

1. What are fundamental and derived units? Give examples.
2. Define a coherent system of units. What are seven base units in SI?
3. Define SI units of luminous intensity and temperature.
4. What are the merits of SI over other system of units?
5. What is inertial mass? How is it measured?
6. What is gravitational mass? How is it measured?
7. Describe in brief the various techniques employed to measure very small and very big masses.
8. Describe parallax method to measure the distance of a planet from the Earth and its size.
9. How can the distance of an inferior planet be measured from the Sun?
10. How is the distance of a superior planet measured from the Sun?
11. Define AU, ly and parsec. How are these related to each other?
12. Discuss in brief the various techniques employed to measure very small and very large distances.
13. Name various methods of measuring time intervals of various ranges.
14. What is meant by the dimensions of a physical quantity? Illustrate with examples.
15. What is meant by dimensional formula and dimensional equation of a physical quantity? Give examples.
16. Obtain dimensional formulae for  $G$  (universal gravitational constant),  $h$  (Planck's constant) and  $R$  (universal gas constant).
17. Discuss the classification of physical quantities.
18. State and explain the principle of homogeneity of dimensions.
19. What is dimensional analysis? State its uses.
20. Discuss briefly the limitations of dimensional analysis.
21. What is meant by dimensions of a physical quantity? What are dimensional equations? What are their limitations?
22. What do you mean by dimensions of a physical quantity? Discuss the uses and limitations of dimensional equations with illustrations?
23. What is physics? What is the difference between the physical and biological sciences?  
[Hint: Physical sciences (physics, chemistry and astronomy) are concerned with the study of *inanimate* natural objects. Biological sciences (biology, biochemistry, bioengineering, biotechnology) are concerned with the study of *living* organisms.]
24. What is meant by an interaction, a field and a force?
25. Distinguish between a law, a theory and a hypothesis.
26. What is the scope of physics? Is modern physics the contemporary physics?
27. Physics is an exciting subject. Comment.
28. How is physics related to other sciences?
29. What is the role of physics in society?
30. Is science not on speaking terms with humanities? Comment.  
[Hint: Not the least. In fact, science helps the growth of humanities in many ways like preservation of old manuscripts and articles of historical values, enrichment of music, etc.]
31. Technological advances owe a great deal to the developments in physics. Comment
32. Describe briefly the four fundamental interactions and give their ranges and relative strengths.
33. What is the present scenario regarding the unification of forces?
34. Give some examples of fundamental forces operating in daily life.
35. What do you mean by a conservation law? State some conservation laws applicable in classical physics.
36. Name some great men in physics and their discoveries.
37. Physics Nobel Prize (2012) has been won by the quantum computing men : Serge Haroche and David Wineland. Write briefly about the possible impact of their pioneering work.