

BHARATI VIDYAPEETH COLLEGE OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING

TEST- I

CLASS: F.E.

SEM: I

SUBJECT: - ENGINEERING MECHANICS

DURATION: 01 HRS.

MAX. MARKS: - 20

DATE: - 01 /09/ 2015

Instructions:

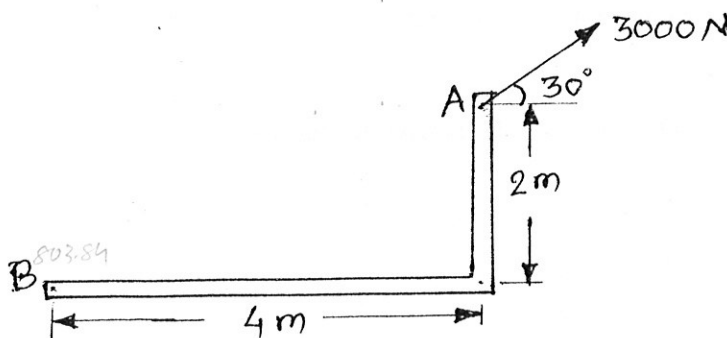
1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

Marks

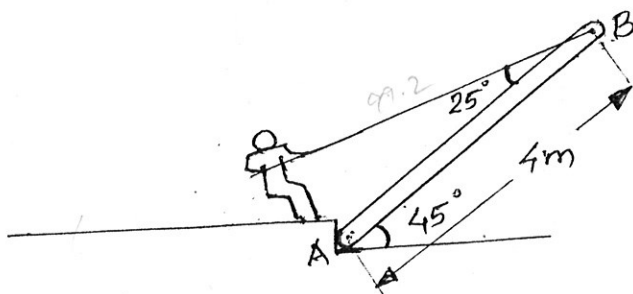
Q.1 Attempt any five.

10

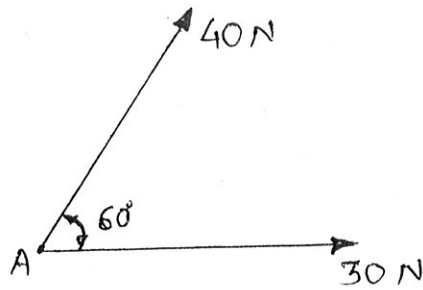
- a) Replace the force 3000 N from point 'A' by equivalent force couple at 'B'.



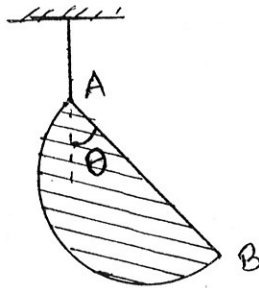
- b) A man raises a 12 kg joist of length 4 m by pulling the rope. Find tension in the rope.



c) Find the resultant of given force system

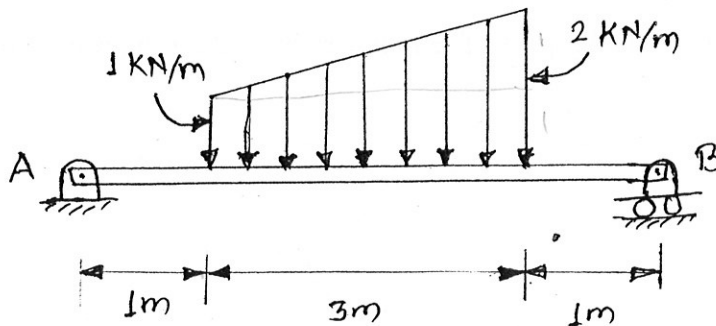


d) A thin homogeneous semi circular plate of radius 'r' is suspended from its corner 'A' as shown in fig. Find the angle made by its diameter 'AB' with the vertical

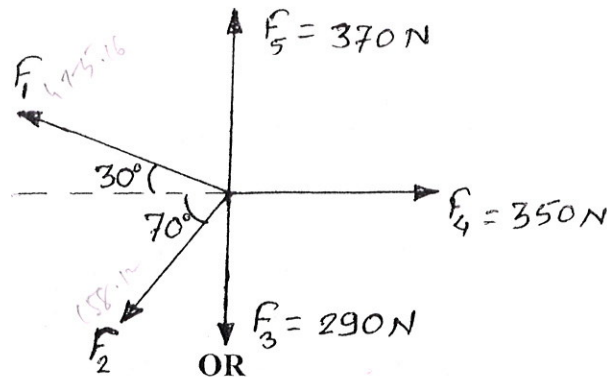


e) State Lami's theorem

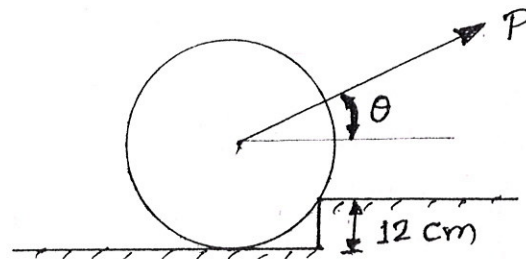
f) Draw the FBD of beam 'AB' shown in fig.



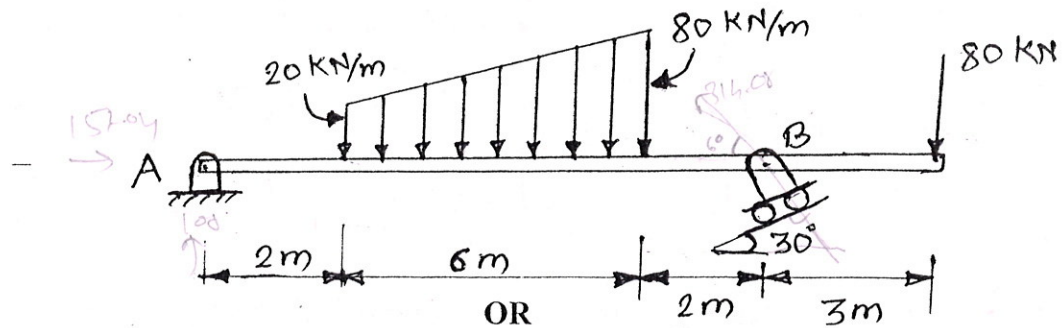
Q.2 (A) Determine the magnitude and direction of forces F_1 & F_2 when the resultant of the given force system is found to be 800 N along positive X-axis. 05



(B) Determine the minimum value of force 'P' required to start a roller of radius 50 cm over a obstruction 12 cm high if roller is of mass 100 kg as shown in fig.05



Q.3 (A) Find the support reactions at 'A' & 'B' for the beam shown in fig. 05



(B) Locate centroid of the shaded area 05

