

Reg. No:

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations December 2018

ENGINEERING MECHANICS

(Common to CE, ME & AGE)

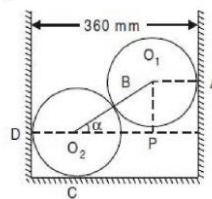
Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

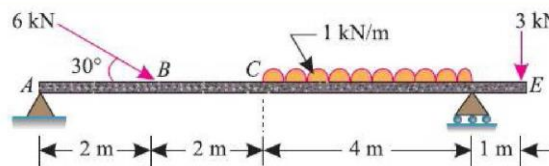
UNIT-I

- 1 Two smooth spheres each of radius 100 mm and weight 100 N, rest in a horizontal channel having vertical walls, the distance between which is 360 mm. Find the reactions at the points of contacts A, B, C and D shown in Fig 12M



OR

- 2 A beam ABCDE hinged at A and supported on rollers at D, is loaded as shown in Fig. Find the reactions at A and D 12M



UNIT-II

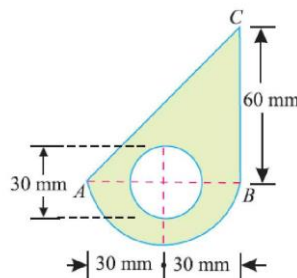
- 3 A pull of 20N, inclined at 25° to the horizontal plane, is required just to move a body placed on a rough horizontal plane. But the push required to move the body is 25N. If the push is inclined at 15° to the horizontal, find the weight of the body and coefficient of friction. 12M

OR

- 4 a. What is the screw jack? What are the applications of it? 6M
b. A body of weight 100N is placed on a rough inclined plane. Determine the coefficient of friction if a horizontal force of 60N just causes the body to slide over the horizontal plane. 6M

UNIT-III

- 5 Find the moment of inertia of the lamina with a circular hole of 30 mm diameter about the axis AB as shown in Fig. 12M

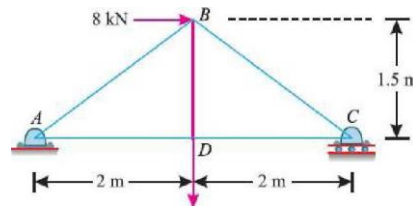


OR

- 6 Describe the method of finding out the moment of inertia of a composite section. 12M

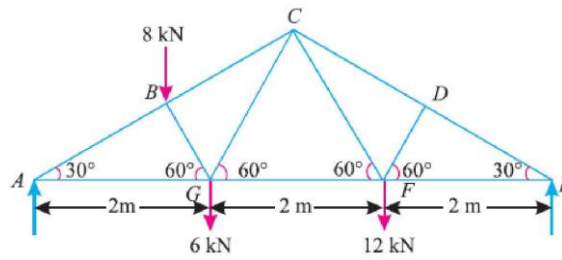
UNIT-IV

- 7 Figure shows a framed structure of 4 m span and 1.5 m height subjected to two point loads at B and D. 12M



OR

- 8 An inclined truss loaded as shown in fig. Determine the nature and magnitude of the forces in the members BC, GC and GF of the truss. 12M



UNIT-V

- 9 A stone is dropped from the top of a tower. During the last second of its flight it is found to fall 1/4th of the whole height of tower. Find the height of the tower. What is the velocity with which the stone hits the bottom of the tower? 12M

OR

- 10 A particle moves along a straight line so that its displacement in metre from a fixed point is given by $x = t^3 + 3.0 t^2 + 4.0 t + 5$, where 'x' is in meters and 't' in seconds. Find.
 (i) Velocity at start and after 4 seconds. (ii) Acceleration at start and after 4 seconds. 12M

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