

Mechanical Engineering Objective Questions - Solved

(i) According to the Principle of Transmissibility of Force...

Answer: (c) the force is shifted along its line of action

Explanation: This principle states that a force acting on a rigid body can be moved anywhere along its line of action without changing the external effect.

(ii) Which is NOT a condition for equilibrium of co-planar, non-concurrent parallel forces?

Answer: (d) The forces must always be equal in magnitude

Explanation: For equilibrium: net horizontal force, vertical force, and moment must be zero. Forces need not be equal.

(iii) Vertical component of 100 N at 60 to horizontal?

Answer: (b) 86.6 N

Explanation: Vertical component = $100 \sin(60)$ 86.6 N

(iv) Unit of a couple?

Answer: (c) N-m

Explanation: A couple is a moment (torque), and its unit is Newton-meter.

(v) Resultant in parallelogram law is maximum when angle is:

Answer: (c) 0

Explanation: Resultant is maximum when forces act in the same direction (0 between them).

(vi) Motion will impend if plane inclination > angle of friction = 12

Answer: (c) 13

Explanation: Motion starts when inclination exceeds angle of friction.

(vii) Stability increases when:

Answer: (c) Its centre of gravity is lowered

Explanation: Lower center of gravity increases stability.

(viii) Limiting force of friction is:

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Answer: (c) the friction force acting when the body is just about to move

Explanation: It is the maximum static friction right before motion begins.

(ix) In $P = mW + C$, constant C is:

Answer: (b) effort lost in friction under no load

Explanation: C is the effort needed to overcome friction even without load.

(x) Linear velocity of rim if $\omega = 10 \text{ rad/s}$, $r = 0.5 \text{ m}$?

Answer: (b) 5 m/s

Explanation: $v = r \omega = 0.5 \times 10 = 5 \text{ m/s}$

(xi) 500 W machine, work in 30 sec?

Answer: (c) 15 kJ

Explanation: Work = Power \times Time = $500 \times 30 = 15000 \text{ J} = 15 \text{ kJ}$

(xii) If efficiency is constant, Y.R. is directly proportional to:

Answer: (a) M.A.

Explanation: Efficiency = M.A./V.R. \therefore V.R. \propto M.A. when efficiency is constant.