TIME AND WORK-2_CSAT_ANSWER_EXPLANATION

Answer 1: (C)

Work done by Akshay in 4 days = $\frac{4}{24}=\frac{1}{6}$

Work done by Sonia = $1-\frac{1}{6}=\frac{5}{6}$

Answer 2: (D)

$\frac{3}{11}$ unit work done in 33 days

1 unit work done in $\frac{33\times11}{3}$ = 121 days

Answer 3: (B)

A & B can do half work in 3 days.

A & B will do full work in $\frac{3\times2}{1}$ = 6 days

$\frac{\text{Efficiency of A}}{\text{Efficiency of B}}=\frac{150}{100}=\frac{3}{2}$

A will do work alone in $\frac{6\times\ 3+2}{3}$ = 10 days

B will do work alone in $\frac{6\times\ 3+2}{2}$ = 15 days

A	10	$3\xrightarrow{\times5}$	= 15
	30		
B	15	$2\xrightarrow{\times5}$	10

Remaining work = 30 – 25 = 5 units

B will complete the left work in = $\frac{5}{2}$ days

Answer 4: (B)

		Capacity
Rehman	12	4
	LCM (12, 16) = 48	
Rohan	16	3

Work done by both in 1 day = $\frac{4+3}{48}=\frac{7}{48}$

Work done by both in 6 days = $\frac{7\times6}{48}=\frac{7}{8}$

Answer 5: (C) (Refer Ans 4)

Required percentage = $\frac{4-3}{3}\times100=33\frac{1}{3}\%$

Answer 6: (B) (Refer Ans 4)

Remaining work = $1-\frac{7}{8}=\frac{1}{8}$

$\frac{1}{8}$ unit done by Ankit in 8 days

1 unit will be done by Ankit in $\frac{8\times8}{1}$ = 64 days

Answer 7: (B)

Let the work completed in x days

Ankit	12	$7\xrightarrow{\times x}$	7x
	84		
Vipin	14	$6\xrightarrow{\times x-3}$	6(x – 3)

According to question,

84 = 7x+6x-18

⇒ 13x = 102

⇒ x = $\frac{102}{13}=7\frac{11}{13}$

Answer 8: (D)

Let A & B work together for x days.

	Time	Capacity
A	15	5
	75	
B	25	3

According to question,

75 = 3x + 5(x+5)

⇒ 8x = 50

⇒ x = $\frac{25}{4}$ days

Answer 9: (D)

Tapsi can do work in 27 days.

$\frac{\text{Eff. of Sudhir}}{\text{Eff. of Tapsi}} = \frac{2}{1}$

$\therefore$ Sudhir will do work in $\frac{27}{2}$ days.

Answer 10: (C)

	Time	Total work	Capacity
Tapsi	27	27	1
Sudhir	$\frac{27}{2}$		2

Together they will take $\frac{27}{1+2}$ = 9 days.

Answer 11: (B)

	Time	Total work	Capacity
A	12	LCM(12,10,16) = 240	20
B	10		24
C	16		15

Work done in 3 days = 20 + 24 + 15

= 59 units

Work done in 12 days = 59 × 4 = 236 units

Now, it is A's turn and the time taken by A to complete four units of work = $4/20 = \frac{1}{5}$ day

$\therefore$ 240 unit will be completed in $12\frac{1}{5}$ days.

Answer 12: (A)

We know that, $\frac{M_1D_1H_1}{W_1} = \frac{M_2D_2H_2}{W_2}$

$\Rightarrow \frac{(6M+2B)}{3}$ = 1M+1B

$\Rightarrow$ 6M + 2B = 3M+3B

$\Rightarrow$ 3M = B

$\Rightarrow$ M:B = 1:3

Answer 13: (B)

We know that, $\frac{M_1D_1H_1}{W_1} = \frac{M_2D_2H_2}{W_2}$

$\Rightarrow$ (6M+10W)8 = (5M+9W)9

$\Rightarrow$ 48M+80W = 45M+81W

$\Rightarrow$ 3M = W

$\Rightarrow \frac{M}{W} = \frac{1}{3}$

18 men will complete work in $\frac{6(1)+10(3)\ 8}{18(1)}$

= $\frac{36\times 8}{18}$ = 16 days

Answer 14: (C)

8 boys complete a work in 24 days.

10 men complete a work in 20 days.

20 women complete a work in 20 days.

50 women, 25 men & 16 boys 1 day's work

= $50\times\frac{1}{20\times 20}+25\times\frac{1}{10\times 20}+16\times\frac{1}{8\times 24}$

= $\frac{1}{8}+\frac{1}{8}+\frac{1}{12}=\frac{1}{4}+\frac{1}{12}=\frac{3+1}{12}=\frac{1}{3}$

$\therefore$ Time taken = 3 days

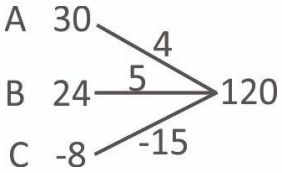
Answer 15: (A)

	Pipe 1 :	Pipe 2
Diameter $\rightarrow$	P :	4P
Efficiency $\rightarrow$	$(P)^2$:	$(4P)^2$
	1 :	16

Total work = 1 × 120 = 120 unit

Required time = $\frac{120}{16}$ = $7\frac{1}{2}$ min

Answer 16: (C)



2 hours work of pipe A = 4 × 2 = 8 units

1 hour work of pipe B = 5 units

Total work done by pipe A and B upto 12 noon

= 8 + 5 = 13 units

Required time = $\frac{13}{4+5-15}\times 60$ = 130 min

= 2 hours 10 min

Hence the tank will be emptied at 12:00 + 2:10 = 14:10 i.e. 2:10 pm

Answer 17: (B)

	A	:	B
Efficiency→	3	:	1
Time→	1	:	3

diff : 2 unit

2 units = 64 hours

1 unit = 32 hours

Total work = 32 × 3 = 96 units

Required time = $\frac{96}{4}$ = 24 hours

Answer 18: (A)

A	:	B	:	C
2	:	1		
		2	:	1
4	:	2	:	1

Required time = $\frac{25\times(4+2+1)}{4}=43\frac{3}{4}$ hours

Answer 19: (B)

Here, the cistern be filled by pipe A in x hours. Then,

pipe B will fill it in (x + 12) hours.

According to the question,

$x^2 - 4x - 96 = 0$

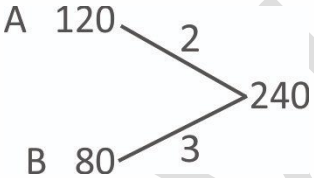
$\Rightarrow x^2 - 12x + 8x - 96 = 0$

$\Rightarrow x \neq -8, x = 12$

$\Rightarrow x = 12$

Hence, A can alone fill the cistern in 12 hours.

Answer 20: (B)



Let the tank be filled in x minutes.

Total work = 240 units

According to question,

$\frac{x}{2}\times 3+\frac{x}{2}\times(2+3)=240$

$\Rightarrow \frac{8x}{2}=240$

$\Rightarrow x = 60$ min