ANSWER SET - 45

01. (2) **02.** (2) **03.** (3) **04.** (4) **05.** (1)
06. (1) **07.** (2) **08.** (1) **09.** (1) **10.** (3)
11. (1) **12.** (3) **13.** (2) **14.** (1) **15.** (3)
16. (2) **17.** (4) **18.** (3) **19.** (4) **20.** (2)
21. (4) **22.** (2) **23.** (2) **24.** (4) **25.** (4)
26. (3) **27.** (4) **28.** (1) **29.** (2) **30.** (1)
31. (1) **32.** (1) **33.** (4) **34.** (1) **35.** (1)
36. (4) **37.** (3) **38.** (3) **39.** (4) **40.** (1)
41. (1) **42.** (1) **43.** (2) **44.** (4) **45.** (3)
46. (4) **47.** (2) **48.** (2) **49.** (1) **50.** (1)
51. (2) **52.** (4) **53.** (4) **54.** (2) **55.** (2)
56. (1) **57.** (1) **58.** (4) **59.** (3) **60.** (2)
61. (1) **62.** (1) **63.** (3) **64.** (4) **65.** (4)
66. (4) **67.** (3) **68.** (3) **69.** (4) **70.** (4)
71. (3) **72.** (4) **73.** (3) **74.** (1) **75.** (2)
76. (2) **77.** (3) **78.** (2) **79.** (3) **80.** (3)
81. (3) **82.** (3) **83.** (3) **84.** (1) **85.** (2)
86. (1) **87.** (1) **88.** (4) **89.** (3) **90.** (1)
91. (2) **92.** (1) **93.** (4) **94.** (3) **95.** (1)
96. (2) **97.** (4) **98.** (1) **99.** (2) **100.** (2)

EXPLANATION - 45

1. (2) **Paper** is made by **pulp**. Similarly, **rope** is made by **hemp**.

2. (2) A C D F : M O P R : : T V W Y : **P R S U** (+1, +2)

3. (3) $5 : 30 :: 8 : \mathbf{72}$ (5^2+5, 8^2+8)

4. (4) A (–) Sister → C (–); A Daughter → R (+); C Sister → R (+); R Brother → S (+)

5. (1) $24 \div 6 \times 3 + 3 - 1 = 14$
$4 \times 3 + 3 - 1 = 14$
$12 + 3 - 1 = 14$
$15 - 1 = 14$
$14 = \mathbf{14}$

6. (1) (A) **3 – 8** (+5)
(B) 12 – 16 (+4)
(C) 20 – 24 (+4)
(D) 54 – 58 (+4)

7. (2) Except the option (2), all others are the different parts of energy.

8. (1) Except option (1) all other are wild animal.

9. (1) (A) **R S U** (+1, +2) (C) J L N (+2, +2)
(B) U W Y (+2, +2) (D) E G I (+2, +2)

10. (3)

11. (1)

12. (3) 3, 8, 15, **24**, 35, 58 (+5, +7, +9, +11, +13; +2, +2, +2, +2)

13. (2) 1.5, 2.3, 3.1, 3.9, **4.7** (+0.8)

14. (1) A Z Y E X W I V U **M T S** (–2; +4; –2)

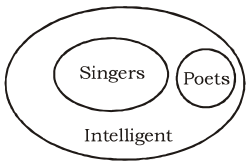
15. (3) o r u **x** / o **r** u x / o r **u** x / **o** r u x

16. (2)

17. (4) B E A U T I F U L → C D O G H J K M N
Then, L E A F → **N D O K**

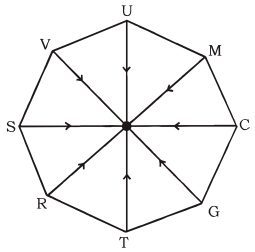
18. (3) T R A **U** M A

19. (4)



Conclusions = I – ×
= II – ×

20. (2)



21. (4) $\left.\begin{matrix}2-1=1\\6-3=3\\5-4=1\end{matrix}\right\} \Rightarrow 131$ and

$\left.\begin{matrix}4-2=2\\6-2=4\\8-0=8\end{matrix}\right\} \Rightarrow 248$

Similarly,

$\left.\begin{matrix}7-5=2\\9-3=6\\3-1=2\end{matrix}\right\} \Rightarrow \mathbf{262}$

22. (2) $4\times4=16 \xrightarrow{\text{Reverse}} 61$

$3\times27=81 \xrightarrow{\text{Reverse}} 18$

Similarly,

$5\times5=25 \xrightarrow{\text{Reverse}} 52$

23. (2)

24. (4)

25. (4)

26. (3) Pipe fill $6\overline{)42}\ 7$
Pipe fill + leakage $7\overline{)42}\ \frac{6}{1}$

Time taken by leakage to emptying tank

$= \frac{41}{2} = 42$ hours

27. (4) Percentage discount

$= \frac{MP-SP}{MP}\times100$

$= \frac{700-625}{700}\times100$

$= 10.71\%$

31. (1) $\begin{matrix}A+B\\B+C\\C+A\\\hline 2(A+B+C)\end{matrix}\ \begin{matrix}10\\15\\20\end{matrix}\ \overline{)120}\ \begin{matrix}12\\8\\6\\\hline 26\end{matrix}$

Work done by (A + B + C) in a day
= 13
Work done by (A + B + C) in two day
= 13 × 2
= 26
Work done by (B + C) in two days
= 18 × 2
= 16
work done by C alone is a day = 13 – 12
= 1
Time taken by C to finish work

$= \frac{120-26-16}{1} = 78$ days

32. (1) Let total cost of the commodity be ₹ x
cost of commodity sold at 15% loss

$= \frac{2}{3}x$

cost of commodity sold at 12% loss

$= \frac{x}{6}$

cost of commodity sold at 18% loss

$= x - \left(\frac{2}{3}x + \frac{x}{6}\right)$

$x - \frac{5x}{6} = \frac{x}{6}$

Net loss = 45

$15\%\text{ of }\frac{2x}{6} + 12\%\text{ of }\frac{x}{6} + 18\%\text{ of }\frac{x}{6} = 45$

$0.5\times\frac{2x}{3} + 0.12\times\frac{x}{6} + 18\times\frac{x}{6} = 45$

$0.10x + 0.02x + 0.03x = 45$
$0.15x = 45$

$\Rightarrow x = \frac{45\times100}{15} = ₹\ 300$

33. (4) Required speed

$= \frac{100+120}{40}\text{ m/s}$

$= \frac{220}{40}\times\frac{18}{5}\text{ km/h} = 19.8\text{ km/h}$

35. (1) $\because A - P\left(1+\frac{r}{100}\right)^2$

$\therefore 12100 - P\left(1+\frac{10}{100}\right)^2$

$\Rightarrow P = \frac{12100\times100\times100}{110\times110}$

$= ₹\ 10{,}000$

36. (4) Average age of the family = $\frac{\text{age of grandparents + age of parents + age of children}}{\text{Total Members}}$

$\frac{67\times2+35\times2+6\times3}{2+2+3}$

$= \frac{222}{7} = 31\frac{5}{7}$ years

37. (3) Expenditure for materials & taxes together
= (22 + 36)% of 500
= 58% of 500
= 0.58 × 500
= ₹ 290 crores

38. (3) Required angle $= \frac{36}{100}100 \times 360^o = 129.6^o$

39. (4) 25 = x% of 22

$\Rightarrow x = \frac{25\times100}{22} = 113.64$

40. (1) Required amount
= 13% of 500 – 4% of 500
= ₹ 45 crores

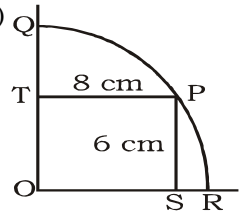
41. (1) No. of bricks = $\frac{\text{volume of the wall}}{\text{volume of one brick}}$

$= \frac{(25\times100)(2\times100)\left(\frac{3}{4}\times100\right)}{20\times10\times\frac{15}{2}}$

$= 25000$

42. (1) Radius of the garden = 31 m
Width of the fencing wall = 2m
Area of the land required by the wall
$= \pi\left|r_0^2 - r_1^2\right| = \pi\left|33^2 - 31^2\right|$
$= \pi(33+31)(33-31)$
$= \pi \times 64 \times 2$
$= 128\pi\ m^2$

43. (2)



From the figure OP $= \sqrt{6^2+8^2}$
= 10 cm

length of the arc OR $= \frac{\pi r\theta}{180}$

$\frac{\pi\times10\times90}{180}$

$= 5\pi$ cm

44. (4) In ΔABC

$\tan30^\circ = \frac{BC}{AB}$

$\frac{1}{\sqrt{3}} = \frac{2\sqrt{3}}{AB} \Rightarrow AB = 6$ cm

$\angle ABD = 60^\circ$

In ΔABD

$\tan60^\circ = \frac{AD}{AB}$

$\sqrt{3} = \frac{AD}{6} \Rightarrow AD = 6\sqrt{3}$cm

45. (3) $\frac{a}{b} = \frac{\sqrt{5}+1}{\sqrt{5}-1}\times\frac{\sqrt{5}+1}{\sqrt{5}-1} = \frac{\left(\sqrt{5}+1\right)^2}{\left(\sqrt{5}-1\right)^2}$

$= \frac{5+1+2\sqrt{5}}{5+1-2\sqrt{5}} = \frac{6+2\sqrt{5}}{6-2\sqrt{5}}$

$\Rightarrow \frac{a}{b} = \frac{3+\sqrt{5}}{3-\sqrt{5}}$

Applying componendo & dividendo, we have

$\frac{a+b}{a-b} = \frac{3+\sqrt{5}+3-\sqrt{5}}{\left(3+\sqrt{5}\right)-\left(3-\sqrt{5}\right)}$

$= \frac{6}{2\sqrt{5}} = \frac{3}{\sqrt{5}}$

$\Rightarrow \left(\frac{a-b}{a+b}\right)^2 = \left(\frac{\sqrt{5}}{3}\right)^2 = \frac{5}{9}$

46. (4) $\frac{c}{2c+z} + \frac{b}{2b+y} + \frac{a}{2a+x}$

$= \frac{cz}{2cz+z^2} + \frac{by}{2by+y^2} + \frac{ax}{2ax+x^2}$

$= \frac{cz}{2cz+2(ax+by)} + \frac{by}{2by+2(cz+ax)}$

$+ \frac{ax}{2ax+2(by+cz)}$

$= \frac{1}{2}\left[\frac{cz}{ax+by+cz} + \frac{by}{ax+by+cz} + \frac{ax}{ax+by+cz}\right]$

$= \frac{1}{2}\left[\frac{ax+by+cz}{ax+by+cz}\right] = \frac{1}{2}$

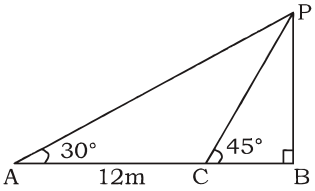
47. (2) $\frac{x^4+1}{x^5-\frac{1}{x}} = \frac{\frac{x^4+1}{x^2}}{\frac{x^5+\frac{1}{x}}{x^2}} = \frac{x^2-\frac{1}{x^2}}{x^3-\frac{1}{x^3}}$

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

$= \frac{3^2+2}{3^3+9} = \frac{11}{36}$

48. (2) Total age of remaining 29 boys
= 30 × 15 – 20
= 450 – 20 = 430
Suppose the age of two new boys be x years and (x + 5) years
then, 430 + x + x + 5 = 15 × 31
2x = 465 – 435 = 30
$\Rightarrow$ x = 15 years
The age of younger boy = 15 years

49. (1)



In PBC

$\tan45^\circ = \frac{PB}{BC}$

PB = BC

In ΔPBA

$\frac{PB}{AB} = \tan30^\circ$

$\frac{PB}{12+PB} = \frac{1}{\sqrt{3}} \Rightarrow PB = \frac{12}{\sqrt{3}-1}$

$= 6\ (\sqrt{3}+1)m = 6 \times 2.732$
$= 16.4$ m

50. (1) tan 15° tan 45° tan 60° tan 75°
tan 15°. tan 75°. tan 45°. tan 60°
tan 15° tan (90°–15) tan 45° tan 60°
= tan 15° cot 15° tan 45° tan 60°
$= 1 \times 1 \times \sqrt{3} = \sqrt{3}$

76. (2) Change 'bursted' into 'burst'. The past and past participle forms of the verb 'burst' is 'burst', not 'bursted'.

77. (3) Change 'whom' into 'who'. The subjective case pronoun 'who' should be used here, as the sentence addresses a specific group of people.

79. (3) 'ashamed of' should replace the

blank, as after making a mistake, one feels guilty when one realizes one's mistake which in turn causes embarrassment.
Options (1) and (2) aren't logical when filled in the blank and option (4) is grammatically wrong.
To be **worthy of** something means to be deserving.
To be **aware of** something is to be knowledgeable about it.
To be **guilty** means to be responsible for an offence/ error/ misdeed.

80. (3) 'gave away' should replace the blank, which means he distributed the prizes.
To **give away** means to bestow something upon, or to donate.
To **give up** means to abandon or to stop doing something which you have been doing regularly or working hard for.
To **give in** means to submit, concede or yield.
To **give way** means to retreat or withdraw.

81. (1) 'calls for' should replace the blank as the sentence talks about some problem which requires a lot of thought.
To **call for** something/ someone means to need, require or demand something or the services of someone.
To **come across** someone/ something means to discover something or to find someone.
To **call on** someone means to meet or visit someone, or to choose someone to do something.
To **come into** something means to accede to power or office/ to receive something as property or money.

82. (3) 'for the exercise' should replace the underlined part, as it is the only option which will make the sentence grammatically correct.

83. (3) 'High Population growth rate' should replace the underlined part, as it is the only option which will make the sentence grammatically correct.

84. (1) 'foreigners to collect ransom' should replace the underlined part, as it is the only option which will make the sentence grammatically correct.