

Unit 2 Friction

1. When a body is moving on a surface, the force of friction is called.

- a) Static friction b) **Dynamic friction** c) Limiting friction d) Rolling friction

2. The magnitude of the force of friction between two bodies, one lying above the other, depends on the roughness of the

- a) Upper body b) Lower body c) **Both the bodies** d) The body having more roughness

3. The force of friction between two bodies in contact

- a) Depends upon the area of their contact b) **Depends upon the relative velocity between them**

- c) is always normal to the surface of their contact d) All the above

4. The maximum value of static friction is called

- a) Dynamic friction b) **Limiting friction** c) Dry friction d) Fluid friction

5. The maximum horizontal force acting horizontally, required to keep the body in equilibrium if the body is acting at inclined plane and moving in upward direction is

- a) $W \tan (\alpha - \phi)$ b) $W \sin (\alpha + \phi) / \cos \phi$ c) $W \tan (\alpha + \phi) / \cos \phi$ d) **$W \tan (\alpha + \phi)$**

6 Coefficient of friction is

- a. The friction force acting when the body is in motion b. **Ratio of limiting friction and normal reaction**

- c. The friction force acting when the body is just about to move d. None of the above

7. The relation between coefficient of friction and angle of friction is

- (a) $\phi = \tan \mu$ (b) $\tan \mu = \tan \phi$ (c) **$\mu = \tan \phi$** d) $\mu = \tan^{-1} \phi$

8. The frictional force is independent on

- a) Nature of surface b) **Contacting area of surfaces** c) Weight of the objects d) None of above

9) The friction force is directly proportional to

- a) **Normal reaction** b) Angle of friction c) Angle of repose d) None of above

10. The friction force is harmful in following case

- a) In walking b) In holding something c) **In case of working of an engine** d) None of above

11. A block resting on an inclined plane begins to slide down when the angle of inclination is gradually increased to 30° . The coefficient of friction is

- a) 0.5 b) 0.866 c) **0.577** d) 0.707

12. Which one of the following surfaces in contact has minimum coefficient of friction

- a) **wood on wood** b) steel on steel c) rubber tyres on concrete road d) wood on steel

13. Static friction is always

- a) **greater than dynamic friction** b) less than the dynamic friction c) equal to dynamic friction
d) none of these

14. A body of weight 200 N is placed on a rough horizontal plane. If a horizontal force of 120 N just cause the body to slide over the horizontal plane then coefficient of friction is

- a) **0.6** b) 0.120 c) 0.200 d) 0.9

15. A body weighing 20 N rests on a rough plane. The plane is inclined at 30° to the horizontal. If coefficient of friction is 0.25, then force of friction when the block just starts sliding up the plane is

- a) **4.33 N** b) 17.32 N c) 14.33 N d) 5.67 N

16. A body weighing 20 N rests on a rough plane. The plane is inclined at 30° to the horizontal. If coefficient of friction is 0.25, then force required to be applied parallel to the plane when the block just starts sliding up the plane is

- a) 4.33 N b) 17.32 N c) **14.33 N** d) 5.67 N

17. A body weighing 20 N rests on a rough plane. The plane is inclined at 30° to the horizontal. If coefficient of friction is 0.25, then force required to be applied at an inclined of 30° to the plane when the block just starts sliding up the plane is

- a) **14.48 N** b) 7.64 N c) 17.64 N d) 4.48 N

18. A body weighing 20 N rests on a rough plane. The plane is inclined at 30° to the horizontal. A 15.2 N force is applied horizontally and the body is try to move in upward direction, then coefficient of friction is

- a) **0.13** b) 0.25 c) 0.36 d) 0.44

19. A body weighing 20 N rests on a rough plane inclined at 30° to the horizontal. A 15 N force is applied at some inclination to the plane and the body is try to move in upward direction. If the coefficient of friction is 0.3, then the value of inclination (in degree) of force with plane is

- a) 55.44 b) 40.61 c) 15.44 d) **30.61**

20. A body weighing 20 N rests on a rough plane inclined at 30° to the horizontal. A 15 N force is applied at inclination of 45° to the plane and the body is try to move in upward direction. If the angle of friction is 40° , then the coefficient of friction is

- a) **0.839** b) 1 c) 0.577 d) 0

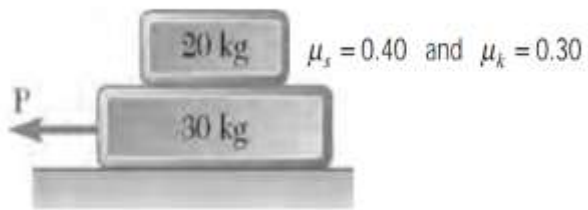
21. Select the correct sentence

- a) **Static friction is always greater than the kinetic friction**
b) Static friction is always less than the kinetic friction
c) Both is wrong
d) Both is correct

22. Static friction only applicable for,

- a) Body at motion
b) **Body at rest**
c) Both is correct
d) Both is wrong

23. Find the smallest force (P) for start to move these two block,



- a) 145.3
- b) 133.7
- c) 126.9
- d) 196.7**

24. Select the correct sentence

- a) Normal reaction is acting opposite direction of force
- b) Normal reaction is acting perpendicular to contacting plane.**
- c) Option (a) and (b) is correct.
- d) Normal reaction is acting opposite direction of weight

25. Select the correct sentence

- a) Coefficient of friction is different from different material**
- b) Coefficient of friction is different from different weight
- c) Coefficient of friction is different from different speed of material motion
- d) Option (a) and (c) is correct