SCHOLASTIC APTITUDE TEST (SAT) SOLUTION

1. C

$x^2 + (x + 1)^2 = 145$

$x^2 + (x^2 + 2x + 1) = 145$

$2x^2 + 2x – 144 = 0$

$x^2 + x – 72 = 0$

$(x + 9)\ (x – 8) = 0$

$x = – 9$ or $x = 8$

$x = 8$ & $x + 1 = 9$

2. D

$$\frac{22\frac{1}{2}}{\frac{1}{4}} = 90$$

3. C

S = {HH, HT, TH, TT}

$$P = \frac{3}{4}$$

4. A

–1, 0, 1, 2, 3, 4, 5, 5, 6, 8, 11

Mean = 4 = Median

5. B

Distance = $\sqrt{(-2-3)^2+(6+6)^2}$

= $\sqrt{25+144}$

= $\sqrt{169}$

= 13

6. **(**A)

a = 17, d = –2

$S_n = 72$

$$S_n = \frac{n}{2}\left[2a+(n-1)d\right]$$

$$72 = \frac{n}{2}\left[2\times 17+(n-1)(-2)\right]$$

$n^2 – 18n + 72 = 0$

n = 6 OR n = 12

7. A

$\tan\theta + \cot\theta = 3$

$(\tan\theta + \cot\theta)^2 = 9$

$\tan^2\theta + \cot^2\theta + 2 = 9$

$\tan^2\theta + \cot^2\theta = 7$

8. B

$\sin\theta - 1 = 0$

$\sin\theta = 1$

$\sin\theta = \sin 90°$

$\theta = 90°$

9. Circumference = $\frac{88 \times 100}{100} = 88$ cm

$2pr = 88$

$2 \times \frac{22}{7} \times r = 88$

$(2r) = 88 \times \frac{7}{22}$

$d = 28$ cm

10. (D)

$x^3 = 3^3 + 4^3 + 5^3$

$x^3 = 216$

$x = 6$ cm

11. (D)

Second polynomial $= \frac{x(x^3 - 9x)}{x^2 + 3x}$

$= \frac{x.x(x^2 - 9)}{x(x+3)}$

$= \frac{x(x+3)(x-3)}{(x+3)}$

$= x(x-3) = x^2 - 3x$

12. (B)

Incorrect sum = 20 × 135 = 2700

Correct Sum = 2700 + 35 – 15 = 2720

correct mean = $\frac{2720}{20}$ = 136

13. (A)

Let n people complete the work in 20 days If the work is halved

Then n people take 10 days

so 2n people take 5 days

14. (C)

$3\sqrt{3} \times 3^3 \div 3^{-3/2} = 3^{a+2}$

$3^{1+\frac{1}{2}+3-\left(-\frac{3}{2}\right)} = 3^{a+2}$

6 = a + 2

a = 4

15. (C)

$x = 90° + \frac{1}{2} \angle A$

$x = 90° + \frac{1}{2} \times 100°$

x = 140°

16. 3A = 4B = 6C

$\frac{3A}{12} = \frac{4B}{12} = \frac{6C}{12}$

$\frac{A}{4} = \frac{B}{3} = \frac{C}{2}$

A : B : C = 4 : 3 : 2

Ans. (D)

17. **(C)**

18. a + b = 2 .....(1)

$\frac{1}{a}+\frac{1}{b} = 2$

$\frac{a+b}{ab} = 2$

$\frac{2}{ab} = 2$

$ab = 1$ .....(2)

$a^3 + b^3 = (a + b)^3 - 3ab\,(a + b)$

$= 2^3 - 3 \times 1 \times (2)$

$= 8 - 6$

$a^3 + b^3 = 2$

Ans. (B)

19. $OP^2 = OA^2 + AP^2$

$10^2 = OA^2 + 8^2$

$OA = 6$ cm

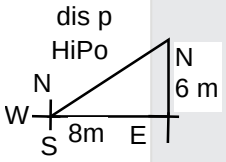
$OB = OA = 6$ cm

Ans. (D)

20. $\frac{8}{40} \times 100 = 20\%$

Ans. (A)

22.



Using Pythagoras theorm –

$H = \sqrt{B^2 + P^2}$

displacroent $= \sqrt{8^2 + 6^2}$

$d = \sqrt{100} = 10$ m

Ans. [A]

23. Force $= \frac{\Delta p}{\Delta t} = \frac{p_t - p_i}{\Delta t} =$

$F = \frac{\text{No of bullets} \times \text{mass} \times \text{vepo}}{\text{time}}$

$F = nmv$

Ans. [B]

25. initial mom $= P_i$

momentum decrease by 10% then –

final mom $P_t = 0.9\ P_i$

% decrease in K.E. $= \frac{K_i - K_t}{K_i} \times 100\%$

$= \frac{\frac{P_i^2}{2\ m} - \frac{(0.9P_i)^2}{2m}}{P_i / 2m} \times 100\%$ $= (1 - 0.81) \times 100\ \% = 19\%$

Ans. [D]

27. Given –

Glance angle of incidence = 30°

So, angle of incidence = 60°

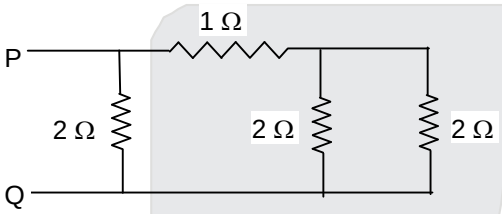
By low of reflection –

$\angle i = \angle r$

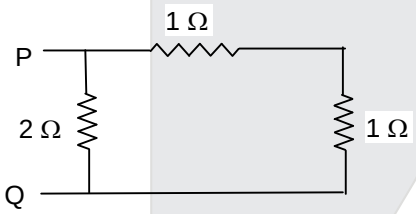
Hence. $\angle r = 60°$

Ans. [D]

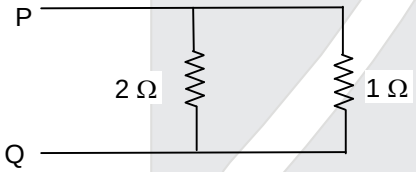
31.



$$Req = \frac{R}{n} = \frac{2}{2} = 1\ \Omega$$



$$Req = 1 + 1 = 2\ \Omega$$



$$R_{PQ} = \frac{R}{n} = \frac{2}{2} = 1\ \Omega$$

Ans. [D]

34. (D) Increasing order of attraction between particles.

Oxygen(g) < Water(ℓ) < Sugar (s)

35. (B) Colloidal solution will show tyndall effect.

e.g. $\rightarrow$ Milk, Gum, Starch solution etc.

36.. (C) Atomic No. = 12 Mg

E.C. = 2, 8, 2

↑ ↑ ↑

K L M

M shell = $2e^-$

37. (A) Atomic number of chlorine is 17.

$^{35}_{17}Cl$, $^{37}_{17}Cl$

Number of neutron is (N) = A – Z

↑ ↑

Mass Atomic

no. no.

35-17, 37-17

= 18, 20

38. (C) A more reactive metal can displace the less reactive metal from it salt solution.

$Fe_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Fe$

↑ ↑

Less More

reactive reactive

This is an example of single displacement reaction.

39. (A) The aqueous solution of Na_2SO_4 will have a pH is 7. because this is neutral salt solution. The solution of strong acid & strong base is called neutral salt solution.

40.. (D) mass = mole × Molar mass

$$\frac{\text{No. of molecule}}{N_A} \times \text{Molar mass}$$

$$= \frac{12.044 \times 10^{23}}{6.023 \times 10^{23}}$$

$$\boxed{\text{mass} = 64\text{g}}$$

41. Electronic configuration = 2,8,4

Element is = Si

for P-block element

Group no. = 10 + outermost e^-

= 10 + 4 = 14 four tenths group

and third period.

42. **(B)**

Sol. General formula of Alkyne is

C_nH_{2n-2}

n = 3 C_3H_4 (Propyne)

43. **(D)**

Sol. The objective of Roasting is

(i) To oxidize it

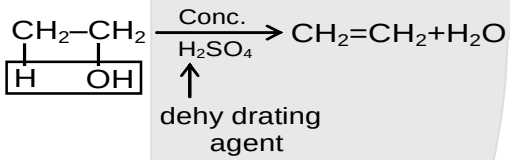
(ii) To remove Volatile matters

44. **(C)**

Sol. Transfer of e^- b/w Metallic & Non-metallic atom formed Electrovalent bond

NaCl

45. **(A)**

Sol. 

46. monomer units of Teflon is

tetra Fluoro ethene. $(CF_2 = CF_2)$ $[C_2F_4]$

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