AAROHAN 2017

Ascent of Knowledge

Class 9th - Answer Key and Hints

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

1. **A** $\overline{v_{new}} = \frac{1}{10}\sum_{i=1}^{10} v_i = \frac{(v_1+3)+\ldots..+(v_{10}+3)}{10} = \overline{v_{old}} + \frac{3\times10}{10} = 93\ ms^{-1}$
2. **D** $a = \frac{\bar{y}\,(\sum_{i=1}^{n} x_i^2) - \bar{x}\,(\sum_{i=1}^{n} x_i y_i)}{\sum_{i=1}^{n} x_i^2 - n\bar{x}^2} = 0$ because of symmetry and hence $x_i^2 = x_i y_i$
3. **C** Areas are equal because both triangles have the same base length & height
4. **B** Deviation will be sum of n natural numbers times iterations: $\frac{n(n+1)}{2} \times 100$
5. **D** $\overline{v_{new}} = \frac{2v_1 + 2v_2 + 2v_3 + \ldots + 2v_n}{n} = \frac{2(v_1 + v_2 + v_3 + \ldots + v_n)}{n} = 2 \times \overline{v_{old}}$
6. **A** Standard formula $\sigma^2 = \frac{\sum_{i=1}^{n} x_i^2}{n} - \bar{x}^2$
7. **B** $v(5) = 0$
8. **C** The first 5 readings, create a positive deviation of $+3 \times 5$ and so a negative deviation of -1×15 will keep the average velocity at the original value.

9 B) Friction will act between the walls of the tube and moving air.

10) A) $\Delta P = \rho g h$ (1-0.01) x 101325 = 0.02 x 32.2 x h, solve for h

11) A) or D) linear effect refers to - energy required to increase the speed by a fixed amount is independent of the initial speed.

12) D) (400 x 2 x 0.6 - 320) x 10 / 320 = 5 hours

13) D) K = ½ mv^2 , 60000 = ½ x 300 x v^2 , Solve for v

14) C) speed after acceleration = 3600 x 5/18 = 1000 m/s, Answer = $(1000^2 \times 0.9801)^{½}$ = 99 m/s

15) B) Time lag = 700/350 = 2 sec, distance travelled by the pod in 2 sec = 2200 m
Angle = $(2200/2\pi r) \times 360^o = 180^0$

16) B) Self explanatory.

17) A) 0.1 J - $P_{external}$×(change in V) = 100000×(1÷1000000) J =0.1 J

18) C) Yes, since the the internal energy is same in both cases - Since pressure, Volume, number of moles are same, so temperature will also be same in the 2 boxes.

19) B) Yes, since the pressure inside the tube is enough for boiling at given temperature

20) D) 5000 - 135 kg=5000 moles

21) A) 2.72 kg - (6×20) g added to air mass, (16×20)g of oxygen used. Initially, air will have around 21% oxygen (to choose closest ans, since here exact value not given). Finally, 19% oxygen by mass should be present.

22) C) 0.996% - Initial volume and final volume given, with final pressure. Use PV=constant to find initial pressure.

23) A) 40000 J - Since pressure change is very less and no external pressure considered, work =$P(V_2-V_1)$, where P is pressure of gas inside the tube (1% of atmospheric pressure, which is 100000)

24) Bonus

Class 9 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.