AAROHAN 2017

Ascent of Knowledge

Class 10th - Answer Key and Hints

Q.No	Key	Q.No	Key	Q.No	Key	Q.No	Key
1	C	9	A	17	A	25	A
2	C	10	B	18	D	26	C
3	A	11	B	19	A	27	B
4	B	12	D	20	D	28	B
5	A	13	A	21	D	29	D
6	A	14	C	22	A	30	C
7	A	15	A	23	C	31	C
8	A	16	B	24	C	32	C

PHYSICS

1. (C)
According to Kepler's second law, the comet orbits the Sun with constant angular momentum.

Hence, we can write $r_0u_0=r_1u_1$. Hence, $u_1 = \frac{u_0 r_0}{r_1} = \frac{54 \times 0.57}{35} = 0.879 \mathrm{km/s}.$

2. (C)

3. (A)
Use the same formula used in Q1

4. (B)
Gravitational force acts on the body, the characteristics of which are given in the options.

5. (A) Radiation from the sun pushes dust particles away from the coma, forming a dusttail, while charged particles from the sun convert some of the comet's gases into ions, forming an ion tail. (Refer to the paragraph for information regarding this.)

6. (A)
According to the passage, the tail of the comet reflects sunlight.

7. (A)
As a comet gets closer to the sun, the ices on the surface of its nucleus vaporize and form a cloud called a coma around the nucleus that can expand out to 50,000 miles (80,000 km).

8. (A)
The tail of a comet is curved because the gravitational force acts differently on dust particles released at different times.

Class X Answers Chemistry

9. A 207kg

Use mole concept

10. B 80kg

Use mole concept

11. (B) $CO_2 + H_2O$

12. (D) 7.8125 gm

76yrs/9.5yrs =8. Remaining wt. = ((2000gm)/(2^8))

13. (A) Methane

14. (C) Ammonia, Carbon di oxide and water vapour

15. (A) $4.56 * 10^9$ W

Power= $eT^4*4\pi r^2$

16. (B) Carbon< Nickel< Aluminium< Gold

17. (A) 35.6 AU - The line joining the two points will be the same as seen from Earth or Sun, and distance will not change. From the Sun, farthest is 35 AU and closest 0.6 AU

18. (D) 0 - The probabilities given sum up to 1. Hence, 0 probability for other values of n. 2133-1986=147 years, but the minimum number of years possible is 2×(76-2)=148 (since n can be maximum 2).

19. (A) 15000 km - Sun, comet and Earth in vertical line, and cross tangents of Sun and Earth intersect at the comet's position. R/0.7=6400/(1-0.7)

20. (D) Jupiter and Saturn, High Mass - Earth and Venus are not always close enough to Haley (due to inclination of orbits and Halley's orbit size) to cover-up their low mass. B and C are not correct.

21. (D) It may collide with any planet, but it has just not collided yet - The planets do not revolve in same plane and the 18^{o} inclination of Halley's comet is not to all planetary orbit. Lastly, speed does not matter, since specific position can lead to collisions.

22. (A) 0.96 km/s - Halley's orbit is retrograde. So, v=86-30=56 km/s. For farthest point, 56×0.6=v'×35. Hence, v'=0.96 km/s

23. (C) The energy of the comet at different points in the orbit - A and D are clearly wrong. B is wrong since area comet "passes" through would be along the orbit, proportional to velocity. Energy is constant, since no external force is acting on the Sun-comet system

24. (C) 0 km/s - since speed of Comet as seen by itself will always be 0.
Class 9 and 10 logic section

25. (A) Both will get Rs 500 , since they will both be worried that if they stay silent, the other will get the 1000.

26. (C) The players in the previous questions both attempt to call the dog - since whoever changes his mind and does not call the dog will get nothing.

27. (B) 230 - Month started with Monday, and 4 weeks plus one Monday, so 4×55+10=230.

28. (B) 7

29. (D) 2400

30. (C) tagazen

31. (C)

Option C clearly maintains the sentence structure that has been established in the lines preceding it.

32. (C)
Use the sentences given to establish the meaning of words and work out the grammar.