
TEST – 1
MECHANICS

1. Light year is the unit of
(a) speed (b) mass
(c) distance (d) time
2. I started walking down a road to day-break facing the sun. After walking for some time, I turned to my left then I turned to the right once again. In which direction was I going then
(a) northeast (b) south
(c) east (d) northwest
3. Which of the following is a vector:
(a) force (d) mass
(c) energy (d) power
4. Debye is the unit of
(a) density
(b) rms velocity
(c) electric dipole moment
(d) magnetic dipole moment
5. Identify the vector quantity
(a) heat (b) angular momentum
(c) time (d) work
6. A car accelerates from rest at constant rate of 2 ms^{-2} for sometime. Then, it retards at a constant rate of 4 ms^{-2} and comes to rest. What is the maximum speed attained by the car, if it remains in motion for 3 second?
(a) 4 ms^{-1} (b) 6 ms^{-1}
(c) 2 ms^{-1} (d) 3 ms^{-1}
7. The unit of surface energy per unit area may be expressed as
(a) Nm^{-2} (b) Nm^{-1}
(c) Nm (d) Nm^2
8. The rectangular components of force 5 dyne are
(a) 3 and 4 dyne (b) 2.5 and 25 dyne
(c) 1 and 2 dyne (d) 2 and 3 dyne
9. Identify the scalar quantity
(a) work (b) impulse
(c) force (d) acceleration
10. Density of a liquid is 13.6 gcm^{-3} . Its value in SI units is
(a) 136.0 kg m^{-3} (b) 13600 kg m^{-3}
(c) 13.6 kg m^{-3} (d) 1.36 kg m^{-3}

11. A particle is moving at 10 ms^{-1} towards east. In one second its velocity changes to 10 ms^{-1} towards west. If the particle be uniformly accelerated, the change in velocity will be directed at
(a) 135° to east (b) 45° to east
(c) 40° to east (d) none of these
12. Angular displacement is
(a) a scalar (b) a vector
(c) neither (a) nor (b) (d) either (a) or (b)
13. The ratio of the atomic radius to nuclear radius is
(a) 10^{-2} (b) 10^2
(c) 10^{-4} (d) 10^4
14. A man travels 1 mile due east, 5 mile due south, 2 mile due east and finally 9 miles due north. How far is he from the starting point?
(a) 3 miles (b) 5 mile
(c) 4 mile (d) between 5 and 9 mile
15. Two forces of magnitude 7 N and 5 N newton act on a particle at an angle θ to each other, θ can have any value. The minimum magnitude of the resultant force is
(a) 12 N (b) 8 N
(c) 2 N (d) 5 N
16. The volume of cube in m^3 is numerically equal to its surface area in m^2 . The volume of the cube is
(a) 1000 m^3 (b) 512 m^3
(c) 216 m^3 (d) 64 m^3
17. Which of the following quantities is a vector
(a) volume (b) temperature
(c) displacement (d) density
18. A mosquito flies from the hole in a mosquito net top corner diametrically opposite. If the net is $3 \times 2 \times 2 \text{ m}$ then the displacement of the mosquito is
(a) m (b) m
(c) m (d) none of these
19. Which of the following system of units is NOT based on the unit of mass, length and time alone
(a) FPS (b) SI
(c) C G S (d) MKS
20. Which of the following can be zero when the particle is in motion for some time?
(a) speed (b) displacement
(c) distance covered (d) none of these

Answers:

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|---------|---------|---------|---------|---------|---------|---------|
| 1. (c) | 2. (c) | 3. (a) | 4. (d) | 5. (b) | 6. (d) | 7. (b) |
| 8. (a) | 9. (a) | 10. (b) | 11. (b) | 12. (d) | 13. (d) | 14. (b) |
| 15. (c) | 16. (c) | 17. (c) | 18. (b) | 19. (b) | 20. (d) | |