Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Supplementary Examinations Dec 2019
ENGINEERING MECHANICS
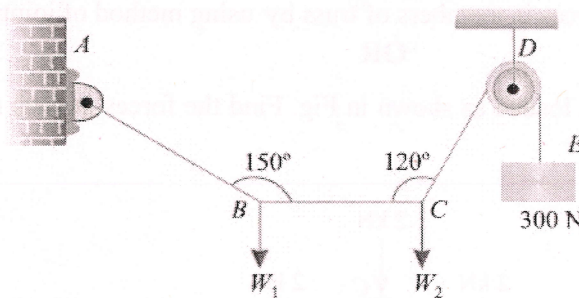**(Common to CE, ME & AGE)**

Time: 3 hours

Max. Marks: 60

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

UNIT-I

1 Light string ABCDE whose extremity A is fixed, has weights W_1 and W_2 attached to it at B   **12M**
and C. It passes round a small smooth peg at D carrying a weight of 300 N 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) Tensions in the portion AB, BC and CD of the string and
(ii) Magnitudes of W_1 and W_2.

OR

2 Explain the classification of a force system with neat sketch   **12M**

UNIT-II

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

OR

4 A ladder of length 4 m, weighing 200 N is placed against a vertical wall as shown in   **12M**
Fig. The coefficient of friction between the wall and the ladder is 0.2 and that between
floor and the ladder is 0.3. The ladder, in addition to its own weight, has to support a
man weighing 600 N at a distance of 3 m from A. Calculate the minimum horizontal
force to be applied at A to prevent slipping.
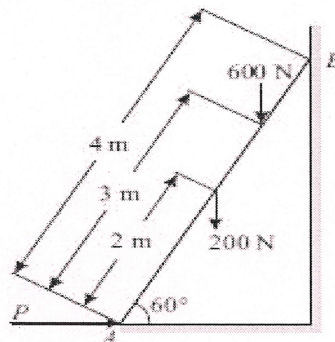
UNIT-III

5 An I-section is made up of three rectangles as shown in Fig. Find the moment of inertia of the section about the horizontal axis passing through the centre of gravity of the section. **12M**
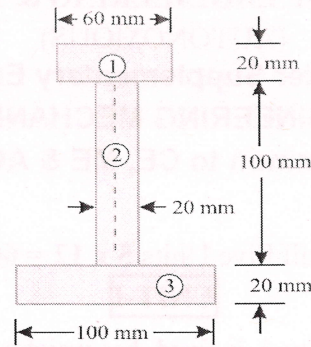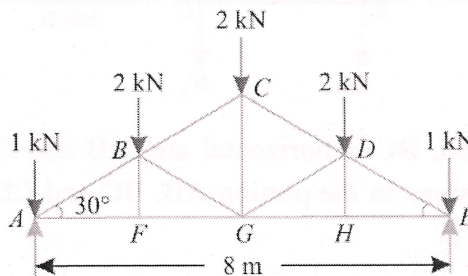

OR

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

UNIT-IV

7 Explain the procedure to find forces in members of truss by using method of joints. **12M**

OR

8 A king post truss of 8 m span is loaded as shown in Fig. Find the forces in each member of the truss and tabulate the results. **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 car moves along a straight line whose equation of motion is given by $s = 12t + 3t^2 - 2t^3$, where (s) is in metres and (t) is in seconds. Calculate (i) velocity and acceleration at start, and (ii) acceleration, when the velocity is zero **12M**

*** END ***