

## Question Bank

Course: I Year B.Sc Physics

Sub.Code: UPH214P2

Subject: Mechanics and Thermal Physics

### Short Questions

1. What is transport phenomena in gases?
2. State the Zeroth law of thermodynamics.
3. State the First law of thermodynamics.
4. State the Second law of thermodynamics.
5. What is a Heat engine?
6. State Carnot's theorem.
7. What do you mean by entropy of a substance?
8. Mention some differences between reversible and irreversible processes.
9. Write down the expression for efficiency of a Carnot engine.
10. What is the difference between first and second of thermodynamics.
11. What is Joule-Thomson effect?
12. What do you mean by adiabatic expansion?
13. What is meant by liquefaction of gases?
14. Write a note on production of low temperatures.
15. What is adiabatic demagnetization?
16. Distinguish between adiabatic process and Joule-Thomson effect.
17. List some practical applications of low temperatures.
18. Define Dulong and Petit law.
19. Define Solar Constant.
20. Define Stefan's fourth power law.
21. State Rayleigh – Jeans law.
22. State Planck's law.
23. What is meant by radiation?
24. What is black body?
25. Define specific heat.
26. What is pyrometry?
27. State Stefan's-Boltzmann law.
28. Write a note on black body radiation?
29. Define S.H.M.
30. Write about radius of gyration
31. Define moment of inertia
32. State the theorems of moment of inertia
33. Write the advantages of compound pendulum
34. State Bernoulli's theorem
35. State Toricelli's theorem
36. Write about Euler's equation for unidirectional flow

37. What is impact
38. State laws of impact
39. Define coefficient of restitution
40. What is equation of continuity
41. What is projectile motion
42. Write the difference between translatory and rotational motion

### **Review questions**

- 1 Describe the working of Carnot engine and derive its efficiency.
- 2 Discuss the change in entropy in reversible and irreversible processes.
- 3 Write in detail the transport phenomena in gases.
- 4 Derive the expression for Maxwell's law of distribution of velocities.
- 5 Explain porous plug experiment in detail.
- 6 Explain adiabatic demagnetization.
- 7 What are accessories employed in liquefied gases?
- 8 Explain the working of Electrolux refrigerator.
- 9 Explain the refrigerating mechanism of a refrigerator with a neat sketch.
- 10 Explain the working of Air conditioning machines.
- 11 State Stefan's law and explain the experimental determination of Solar Constant.
- 12 Explain Einstein theory of Specific heat of solids.
- 13 Derive Planck's equation for black body radiation
- 14 Derive the expression of direct impact between two smooth spheres and loss in kinetic energy
- 15 Discuss in detail about Bernoulli's theorem with applications
- 16 Derive the expression for moment of inertia of a thin spherical shell, hollow sphere, solid sphere
- 17 Discuss about S.H.M and energy of harmonic oscillator
- 18 Derive an expression of Bifilar pendulum
- 19 Derive an expression for to find "g" using compound pendulum?
- 20 Explain Euler's equation for unidirectional flow