Yakeen NEET 2.0 2026

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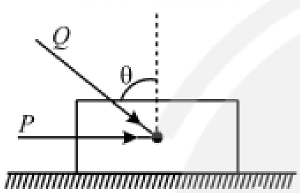
DPP: 7

Laws of Motion

Q1 A block of mass m lying on a rough horizontal plane is acted upon by a horizontal force P and another force Q inclined at an angle θ to the vertical. The block will remain in equilibrium if the coefficient of friction between it and the surface is :-



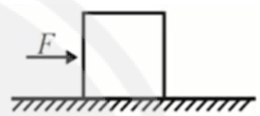
(A) $\frac{P+Q \sin \theta}{mg+Q \cos \theta}$
(B) $\frac{P \cos \theta+Q}{mg-Q \sin \theta}$
(C) $\frac{P+Q \cos \theta}{mg+Q \sin \theta}$
(D) $\frac{P \sin \theta+Q}{mg-Q \cos \theta}$

Q2 Select the incorrect statement(s) about static friction.
(I) Static friction exists on its own
(II) In the absence of applied force, static friction is maximum
(III) Static friction is equal and opposite to the applied force upto a certain limit

(A) I only
(B) II and III
(C) I and III
(D) I and II

Q3 Which of the following is self-adjusting force?
(A) Static friction
(B) Limiting friction
(C) Kinetic friction
(D) Rolling friction

Q4 A block of mass $2 \mathrm{~kg}$ is kept on the floor. The coefficient of static friction is 0.4 . If a force F of 2.5 Newtons is applied on the block as shown in the figure, the frictional force between the block and the floor will be:



(A) $2.5 \mathrm{~N}$
(B) $5 \mathrm{~N}$
(C) $7.84 \mathrm{~N}$
(D) $10 \mathrm{~N}$

Q5 Maximum force of friction is called
(A) Limiting friction
(B) Static friction
(C) Sliding friction
(D) Rolling friction

Q6 A $20 \mathrm{~kg}$ block is resting on a horizontal floor. A force of $75 \mathrm{~N}$ is required to just move the block and a force of $60 \mathrm{~N}$ is required to move the block with constant velocity then coefficient of static friction is:

(A) 0.375
(B) 0.44
(C) 0.52
(D) 0.60

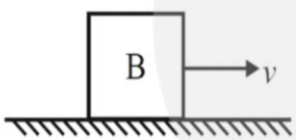
Q7 A heavy uniform chain lies on a horizontal table top. If the coefficient of friction between the chain and the table surface is 0.2, what is the maximum fraction of the length of the chain that can hang down the table-

(A) 1/6
(B) 1/4
(C) 1/3
(D) 1/2

Q8 A car is moving along a straight horizontal road with a speed v_0. If the coefficient of friction between the tyres and the road is μ then the shortest distance in which the car can be stopped is (Coefficient of friction is μ)

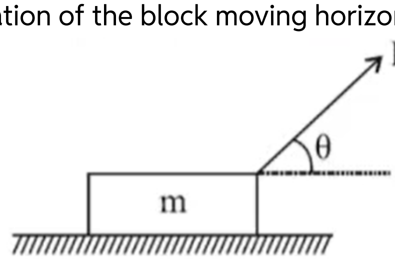
(A) $\frac{v_0^2}{2\mu g}$
(B) $\frac{v_0}{\mu g}$
(C) $\left(\frac{v_0}{\mu g}\right)^2$
(D) $\frac{v_0}{\mu}$

Q9 A block B is pushed momentarily along a horizontal surface with an initial velocity v, if μ is the coefficient of sliding friction between B and the surface, block B will come to rest after a time:



(A) $\frac{v}{g\mu}$
(B) $\frac{g\mu}{v}$
(C) $\frac{g}{v}$
(D) $\frac{v}{g}$

Q10 A wooden block of mass m resting on a rough horizontal table (coefficient of friction $= \mu$) is pulled by a force F as shown in figure. The acceleration of the block moving horizontally is :

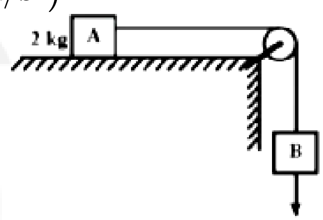


(A) $\frac{F\cos\theta}{m}$
(B) $\frac{\mu F\sin\theta}{M}$
(C) $\frac{F}{m}(\cos\theta+\mu\sin\theta)-\mu g$
(D) None of these

Q11 Consider a car moving on a straight road with a speed of $100\ \mathrm{m/s}$. The distance at which car can be stopped is $[\mu_k = 0.5]$

(A) 100 m
(B) 400 m
(C) 800 m
(D) 1000 m

Q12 The coefficient of static friction, μ_s, between block A of mass $2\ \mathrm{kg}$ and the table as shown in the figure is 0.2 . What would be the maximum mass value of block B so that the two blocks do not move ? The string and the pulley are assumed to be smooth and massless. $(g = 10\ \mathrm{m/s^2})$



(A) $4.0\ \mathrm{kg}$
(B) $0.2\ \mathrm{kg}$
(C) $0.4\ \mathrm{kg}$
(D) $2.0\ \mathrm{kg}$

Answer Key

Q1	(A)	Q7	(A)
Q2	(D)	Q8	(A)
Q3	(A)	Q9	(A)
Q4	(A)	Q10	(C)
Q5	(A)	Q11	(D)
Q6	(A)	Q12	(C)