

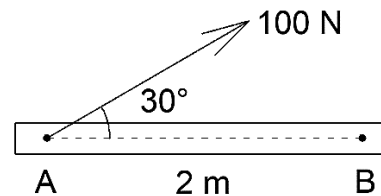
Type: MCQ

Q1. The technique of finding the resultant of a system of forces is called _____ (0.5)

1. Component
2. Resolution
3. ** Composition
4. Equivalent force-couple system

Q2. In the force system shown in figure, if the force acting at 'A' is to be replaced by a force – couple system at 'B', then the couple generated at 'B' will be, (0.5)

1. ** 100 N-m (Clockwise)
2. 200 N-m (Clockwise)
3. 100 N-m (Anticlockwise)
4. 200 N-m (Anticlockwise),



Q3. ----- states that, when a force acts upon a rigid body, its effect is same at every point along its line of action (0.5)

1. ** Principle of transmissibility
2. Varignon's theorem
3. Resolution of a force into force – couple system
4. Moment of a couple

Q4. The resultant force of two mutually perpendicular concurrent forces having equal magnitude 'P' acting on a rigid body is (0.5)

1. 2P
2. 4P
3. P
4. ** $\sqrt{2}$ P

Q5. If a beam is supported by hinge supports at both ends, then it is a _____ (0.5)

1. Statically determinate beam
2. Overhang beam
3. ** Statically indeterminate beam
4. Fixed beam

Q6. Conditions of equilibrium for a coplanar non-concurrent force system is: (0.5)

1. ** Three
2. One
3. Two
4. Four

Q7. If two forces of equal magnitudes are acting on a particle, the angle between two forces for equilibrium is (0.5)

1. 0°
2. 90°
3. 45°
4. ** 180°

Q8. When a block of weight W resting on a rough inclined plane of inclination θ does not slide, then the frictional force acting on it is (0.5)

1. ** $W \sin \theta$
2. $W \cos \theta$
3. $\mu \times W \sin \theta$
4. $\mu \times W \cos \theta$

Q9. The centroid of an equilateral triangle with each side 'a' is ----- from any of the three sides (0.5)

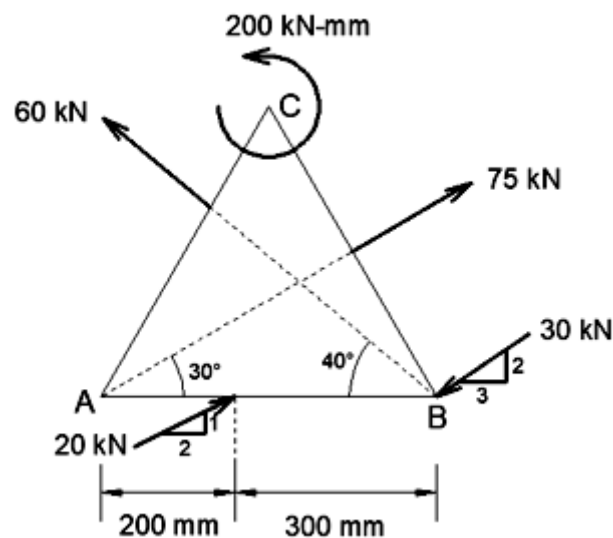
1. ** $\frac{a}{2\sqrt{3}}$
2. $\frac{a\sqrt{2}}{3}$
3. $\frac{a\sqrt{3}}{2}$
4. $\frac{a}{3\sqrt{2}}$

Q10. Which of the following theorem is used to locate the centroid of a lamina? (0.5)

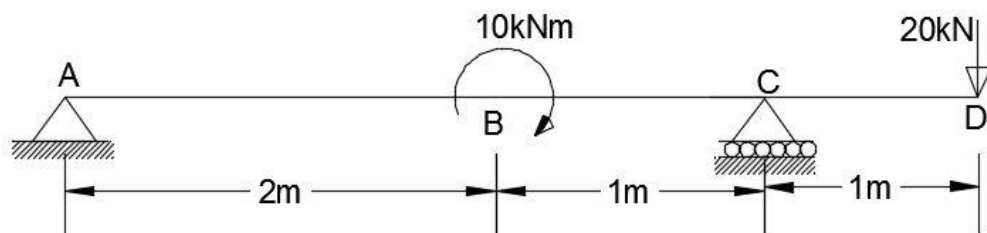
1. Lami's theorem
2. Triangle law of forces
3. ** Varignon's theorem
4. Parallel axis theorem

Type: DES

Q11. An equilateral triangle ABC of side 500 mm is subjected to forces as shown in the figure. Determine the magnitude and direction of resultant and its position with respect to 'A'. (3)

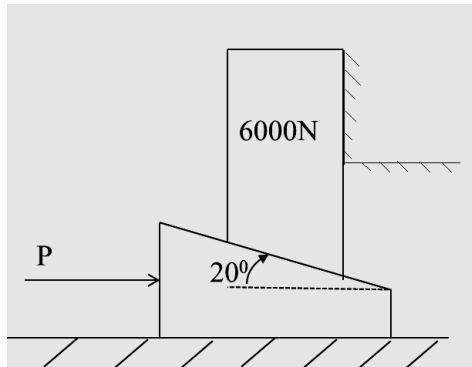


Q12. Determine the support reaction at A and C for an overhanging beam shown in figure below.



(2)

Q13. A block weighing 6000N is lifted by driving a 20° wedge having coefficient of friction $\mu = 0.27$ for all contact surfaces. Find the magnitude of P required to impend. (3)



Q14. Determine the centroidal coordinate w.r.t y -axis as shown in the fig. (2)

