

Ln-1 Conceptual Questions

1) ~~Refer~~ Why is it convenient to express the distance of stars in terms of light year (or) parsec rather than in km?

As the distance of the star are extra-ordinarily large, so it is convenient to express them in light year and parsec rather than in kilometer.

2) Ques - Refer Book.

Precision depends on least count of the instrument. Smaller the least count more precise the measurement. Since least count of the screw gauge (0.001 cm) is less than the least count of vernier caliper (0.01 cm). It is proved

3) Ques - Refer Book

Time is not running at the same rate everywhere. Einstein's theory show that time given by a clock depends on that clock relative speed with respect to an observer. As a result there is an gravity time dilation.

4) Ques - Refer Book

It became necessary to redefine units in atomic standard because the prototype offered the following difficulties

- 1) It is difficult to preserve the prototype
- 2) It is difficult to reproduce replica.
- 3) The techniques used are not of high accuracy.

5) Ques - Refer Book.

Because on equating the powers M, L & T on either sides of the dimensional equations, we can obtain 3 equations from which only 3 unknown dimensions can be calculated.

Lesson-3

1) Why it is not possible to push a car from inside?

Push on the car by the person and force exerted by the car on the person are though equal and opposite they are internal forces. An object can't move under the influence of internal force.

2) There is a limit beyond which the polishing of a surface increases frictional resistance rather than decreasing it why?

When surfaces are highly polished, area of contact between them increases. As a result of large number of atoms and molecules lying on both the surfaces. There is a strong force of attraction on each other. Therefore frictional force increases.

3) Can a single isolated force exist in ~~force~~ nature? Explain your answer.

No, According to Newton's 3rd law, force always exist in pairs.

4) Why does a parachute descend slowly?

Because it attains terminal velocity. Weight of the parachute and its content is balanced by viscous drag and force of buoyancy.

5) When walking on ice one should take short steps. Why?

When we take big steps the angle of our leg with vertical increases. Hence normal reaction component increases, which promote slipping. So, it is advisable to take small steps to avoid slipping.

6) When a person walks on a surface, the frictional force exerted by a surface on the person is opposite to the direction of motion. True or false?

False, because when the person walk he pushes the ground in the backward direction, with his foot. and force of friction acts in the forward direction.

(i.e.) In the direction in which man walk

7) Can the coefficient of friction be more than one?

Yes, the coefficient of friction is less than one for normal ~~force~~ surfaces. When surfaces are irregular they have cavities and minute projection on them. So, coefficient of friction may exceed unity.

8) Can we predict the direction of motion of a body from the direction of force on it? It is possible to predict the direction of motion with the help of resultant force of various forces acting on the body.

9) The momentum of a system of particle is always conserved. True or false?

True, when the system is isolated and no external force acts on it.