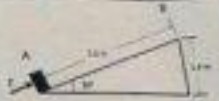
Q.14 Refer to Q13. If the coefficient of friction between the mass and the incline is μ, the friction force is
(A) μ m g sin θ (B) μ m g cosθ (C) μ m g (D) μ m g tanθ

Q.15 The frictional force on a moving body is proportional to the
(A) force causing the motion (B) weight of the body
(C) acceleration of the body (D) normal force on the body

Q.16 Two blocks A and B (m_A=120 kg and m_B= 55 kg) connected by a cord passing over a small, frictionless pulley rest on frictionless planes. The acceleration of the blocks is:
(A) 4m/s² (B) 4.6 m/s² (C) 3.1 m/s² (D) 4.3 m/s²

Q.17 A particle moves 17 m in the positive x direction while being acted upon by a constant force $F=(3\hat{i}+4\hat{j})$ N. The work done on the particle by this force is:
(A) 45 J (B) 51 J (C) 36 J (D) 30 J

Q.18 force F causes the 5 kg box to slide up from point A to point B. The work done by the normal force on the box is:
(A) 98 J (B) 58 J (C) 49 J (D) zero



Q.19 An object that has kinetic energy must be:
(A) at rest (B) falling (C) moving (D) non of these

Q.20 A moving particle of mass 3 kg, has kinetic energy of 10 J. Its speed is:
(A) 3.37 m/s (B) 2.58 m/s (C) 3.16 m/s (D) 2.83 m/s

Q.21 A particle of mass 10 kg moves with a speed of 3 m/s. Its kinetic energy is:
(A) 45 J (B) 36 J (C) 27 J (D) 18J

Q.22 A man of mass 85 kg climbs a stair of 7 m height at constant speed. The work done by the man is:
(A) 3332 J (B) 5831 J (C) 4165 J (D) 4998 J

Q.23 A 80 kg runner runs up the stairs to the top of 400 m tall tower. To lift himself to the top in 30 minutes, what must be his average power output?
(A) 174 W (B) 348 W (C) 523 W (D) 261 W

Q.24 A force acts on a spring with length 30 cm. This force compressed it to be 22 cm. If the spring constant is 50 N/m, the work done by the spring is:
(A) -0.0625 J (B) -0.0900 J (C) -0.1225 J (D) -0.1600 J

Q.25 If the work done on a particle is 55 J in 5 s. The power is:
(A) 11 W (B) 10 W (C) 9 W (D) 8 W

Q.6 A car moves along the x-axis with constant speed. Its acceleration is

(A) Positive (B) Zero (C) Increasing (D) Decreasing

Q.7 The Newton's Second Law is given by

(A) $F_{net} = ma$ (B) $F_{net} = -ma$ (C) $F = ma$ (D) $F = -ma$

Q.8 A car travels north at constant velocity. The net force on the car is

(A) Non-zero (B) greater than zero (C) 0 N (D) zero

Q.9 A horizontal force $F = (3i + 5j)$ N acts on an object of mass 5 kg. The magnitude of the acceleration of the object is

(A) 8 m/s² (B) 5.8 m/s² (C) 4 m/s² (D) 1 m/s²

Q.10 The acceleration of gravity on the moon is 1.62 m/s². A person of weight 111 N on the moon, his mass is

(A) 91 kg (B) 73 kg (C) 64 kg (D) 56 kg

Q.11 A mass of mass 70 kg. His weight is

(A) 686 N (B) 700 N (C) 686 N (D) 686

Q.12 An electron (mass = 9.1×10^{-31} kg) leaves one end of a TV picture tube with zero initial speed and travels in a straight line to the accelerating grid, which is 1.3 cm away. It reaches the grid with a speed of 3.0×10^7 m/s. If the accelerating force is constant, (a) find the gravitational force on the electron, (b) the net force on it.

(A) 1.6×10^{-16} N (B) 2.05×10^{-16} N (C) 2.73×10^{-16} N (D) 3.2×10^{-16} N

Q.13 A light cable from the ceiling supports a box of weight 350 N in static equilibrium. The tension in the cable is:

(A) 350N (B) 400 N (C) 420 N (D) 440 N

Q.14 A block of wood m is suspended from the ceiling by a light cable in static equilibrium. If the tension in the cable is 39.8 N, the mass of the block is:

(A) 4 kg (B) 3 kg (C) 5 Kg (D) 6 kg

Q.15 A 900 kg elevator is moving up with zero acceleration. The tension in the cable is:

(A) 10780 N (B) 3960 N (C) 11760 N (D) 8820 N

Q.16 In the figure a 10 kg box is pushed at a constant speed up the frictionless ramp by a horizontal force F. The magnitude of F is:

(A) 83.9 N (B) 44.1 N (C) 83.7 N (D) 58.8 N

Q.17 A 1500 kg elevator is moving up with acceleration 3 m/s². The tension in the cable is:

(A) 11800 N (B) 12900 N (C) 14800 N (D) 13000 N

Q.18 A mass m is placed on incline that makes an angle θ with respect to the horizontal. The normal force is:

(A) $mg \sin\theta$ (B) $mg \tan\theta$ (C) mg (D) $mg \cos\theta$