Total No. of Printed Pages:2

CODE NO:- K-31

FACULTY OF ENGINEERING AND TECHNOLOGY

F .E. (All) Examination Nov/Dec 2015

Engineering Mechanics

(Revised)

[Time: Two Hours] **[Max. Marks: 40]**

"Please check whether you have got the right question paper."

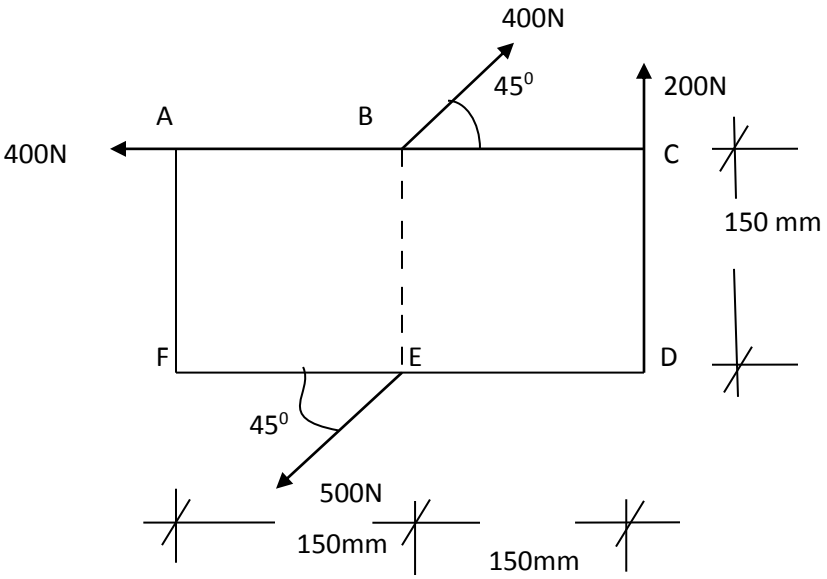
N.B i) Q.No.1 is compulsory.
ii) Attempt any two questions from the remaining.
iii) Figures to the right indicate full marks.
iv) Assume suitable data, if required.

Q1. Attempt any five questions from the following. 10

i) State the laws of parallelogram of forces.
ii) Resultant
iii) Laws of static friction.
iv) Couple
v) Define Resolution and composition.
vi) Principle of superposition.
vii) Equilibrium
viii) Radius of Gyration.

Q2 a) The resultant of two forces when they act right angle is 10N while it is $\sqrt{148}$ when they make an angle of 60^0. Determine the magnitude of two forces. 7

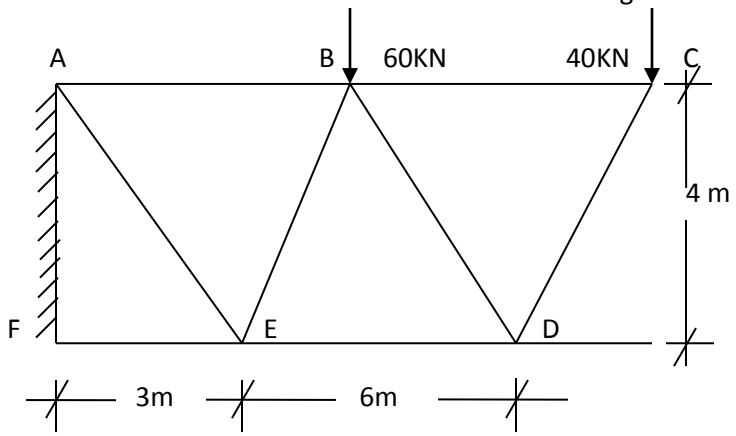
b) A force system is shown in fig Ac=FD=300mm and AF=CD=150 mm B&E are midpoints of AC & FD respectively. Find the equivalent force couple system acting at the point. 8



Q3 a) Show that the moment of inertia of a rectangular section about x-x axis passing through C.G. of the section is $bd^2/12$. 6

b) A ladder 5m long and weighing 300 N is placed against vertical wall and resting on a rough floor. Inclination of ladder with horizontal is 60^0 .A man weighing 850 N climbs on ladder. At what position of the man ladder will just start sipping if coefficient of friction at all contact surface is 0.2. 9

Q4. Determine the forces in all the members of the frames as shown in fig. Indicate the nature of the forces also. 15



Q5. a) What is the assumption in analysis of truss? 3

b) Determine the moment of inertia of shaded area with respect to x-axis. 12