

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE –
RAIGAD -402 103**

Mid Semester Examination – October - 2017

Branch: Group B

Sem.:- I

Subject with Subject Code:-Engineering Mechanics ME 102

Marks: 20

Date:- 03/10/2017

Time:- 1 Hr.

Instructions:- Assume the appropriate data if not given

**(Marks)
(06)**

Q. No.1 Fill in the blanks

- The Free body diagram of a body we ----- all the supports and ----- them by the reactions which these supports exert on the body. (subtract, remove, add, replace, represent)
- Moment of a force about a point is equal to the ----- of the forces and ----- distance of the point from the line of action of the force. (addition, multiplication, product, parallel, perpendicular, equal)
- Frame is a structure consisting of -----bars or members pinned together and in which one or more than one of its members is subjected to more than ----- forces. (one, two, several, fix)

Q. No. 2 Attempt any one of the following:

(06)

- A uniform wheel 60 cm in diameter rests against a rigid rectangular block 15 cm thick as shown in the figure. Find the least pull force P through the centre of the wheel to just turn the wheel over the corner of the block. All surfaces are smooth. Find also the reaction of the block. The wheel weights 10,000 newtons. (Figure -1)

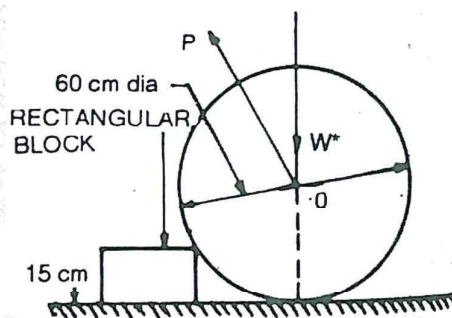


Figure -1

23A4814799595A7FADC157ADCF773596

Q.2. b) Explain and elaborate the following

- i) Parallelogram Law
- ii) Varignon's Theorem
- iii) Trusses and frames

Q.No 3. Attempt any two of the following

(08)

- a.) A beam is supported and loaded by hinged support at A and roller support at B as shown in the figure. Find the reactions at A and B (figure -2)

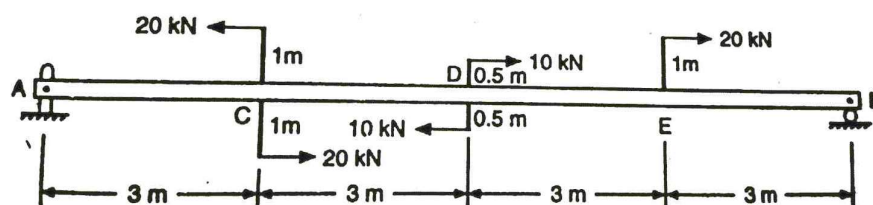


Figure -2

- b) Find the axial force in the member DE of the truss using the method of sections. (figure-3)

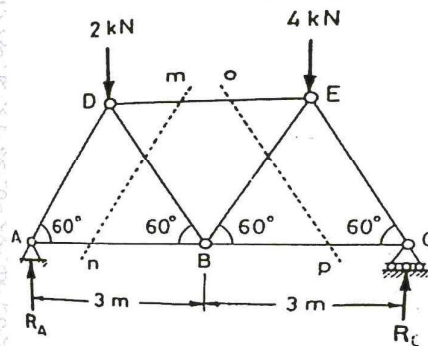


Figure-3

- c) How will you find out the resultant of two parallel forces acting in the same direction. Explain with neat diagram.

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