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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – MARCH 2019

Course: FY B. Tech GROUP A **Sem: II**

Subject Name: ENGINEERING MECHANICS **Subject Code: BTES203**

Max Marks: 20 **Date: 13/3/2019** **Duration:- 1 Hr.**

Instructions to the Students:

1. Assume suitable data wherever necessary and State it clearly.
2. Figures to Right Indicate full Marks

QUESTIONS

Marks

Q.1 Multiple choice questions 6

1. The forces ,whose line of action lies in the same plane and are meeting at one point, are known as.....

A) Co-planar concurrent forces. B) Non co-planar concurrent

C) co-planar non concurrent D) none of the above

2.If an object is on an inclined plane having an angle θ, the component of weight (w) parallel to incline is _____.

A. w cos θ B. w sin θ

C. w tan θ D. w cot θ

3.Type of distributed loads are .....

A) Point load B) Uniformly distributed load

C) Uniformly Varying load D) Both B & C

4 A Block of 500N is kept on Horizontal surface. A Horizontal force of 190N is required to just move it. If μ=0.38 what is Resultant Reaction.....

A) 500 B) 544 C) 534 D) 556

5. Second moment of area is the product of.....

A. area and square of the distance from the reference axis

B. area and distance from the reference axis

C. square of the area and distance from the reference axis

D. square of the area and square of the distance from the reference axis

6. A Truss which satisfies relation m > 2j - r then Truss is called as.....

A)Redundant Truss B)Perfect Truss c) Deficient truss D) Unstable

Q.2 Solve Any Two of the following. 3 X 2

(A) State and prove Varignon's Theorem.

(B) Locate centroid

of the following I-Section fig-1 with the following details

i) Top flange= 20mm x 10 mm ii) Bottom flange=100 mm x 20 mm

iii) web thickness=15 mm iv) overall depth 250 mm

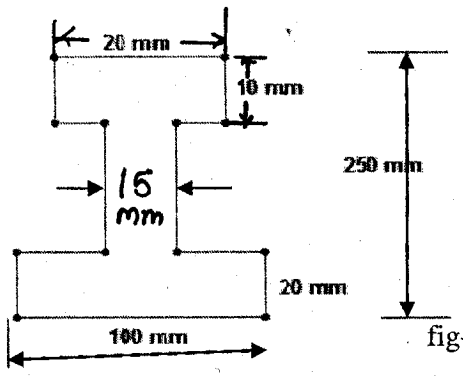

fig-1

(C) A block of weight 600N is placed on a inclined plane at an angle of 20° with the horizontal. If coefficient of friction is 0.14.find the force P Applied parallel to the plane. Just move the body up the plane.

Q.3 Solve Any One of the following. 1 X 8

(A) A beam is loaded by Hinge support at A & Roller support at D. Calculate reactions at A & D, Refer Fig-2

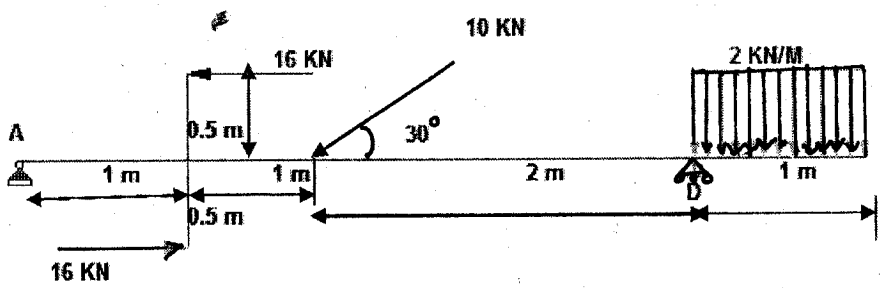

Fig-2

(B) Find the support Reactions and member forces for Truss which is supported by hinge support at A & Roller Support at C. As shown in Fig-3

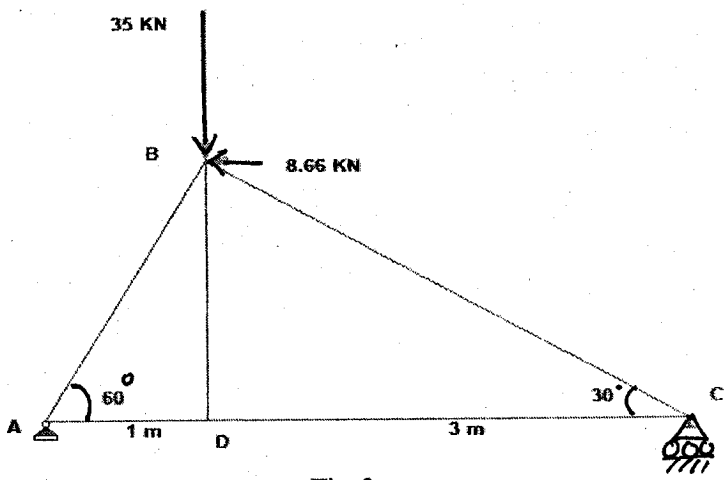

Fig-3

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