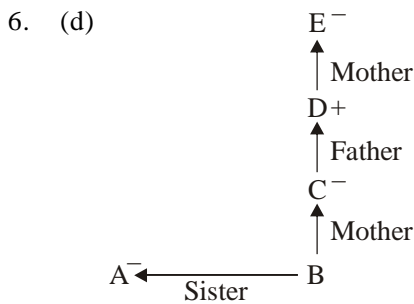


WBCS Mains Exam. Paper - VI Practice Set – 2023

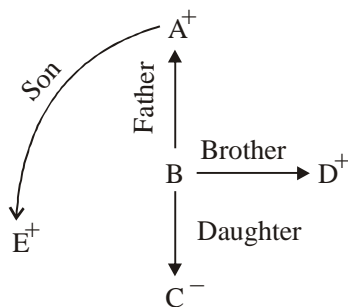
1. (a) The water in river flows. The water in pool remains stagnant.
2. (b) 'Demand' is of greater intensity than suggestion. Similarly, Snatch is of greater intensity than Take.
3. (a) Smoke is emitted through chimney. Similarly, bullet is fired from gun.
4. (b) Light propagates in the form of rays. Similarly, sound travels in the form of waves.
5. (c) Surgeon uses forceps. Similarly, Blacksmith uses hammer.

শ্রীচিভর্ষ



From above figure it is clear that D is grand father (maternal, i.e., mother's father) of A and B.

7. (c)



শ্রীচিভর্ষ

Clearly, A is father of E, D and B of which E and D are sons and B's sex is not given and C is B's daughter hence two possibilities exist :

- (i) When B is female — then E (and also D) is maternal uncle of C. So option (c).
- (ii) When B is male — then E (and also D) is paternal uncle of C.

Hence C and E are niece and uncle respectively. Option (c) is correct.

8. (b) D is father of B and C. A is brother of D. Therefore, C is niece of A.

শ্রীচিভর্ষ

9. (a) $\boxed{\times \Rightarrow +} \quad \boxed{\div \Rightarrow -}$

$$\begin{aligned} ? &= 39 \times 23 \div 21 \times 5 \\ \text{or, } ? &= 39 + 23 - 21 + 5 \\ \text{or, } ? &= 67 - 21 = 46 \end{aligned}$$

10. (b) $\boxed{\div \rightarrow +} \quad \boxed{\times \rightarrow -}$

Given expression

$$(15 \times 9) \div (12 \times 4) \times (4 \div 4) = ?$$

After changing the sign,

$$? = (15 - 9) + (12 - 4) - (4 + 4)$$

$$\text{or, } ? = (6) + (8) - (8)$$

$$\text{or, } ? = 6 + 8 - 8 = 6$$

শ্রীচিভর্ষ

11. (c) All the letters of word NATURAL are present in the word RETURNABLE. In the case of third option, the letter 'O' of the second word is not present in the first word.
12. (c) Except Deposit, all other words are relative synonyms of one another.

13. (c) $\boxed{\times \Rightarrow -} \quad \boxed{+ \Rightarrow \times}$
 $\boxed{- \Rightarrow +} \quad \boxed{\quad \quad \quad}$

Given expression

$$6 + (3 \times 1) + 5 = ?$$

After changing the signs

$$? = 6 \times (3 - 1) \times 5$$

$$\text{or, } ? = 6 \times 2 \times 5 = 60$$

শ্রীচিভর্ষ

14. (c) Except Late, all other words convey more or less similar meaning.
15. (c) **Confusion** means a state of not being certain about what is happening.

Commotion means sudden noisy confusion or excitement.

Agitation means worry and anxiety that you show by behaving in a nervous way.

Annihilation means destruction (complete).

Thus, Annihilation is different from the other three words.

16. (c) 42 is a multiple of 3.

17. (d) $6958 \Rightarrow 6 + 9 + 5 + 8 = 28$

$$7948 \Rightarrow 7 + 9 + 4 + 5 = 28$$

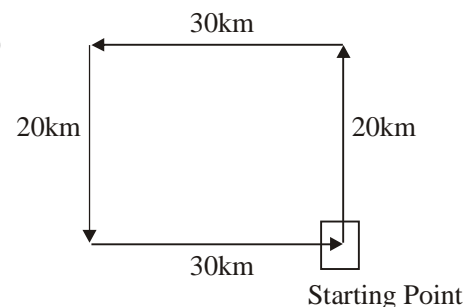
$$6895 \Rightarrow 6 + 8 + 9 + 5 = 28$$

$$\text{But, } 9783 \Rightarrow 9 + 7 + 8 + 3$$

$$= \boxed{27}$$

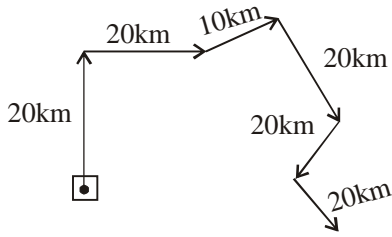
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18. (b)



Now he is driving towards east.

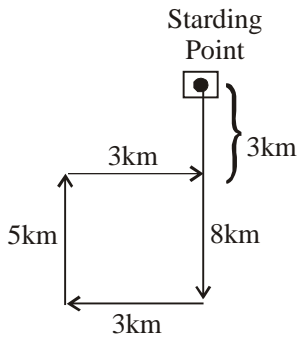
19. (a)



প্র্যাচিভর্ন

It is clear from the diagram that Raju is facing towards South-East.

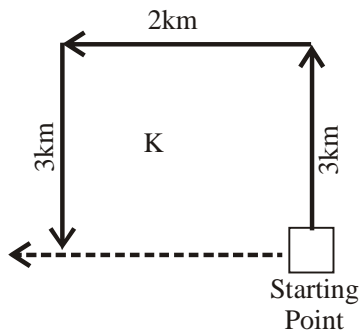
20. (d)



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It is clear from the diagram that Ashok was in South direction from the starting point.

21. (b)



It is clear from the diagram that finally A was walking in west direction.

22. (a) Day before yesterday was Thursday.

Today is Saturday.

Tomorrow will be Sunday.

প্র্যাচিভর্ন

23. (a) Day before yesterday was Sunday.

Therefore, today is Tuesday.

Day after tomorrow will be Thursday.

Thursday + 3 = Sunday

24. (d) The year 1989 was a normal year.

Days upto 15 August 1989 from August 15, 1988

= 16 + 30 + 31 + 30 + 31 + 31 + 28 + 31 + 30

+ 31 + 30 + 31 + 15 = 365 = 52 weeks 1 day

Therefore, Wednesday + 1 = Thursday

25. (c) Last Monday was December 29, 1975.

Tuesday → December 30, 1975

Wednesday → December 31, 1975

Thursday → January 1, 1976

Friday → January 2, 1976

26. (b) The given number series is based on the following pattern :

$$1438 - (3 \times 3) = 1429$$

$$1429 - (3 \times 4) = 1417$$

$$1417 - (3 \times 5) = 1402$$

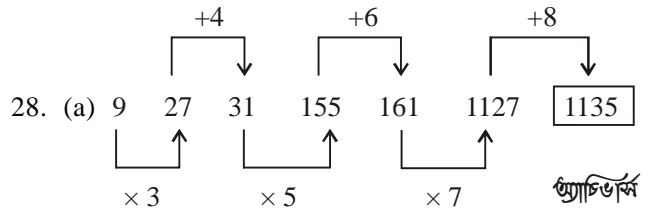
$$1402 - (3 \times 6) = \boxed{1384}$$

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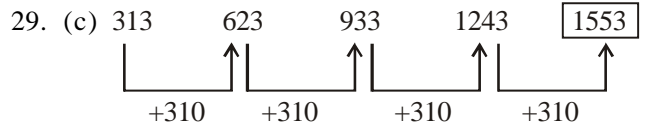
27. (d) Add 2, 3, 4, 5 ... respectively to numerators and add 4, 6, 8, 10.... respectively to the denominators.

Thus,

$$\frac{2}{3} + \frac{2}{4} \Rightarrow \frac{4}{7} + \frac{3}{6} \Rightarrow \frac{7}{13}$$



প্র্যাচিভর্ন



30. (d) G L A R E

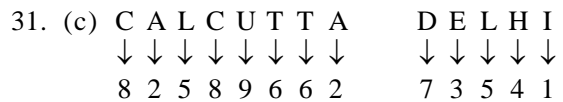
↓ ↓ ↓ ↓ ↓
6 7 8 1 0

And,

M O N S O O N
↓ ↓ ↓ ↓ ↓ ↓ ↓
2 3 9 5 3 3 9

Similarly,

R A N S O M
↓ ↓ ↓ ↓ ↓ ↓ ↓
1 8 9 5 3 2



Therefore,

C A L I C U T
↓ ↓ ↓ ↓ ↓ ↓ ↓
8 2 5 1 8 9 6

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32. (d) R A P D C N

↓ ↓ ↓ ↓ ↓ ↓ ↓
3 6 2 8 5 7

33. (a) 9 1 5 2 4 7

↓ ↓ ↓ ↓ ↓ ↓ ↓
L Y C P J N

34. (b) The letter 'H' is not present in the keyword. Therefore the word CHARTER cannot be formed.
35. (b) There is no 'O' or 'R' in the keyword. Therefore, the word BOARD cannot be formed.
There is no 'P' in the keyword.
Therefore, the word SHAPE cannot be formed.
There is no 'C' or 'R' in the keyword. Therefore, the word CRASH cannot be formed.

B L A N D I S H M E N T ଆଚିତ୍ତର୍କ

36. (c) Meaningful order of words:

b. Fever
↓
a. Doctor
↓
d. Diagnose
↓
c. Prescribe
↓
e. Medicine

37. (a) Meaningful order

a. Pulp
↓
c. Paper
↓
b. Print
↓
e. Publish
↓
d. Purchase

38. (c) Suppose the age of Johnny is x years and that of Rahul is y years.

According to question
Age of Hari = $2x = 5y$

or, $2x - 5y = 0$... (i)

Again $x = 3 + y$

or, $x - y = 3$... (ii)

On solving equations (i) and (ii), we get

$y = 2$

\therefore Age of Johnny = $3 + y = 3 + 2$
 $= 5$ years

39. (b) Suppose the age of son at present = x years

\therefore Present age of son

$= x + 30$ years

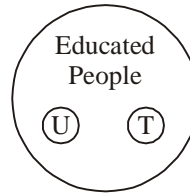
Age of father at the birth of his son

$= x + 30 - x = 30$ years

40. (b) From the two views of the dice, it is clear that Black is opposite to Red.

41. (c) The numbers 2, 4 and 5 cannot be on the opposite face of 6. From the two views of dice, it is clear that 2 is at bottom when 4 is at top.

42. (b)

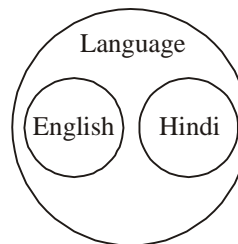


U = Unemployed ; T = Teacher

Educated people may be employed or unemployed.

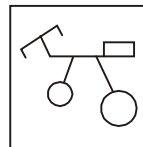
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43. (a)

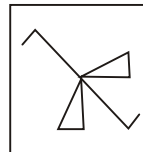


English and Hindi are two different languages.

44. (b)



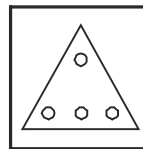
45. (d)



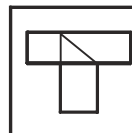
46. (a)



47. (a)



48. (d)



49. (d)

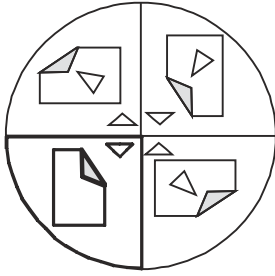


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50. (c)



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51. (d) $\frac{8}{25} = 0.32$, $\frac{7}{23} = 0.30$

$\frac{11}{23} = 0.47$, $\frac{14}{53} = 0.26$

 $\therefore \frac{14}{53}$ is the smallest fraction.

52. (d) LCM of 3, 2 and 6 = 6

$\therefore (3)^{\frac{1}{3}} = (3^2)^{\frac{1}{6}} = (9)^{\frac{1}{6}}$

$2^{\frac{1}{2}} = (2^3)^{\frac{1}{6}} = (8)^{\frac{1}{6}}$

$(1)^{\frac{1}{6}} = 1$;

$(6)^{\frac{1}{6}} = (6)^{\frac{1}{6}}$

53. (d) $\frac{13}{4} \times \frac{2}{3} - \left(\frac{9}{4} - \frac{5}{3}\right) \times \frac{3}{4}$

$= \frac{13}{6} - \left(\frac{27-20}{12}\right) \times \frac{3}{4}$

$= \frac{13}{6} - \frac{7}{12} \times \frac{3}{4} = \frac{13}{6} - \frac{7}{16}$

$= \frac{104-21}{48} = \frac{83}{48}$

54. (d) Let the numbers be $6x$ and $6y$ where x and y are prime to each other.

$\therefore 6x \times 6y = 216$

$\Rightarrow xy = \frac{216}{6 \times 6} = 6$

$\therefore \text{LCM} = 6xy = 6 \times 6 = 36$

55. (d) HCF of two numbers is 8.

This means 8 is a factor common to both the numbers. LCM is common multiple for the two numbers, it is divisible by the two numbers. So, the required answer = 60

56. (b) LCM of 3, 5, 6, 8, 10 and 12 = 120

 \therefore Required number $= 120x + 2$, which is exactly divisible by 13.

$120x + 2 = 13 \times 9x + 3x + 2$

Clearly $3x + 2$ should be divisible by 13.For $x = 8$, $3x + 2$ is divisible by 13. \therefore Required number

$= 120x + 2 = 120 \times 8 + 2$

$= 960 + 2 = 962$

57. (c) Suppose that

$1 + \frac{1}{10 + \frac{1}{10}} = \frac{111}{101} = a$

and $1 - \frac{1}{10 + \frac{1}{10}} = \frac{91}{101} = b$.

$\therefore \frac{a^2 - b^2}{(a+b)} = \frac{(a+b)(a-b)}{(a+b)}$

$= (a-b)$

$= \frac{111}{101} - \frac{91}{101} = \frac{20}{101}$

58. (d) Let, $a = 1 + \frac{1}{10 + \frac{1}{10}}$

$= 1 + \frac{1}{\frac{100+1}{10}} = 1 + \frac{10}{101}$

$= \frac{101+10}{101} = \frac{111}{101}$

Again,

$b = 1 - \frac{1}{10 + \frac{1}{10}} = 1 - \frac{1}{\frac{100+1}{10}}$

$= 1 - \frac{10}{101}$

$= \frac{101-10}{101} = \frac{91}{101}$

 \therefore Expression

$= (a^2 - b^2) \div ab$

$= \{(a+b)(a-b)\} \div ab$

$= \left(\frac{111}{101} + \frac{91}{101}\right) \left(\frac{111}{101} - \frac{91}{101}\right) \div \left(\frac{111}{101} \times \frac{91}{101}\right)$

$= \frac{202}{101} \times \frac{20}{101} \times \frac{101 \times 101}{111 \times 91}$

$= \frac{4040}{10101}$

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$$59. (a) \frac{2}{3} \times \frac{3}{\frac{5}{6} \div \frac{2}{3} \text{ of } 1\frac{1}{4}}$$

$$= \frac{2}{3} \times \frac{3}{\frac{5}{6} \div \frac{2}{3} \text{ of } \frac{5}{4}}$$

$$= \frac{2}{3} \times \frac{3}{\frac{5}{6} \times \frac{10}{12}}$$

$$= \frac{2}{3} \times \frac{3}{\frac{5}{6} \times \frac{10}{12}} = \frac{2}{3} \times \frac{3}{1} = 2$$

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$$60. (b) \text{ Required average}$$

$$= \frac{32 \times 60 + 33 \times 40}{72}$$

$$= \frac{1920 + 1320}{72} = \frac{3240}{72} = 45$$

প্র্যাচিভার্স

$$61. (a) \text{ Average of all numbers}$$

$$= \frac{30 \times 40 + 40 \times 30}{70}$$

$$= \frac{2400}{70} = 34\frac{2}{7}$$

$$62. (c) M + T + W + TH = 4 \times 37$$

$$= 148^\circ\text{C} \quad \dots\dots (i)$$

$$TH + F + S + S = 4 \times 41$$

$$= 164^\circ\text{C} \quad \dots\dots (ii)$$

$$M + T + \dots + S + S = 7 \times 39$$

$$= 273^\circ\text{C} \quad \dots\dots (iii)$$

$$\therefore \text{ The temperature of the fourth day}$$

$$= 148 + 164 - 273 = 39^\circ\text{C}$$

প্র্যাচিভার্স

$$63. (c) \frac{m}{n} = \frac{3}{2} \text{ (Given)}$$

$$\therefore \frac{4m + 5n}{4m - 5n} = \frac{4\left(\frac{m}{n}\right) + 5}{4\left(\frac{m}{n}\right) - 5}$$

$$= \frac{4 \times \frac{3}{2} + 5}{4 \times \frac{3}{2} - 5} = \frac{6 + 5}{6 - 5} = 11:1$$

প্র্যাচিভার্স

$$64. (b) \text{ Given, } \frac{x}{y} = \frac{2}{3} \dots\dots(i)$$

$$\text{Expression} = \frac{3x + 2y}{9x + 5y}$$

$$= \frac{3 \cdot \frac{x}{y} + 2}{9 \cdot \frac{x}{y} + 5} = \frac{3 \times \frac{2}{3} + 2}{9 \times \frac{2}{3} + 5}$$

$$= \frac{2 + 2}{6 + 5} = \frac{4}{11}$$

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$$65. (c) \frac{x}{y} = \frac{5}{6}$$

$$\therefore \frac{3x^2 - 2y^2}{y^2 - x^2} = \frac{3 \cdot \frac{x^2}{y^2} - 2}{1 - \frac{x^2}{y^2}}$$

$$= \frac{3 \times \frac{25}{36} - 2}{1 - \frac{25}{36}} = \frac{75 - 72}{36 - 25} = \frac{3}{11}$$

$$= 3 : 11$$

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66. (d) Since 18% of the students neither play football nor cricket. It means 82% of the students either play football or cricket or both.

Using set theory
 $\therefore n(A \cup B) = n(A) + n(B) - n(A \cap B)$
 $\Rightarrow 82 = 40 + 50 - n(A \cap B)$
 $\Rightarrow n(A \cap B) = 90 - 82 = 8$
 \therefore 8% students play both games.

$$67. (d) \frac{A \times 90}{100} = \frac{B \times 30}{100}$$

$$\Rightarrow 3A = B$$

$$\Rightarrow 3A = A \times \frac{2x}{100}$$

$$\Rightarrow 300 = 2x \Rightarrow x = 150$$

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$$68. (c) \text{ After taking away respective balls,}$$

$$\text{Number of balls in the box}$$

$$= 75 + 25 + 50 = 150$$

$$\therefore \text{ Percentage of black balls}$$

$$= \frac{50}{150} \times 100$$

$$= \frac{100}{3} = 33\frac{1}{3}\%$$

69. (c) If the C.P. be x, then

$$\frac{x \times 130}{100} = 1690$$

$$\Rightarrow x = \frac{1690 \times 100}{130} = ₹ 1300$$

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70. (c) S.P. of the fan = $\frac{150 \times 80}{100} = ₹ 120$

71. (b) Actual C.P. of radio

= $600 + \frac{600 \times 5}{100} = ₹ 630$

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∴ Required S.P. = $\frac{630 \times 115}{100} = ₹ 724.50$

72. (b) Case I : A single discount of 30%

Case II : Two successive discounts of 20% and 10% Single equivalent discount

= $(20 + 10 - \frac{20 \times 10}{100})\% = 28\%$

Difference = $(30 - 28)\% = 2\%$

∴ Required difference = 2% of 550

= $₹ \frac{2 \times 550}{100} = ₹ 11.$

73. (c) (i) : Equivalent discount

= $(25 + 15 - \frac{25 \times 15}{100})\%$

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= $(40 - 3.75)\% = 36.25\%$

(ii) : Equivalent discount

= $(30 + 10 - \frac{30 \times 10}{100})\%$

= $(40 - 3)\% = 37\%$

(iii) : Equivalent discount

= $(35 + 5 - \frac{35 \times 5}{100})\%$

= $(40 - 1.75)\% = 38.25\%$

Clearly, third offer is best for a customer.

74. (d) Let the principal be x.

S.I. = $\frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$

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⇒ $5400 = \frac{x \times 12 \times 3}{100}$

⇒ $x = \frac{5400 \times 100}{12 \times 3} = ₹ 15000$

75. (b) ₹ 720 (i)

Principal + SI for 7 years = ₹ 1020(ii)

Subtracting equation (i) from (ii)

get,

SI for 5 years

= $₹ (1020 - 720) = ₹ 300$

∴ SI for 2 years

= $₹ 300 \times \frac{2}{5} = ₹ 120$

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∴ Principal

= $₹ (720 - 120) = ₹ 600$

76. (d) After 10 years,

SI = $\frac{1000 \times 5 \times 10}{100} = ₹ 500$

Principal for 11th year

= $1000 + 500 = ₹ 1500$

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SI = $₹ (2000 - 1500) = ₹ 500$

∴ $T = \frac{\text{SI} \times 100}{P \times R} = \frac{500 \times 100}{1500 \times 5}$

= $\frac{20}{3}$ years = $6\frac{2}{3}$ years

∴ Total time = $10 + 6\frac{2}{3} = 16\frac{2}{3}$ years

77. (c) S.I. for 1 year

= $14250 - 12900 = ₹ 1350$

S.I. for 4 years = $1350 \times 4 = ₹ 5400$

∴ Principal = $12900 - 5400 = ₹ 7500$

∴ Rate = $\frac{\text{S.I.} \times 100}{\text{Principal} \times \text{Time}}$

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= $\frac{5400 \times 100}{7500 \times 4} = 18\%$ per annum

78. (a) Let the required time be n years.

Then,

$1331 = 1000 \left(1 + \frac{10}{100}\right)^n$

$\left[\because P_1 = P \left(1 + \frac{r}{100}\right)^n\right]$

⇒ $\frac{1331}{1000} = \left(\frac{10+1}{10}\right)^n$

⇒ $\left(\frac{11}{10}\right)^n = \left(\frac{11}{10}\right)^3$

⇒ $n = 3$

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79. (d) Let the sum be x.

∴ $1352 = x \left(1 + \frac{4}{100}\right)^2$

⇒ $1352 = x \left(1 + \frac{1}{25}\right)^2$

⇒ $1352 = x \left(\frac{26}{25}\right)^2$

⇒ $x = \frac{1352 \times 25 \times 25}{26 \times 26} = ₹ 1250$

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80. (a) $A = P \left(1 + \frac{R}{100}\right)^T$

Let rate be 'r'

$$\Rightarrow \frac{1102.50}{1000} = \left(1 + \frac{r}{100}\right)^2$$

$$\Rightarrow \frac{11025}{10000} = \left(1 + \frac{r}{100}\right)^2$$

$$\Rightarrow \frac{11025}{10000} = \left(1 + \frac{r}{100}\right)^2$$

$$\Rightarrow \left(\frac{105}{100}\right)^2 = \left(1 + \frac{r}{100}\right)^2$$

$$\Rightarrow 1 + \frac{r}{100} = \frac{105}{100}$$

$$\Rightarrow \frac{r}{100} = \frac{5}{100}$$

$$\Rightarrow r = 5\%$$

81. (c) Time taken

$$= \frac{2 \times 8 \times 6 \times 10}{8 \times 6 + 6 \times 10 + 10 \times 8}$$

$$= \frac{960}{48 + 60 + 80} = \frac{960}{188}$$

$$= \frac{240}{47} = 5 \frac{5}{47} \text{ days}$$

82. (a) A alone can complete the work in 42 days working 1 hour daily.

Similarly, B will take 56 days working 1 hour daily.

$$\text{A's 1 day's work} = \frac{1}{42}$$

$$\text{B's 1 day's work} = \frac{1}{56}$$

(A + B)'s 1 day's work

$$= \frac{1}{42} + \frac{1}{56} = \frac{4+3}{168} = \frac{7}{168}$$

\(\therefore\) Time taken by (A + B) working

$$8 \text{ hours daily} = \frac{168}{7 \times 8} = 3 \text{ days}$$

83. (c) (A + B)'s 1 day's work = $\frac{1}{5}$

$$\text{A's 1 day's work} = \frac{1}{8}$$

$$\therefore \text{B's 1 day's work} = \frac{1}{5} - \frac{1}{8}$$

$$= \frac{8-5}{40} = \frac{3}{40}$$

\(\therefore\) B alone will complete the work in

$$\frac{40}{3} = 13 \frac{1}{3} \text{ days.}$$

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84. (d) (A + B)'s 1 day's work

$$= \frac{1}{6} + \frac{1}{12} = \frac{2+1}{12} = \frac{1}{4}$$

\(\therefore\) A and B together will complete the work in 4 days.

85. (b) Part of the cistern filled by pipe Q in 1 minute

$$= \frac{1}{20} - \frac{1}{30} = \frac{3-2}{60} = \frac{1}{60}$$

\(\therefore\) Required time = 60 minutes

86. (a) Part of the tank filled by all three taps in an hour

$$= \frac{1}{4} + \frac{1}{6} + \frac{1}{12} = \frac{6+4+2}{24} = \frac{1}{2}$$

\(\therefore\) Hence, the tank will be filled in 2 hours.

87. (a) Part of the tank filled in an hour by both pumps

$$= \frac{1}{8} + \frac{1}{10} = \frac{5+4}{40} = \frac{9}{40}$$

\(\therefore\) Part of the tank filled in 4 hours

$$= \frac{4 \times 9}{40} = \frac{9}{10}$$

88. (d)



The distance covered upstream

$$= AC = d$$

$$AB = 100$$

$$BC = 100 + d$$

Rate upstream

$$= (x - y) \text{ m/minute}$$

Rate downstream

$$= (x + y) \text{ m/minute}$$

$$\therefore \frac{d}{x - y} = 5$$

$$\Rightarrow d = 5(x - y) \dots(i)$$

Again,

$$\frac{100 + d}{x + y} = 5$$

$$\Rightarrow \frac{100 + 5(x - y)}{x + y} = 5 \text{ (By (i))}$$

$$\Rightarrow 100 + 5x - 5y = 5x + 5y$$

$$\Rightarrow 10y = 100$$

$$\Rightarrow y = 10 \text{ m/minute}$$

$$= \frac{10}{1000} \times 60 \text{ kmph}$$

$$= 0.6 \text{ kmph}$$

89. (c) Let the speed of man in still water be x kmph and rate of stream be y kmph

$$\therefore \text{Distance} = \frac{750}{1000} \text{ km} = \frac{3}{4} \text{ km}$$

$$\text{Time} = 675 \text{ seconds} = \frac{675}{60} = 11 \frac{1}{4} \text{ minutes}$$

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$$\therefore x - y = \frac{\frac{3}{4}}{\frac{45}{4}} = \frac{3}{45} = \frac{1}{15} \text{ km/min}$$

$$\text{and } x + y = \frac{\frac{3}{4}}{\frac{15}{2}}$$

$$= \frac{3}{4} \times \frac{2}{15} = \frac{1}{10} \text{ km/min}$$

\therefore Speed in still water

$$= \frac{1}{2} \left(\frac{1}{10} + \frac{1}{15} \right) = \frac{1}{2} \left(\frac{3+2}{30} \right)$$

$$= \frac{1}{12} \text{ km/min}$$

$$= \frac{1}{12} \times 60 \text{ kmph} = 5 \text{ kmph}$$

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90. (b) Let the speed of stream be x kmph, then speed of boat in still water = $4x$ kmph

\therefore Rate downstream

$$= 4x + x = 5x \text{ kmph}$$

Rate upstream = $4x - x$

$$= 3x \text{ kmph}$$

$$\therefore \frac{30}{3x} + \frac{30}{5x} = 8 \Rightarrow \frac{10}{x} + \frac{6}{x} = 8$$

$$\Rightarrow \frac{16}{x} = 8 \Rightarrow x = \frac{16}{8} = 2 \text{ kmph}$$

91. (d) Using Rule 9,

Let the breadth be x m.

$$\therefore \text{Length} = (23 + x) \text{ m}$$

$$\Rightarrow 2(x + 23 + x) = 206$$

$$\Rightarrow 4x = 206 - 46$$

$$\Rightarrow x = \frac{160}{4} = 40 \text{ m}$$

$$\therefore \text{Length} = 40 + 23 = 63 \text{ m}$$

$$\therefore \text{Required area} = 63 \times 40 = 2520 \text{ m}^2$$

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92. (d) Let the breadth of rectangular hall = x m.

$$\therefore \text{length} = (x + 5) \text{ m.}$$

Area of hall

$$= \text{Length} \times \text{Breadth}$$

$$\Rightarrow 750 = (x + 5) x$$

$$\Rightarrow x^2 + 5x - 750 = 0$$

$$\Rightarrow x^2 + 30x - 25x - 750 = 0$$

$$\Rightarrow x(x + 30) - 25(x + 30) = 0$$

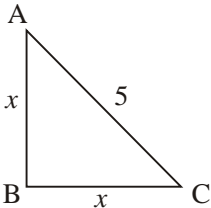
$$\Rightarrow (x - 25)(x + 30) = 0$$

$$\Rightarrow x = 25, \text{ as } x \text{ cannot be negative.}$$

$$\therefore \text{Length of hall} = x + 5$$

$$= 25 + 5 = 30 \text{ m.}$$

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93. (b) 

$$x^2 + x^2 = (5)^2 \Rightarrow 2x^2 = 25$$

$$\Rightarrow x^2 = \frac{25}{2} \Rightarrow x = \frac{5}{\sqrt{2}}$$

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$$\text{Area} = \frac{1}{2} \times \frac{5}{\sqrt{2}} \times \frac{5}{\sqrt{2}}$$

$$= \frac{25}{4} = 6.25 \text{ sq.cm.}$$

94. (a) $\pi(r + 1)^2 - \pi r^2 = 22$

$$\Rightarrow \pi(r^2 + 2r + 1 - r^2) = 22$$

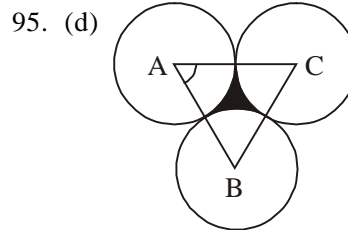
$$\Rightarrow 2\pi r + \pi = 22$$

$$\Rightarrow \frac{22}{7}(2r + 1) = 22$$

$$\Rightarrow 2r + 1 = 7$$

$$\Rightarrow 2r = 6 \Rightarrow r = 3 \text{ cm.}$$

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Let $AB = BC = CA = 2a$ cm.
 $\angle BAC = \angle ACB = \angle ABC = 60^\circ$

$$\text{Area of } \Delta ABC = \frac{\sqrt{3}}{4} \times (\text{side})^2$$

$$= \frac{\sqrt{3}}{4} \times 4a^2$$

$$= \sqrt{3}a^2 \text{ sq.cm.}$$

Area of three sectors

$$= 3 \times \frac{60}{360} \times \pi \times a^2$$

$$= \frac{\pi a^2}{2} \text{ sq.cm.}$$

Area of the shaded region

$$= \sqrt{3}a^2 - \frac{\pi}{2}a^2$$

$$= \left(\frac{2\sqrt{3} - \pi}{2} \right) a^2 \text{ sq.cm.}$$

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96. (c) House rent per month
= 18% of ₹ 33650

$$= ₹ \frac{18 \times 33650}{100} = ₹ 6057$$

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97. (a) Annual provident fund savings
= 12% of (₹ 33650 × 12)

$$= ₹ \frac{12 \times 33650 \times 12}{100} = ₹ 48456$$

98. (c) Remaining monthly income
= [100 – (12 + 18)]% of ₹ 33650

$$= ₹ \frac{70 \times 33650}{100} = ₹ 23555$$

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99. (b) Amount spent on food and entertainment
together

= 34% of ₹ 33650

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$$= ₹ \frac{34 \times 33650}{100} = ₹ 11441$$

100. (d) Expenditure on children = 23%

Provident fund savings = 12%

For no children, total savings = 35%

∴ Required savings

= 35% of ₹ 33650

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$$= ₹ \frac{35 \times 33650}{100} = ₹ 11777.50$$

