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Answers Key:

Problems

1. Inian's statement is correct
   Because light travels 3 x 10^8 m in one second total number of second in one year is equal to 365 x 24 x 60 x 60 = 3.153 x 10^7 second.
   So one light year is = (3.153 x 10^7) x (3 x 10^8)
   = 9.46 x 10^{15} m
2. Main scale reading = 7 x 10 = 70 mm.(∴ 1 cm = 10 mm)
   Vernier coincidence = 6
   Least count = 0.1 mm.
   Zero error = Nil
   The diameter of the ball = MSR + (V.C x L.C) ± ZE
   = 70 mm + (6 x 0.1)
   = 70 mm + 0.6 = 70.6 mm
   radius of the ball = 70.6/2 (∴ r = d/2)
   35.3 mm
3. Pitch scale reading is = 1 mm
   Head scale coincidence = 68
   Thickness of 5 rupee coin = PSR + (HSC x L.C)
   = 1 +(68 x 0.01)
   = 1 + 0.68
   = 1.68 mm
   Thickness of five rupee coin is = 1.68 mm
4. 9.8 = 1 kg mass
   98 N = ?
   Mass of the object $= \frac{98 \times 1}{9.8} = 10\ kg$
5. Weight (w) = mg
   Mass of a man = 50 kg
   His weight = 50 × 9.8
   w = 490 newton

Assertion and reason

6. Both A and R are true and R is the correct reason
7. Both A and R are true and R is the correct reason
8. Both A and R are true and R is the correct reason

Match the following

9. (⊠) metre
10. (⊠) kilogram
11. (⊠) second
12. (⊠) kelvin
13. (⊠) Coins
14. (⊠) Cricket ball
15. (⊠) Vegetables
16. (⊠) Gold ornaments

True or False

17. (a) True

Fill in the blanks

18. (⊠) length
19. (⊠) common (beam) balance
20. (⊠) Vernier Caliper
21. (⊠) Screw gauge
22. (⊠) milligram

Multiple Choice Question

23. (a) mm < cm < m < km
24. (d) Length
25. (b) 10 quintals
26. (a) Spring balance