

12. Efficiency of Carnot engine is 100 % if (with standard symbols)
 A) $T_2 = 273 \text{ K}$ B) $T_2 = 0 \text{ K}$ C) $T_1 = 273 \text{ K}$ D) $T_1 = 0 \text{ K}$
13. A monoatomic gas molecule has
 A) three degrees of freedom B) four degrees of freedom
 C) five degrees of freedom D) six degrees of freedom
14. The circular motion of a particle with a constant speed is
 A) periodic and oscillatory B) neither periodic nor oscillatory
 C) periodic but not oscillatory D) oscillatory but not periodic
15. Propagation constant of a wave is also called as
 A) wave number B) wavelength
 C) frequency D) angular wave number

II. Fill in the blanks by choosing appropriate answer given in the brackets for ALL the following questions: **5 x 1 = 5**

(equal, energy, compressibility, unequal, 1metre, sublimation)

16. The line that joins any planet to the sun sweeps _____ areas in equal interval of time.
17. The reciprocal of bulk modulus is called _____.
18. The process of change of state directly from solid to vapour is known as _____.
19. The length of second's pendulum is _____.
20. In case of progressive waves _____ is transferred from one point to another.

PART – B

III. Answer any FIVE of the following questions: **5 x 2 = 10**

21. Write any two limitations of dimensional analysis.
22. Explain triangle law of vector addition.
23. Two forces of 4N and 3N act at a point making an angle of 60° with one another. Find the magnitude of resultant of the two forces.
24. Define impulse of a force with an example.
25. What is elastic collision? Give examples.
26. What is a satellite? Name the natural satellite of earth.
27. State and explain Hooke's law.
28. Mention any two applications of beats.

PART – C

IV. Answer any FIVE of the following questions: **5 x 3 = 15**

29. Obtain the expression for time of flight of a projectile motion.
30. Mention any three methods of reducing friction.
31. Show that $P = \vec{F} \cdot \vec{v}$, where the symbols have their usual meanings.
32. The angular speed of a motor wheel is increased from 1200 rpm to 3120 rpm in 16 seconds. What is its angular acceleration, assuming the acceleration to be uniform?
33. Draw typical stress - strain graph. Represent yield point and fracture point.
34. Arrive at an expression for gauge pressure inside a static fluid.
35. Mention the modes of transfer of heat.
36. State any three postulates of kinetic theory of ideal gases.