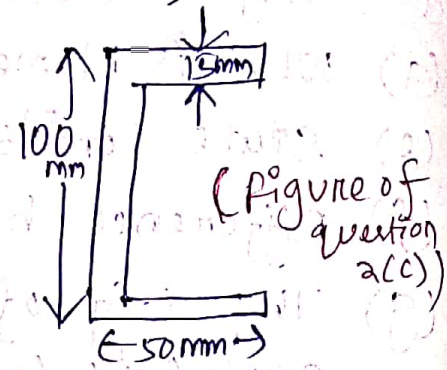


If in the equilibrium position, BC is horizontal and AB and CD make 150° and 120° with BC. Find

i) Tension in the portion AB, BC & CD of the string

ii) Magnitudes of W_1 & W_2.

(c) Find the C.G of a channel section 100mm x 50mm x 15mm.

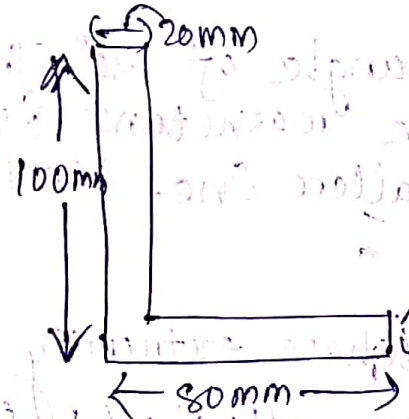


(Figure of question 2(c))

(d) Prove M.I of triangular section about base, Apex and C.G of the section.

(e) state and prove the Perpendicular Axis theorm.

(f) Find the Centroid of an unequal angle section 100mm x 80mm x 20mm.

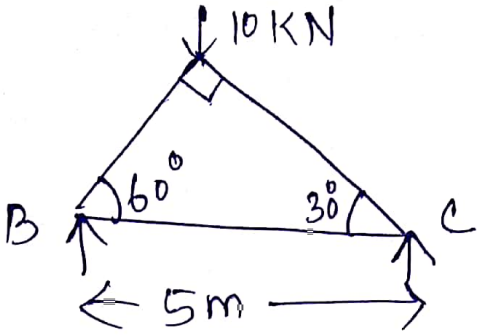


Long question

(3) Find the moment of Inertia about Centroidal x-x and y-y axes of the ~~aaaa~~ angle section.
(Figure same as question no. 2(f))

(4) Define truss, its types and Assumption in ~~frame~~ truss.
The truss ABC has a span of 5 m. It is carrying a load of 10KN at its Apex.

Find the forces in the members AB, AC & BC.



(5) Find the M.I of a hollow Section about an axis passing through its C.G or parallel X-X axis.