VIII - 2. Force Friction and Pressure

Exercise Solutions

Level-1

1. (b)
    A plastic comb attracts small pieces of paper due to electro static force.

2. (c)
    When tow surface are in physical contact frication will applied.

3. (d)

4. SI unit -neutron

5. Muscular force is an example of contact

6. Electrostatic force exists between two stationary charges.

7. When applied force and motion in same direction speed will be increases.

8. In electrostatic force act between two stationary charges.

9. Fruits falling from trees is an example of gravitational force.

10. In liquids, the pressure increases with depth.
    $$P = hdg$$

11. $$Pressure = \frac{F}{A} = \frac{Newton}{Meter^2}$$

12. When two unbalanced force act on a body, in opposite direction net force is equal to difference between the two unbalanced forces and is in the direction of the larger force.

13. A push or pull on an object is called force.

14. (d)

15. A ball rolling on the ground slows down and finally stops. This is because of friction force.

16. Force of friction always acts on moving objects and its direction shall be opposite (relative) to the direction of motion.

17. When two equal forces applied in opposite direction object does not move.

18. Force exerted by magnet is an example of non-contact force.

19. Pressure $= \dfrac{\text{Force}}{\text{Area of which it acts}}$

20. Gravity is only attractive force.

21. Batsman changes the direction and speed of the ball.

22. In oily floor friction force is very less.

23. Spring balance is used to force acting on an object.

24. Friction may cause fire.

25. Tyres are treaded to increases friction.

26. Lubricants are used to reduce friction.

27. Sliding friction > rolling friction.

28. Drag is known as friction force exerted by fluids.

29. Rolling friction < sliding friction < limiting friction

30. Sole of shoes become plain after wearing it for several months because of friction.

31.
$F = ma$

$a = \dfrac{F}{m} = \dfrac{28}{7} = 4\,m/s^2$

32. Mass is a fundamental quantity.

33. Rolling a drum of same mass because friction is less.

34. Because the earth attracts it. (Gravity)

35. Thrust is a type of force. (Newton)

36. Rolling friction < sliding friction

37. Atmospheric pressure is measured by barometer.

38. Because increase pressure with depth of water. (P=hdg)

39. Thrust = Pressure × Area

40. Pressure exerted by liquid increases with depth.

41. Atmospheric pressure in due to the air mass surrounding earth.

Level-2

1. When vector sum of all applied force is zero, body does not change its position.

2. Boat and aeroplane has a pointed because reduced the friction of fluid.

3. A ball starts rolling when table is tilted because gravitational pull by earth.

4. A mountain climber experiences a nose bleed due to decreases in atm pressure.

5. A man walking from east to west the direction of friction force will be same.

6.
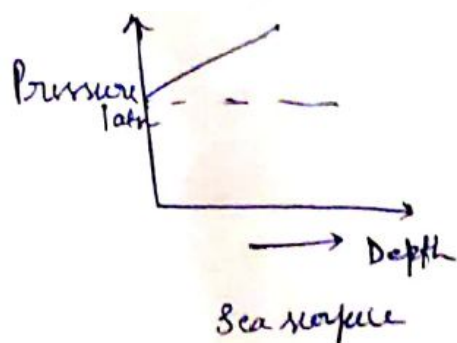
pressure will increases when depth increases.

7. Pressure on top of Mt. Everest is less than 1 atm.

Subjective Questions
1. (i) Spring force
   (ii) Friction force

2. Gravitational force

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4. (a) Kicking a stationary football
   (b) Applying brakes to moving bicycle
   (c) Pressing an accelerator to speed up a moving car
   (d) A moving cricket ball hit by a bat.
   (e) Flatting of dough by a rolling pin to make chapattis

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7.   Newton

8.   20 kg mass of object has greater inertia.

9.   Because of gravitational force.

10.   Momentum.(P) = mv

11.   We fall in forward direction when a moving buss apply brakes because when the bus was moving, our upper part of body and the bus both are in motion and when buss apply breaks our body tries to be in motion because of inertia of motion and experiences a forward push.

12.   A luggage is usually tied with a rope on the roof of buses, when a moving bus suddenly stops, the luggage on its roof tends to continue in the state of moving due to inertia of motion.

13.   (a)
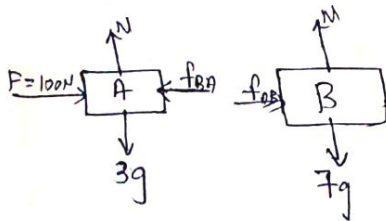
(b) $F = (m_A + m_B) a$

$= \dfrac{100}{10} = 10 \, m/s^2$

(c) $F = 100 N$

FAB = ?

FAB = $100 - 3 \times 10$

$= 70N$