RRB JE Memory Based (Solutions)

S1. Ans.(b)

Sol. Required time taken $= \frac{\text{Distance}}{\text{speed}} = \frac{162}{13-4} = 18$ hrs

S2. Ans.(c)

Sol. Difference in SI and CI $= \frac{Pr^2}{100}$

$\Rightarrow 260 = \frac{P\times5^2}{100}$

$\Rightarrow$ P = Rs 1040

S3. Ans.(a)

Sol.

$\text{Sin}\left(\frac{\pi}{2}+\frac{\pi}{4}\right) - \tan\left(\pi-\frac{\pi}{3}\right) = \cos\frac{\pi}{4} + \tan\frac{\pi}{3} = \frac{1}{\sqrt{2}} + \sqrt{3} = \frac{1+\sqrt{6}}{\sqrt{2}}$

S4. Ans.(d)

Sol. Let actual cost price be x

$\therefore$ S. P $= \frac{85x}{100}$

Now,

$\frac{120x}{100} - \frac{85x}{100} = 105$

$\Rightarrow \frac{35x}{100} = 105 \Rightarrow$ x= Rs 300

S5. Ans.(a)

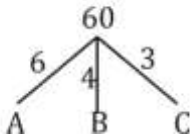
Sol.

$\frac{\text{volume of sphere}}{\text{Volume of cylinder}} = \frac{\frac{4}{3}\pi r^3}{\pi r^2\ (2r)} = \frac{2}{3}$

S6. Ans.(b)

Sol.

LCM of (10, 15, 20) $\longrightarrow$ 60



Efficiency of A, B, C = 6, 4, 3

In 2 days they will complete = 13 × 2 = 26 work

Remaining 34 work will be completed by A and C only in $\frac{34}{9} = 3\frac{7}{9}$ days

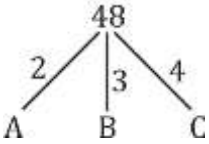
S7. Ans.(b)
Sol.
$\sin\left(\pi+\frac{\pi}{4}\right)\sin\left(\pi-\frac{\pi}{4}\right)\sin\frac{\pi}{4}$
$= -\sin\frac{\pi}{4}\sin\frac{\pi}{4}\sin\frac{\pi}{4} = -(\sin\frac{\pi}{4})^3 = -\frac{1}{2\sqrt{2}}$

S8. Ans.(b)
Sol. 48 km → 4 hours
72 km → 4 × 1.5 = 6 hrs

S9. Ans.(b)
Sol. Product of two co-prime number is equal to the LCM.

S10. Ans.(d)
Sol. Circumference = $\frac{22}{7}\times\frac{7}{4}\times 2 = 11$ m
Distance travelled = 22000 m
Revolutions = $\frac{22000}{11}$ = 2000 revolutions

S11. Ans.(a)
Sol. LCM of 24, 16, 12 = 48



Efficiency of A, B, C = 2, 3, 4
They can complete the whole work in $\frac{48}{9} = 5\frac{1}{3}$ days.

S12. Ans.(b)
Sol. HCF of 12, 18 = 6
LCM of $\frac{1}{12}, \frac{1}{18} = \frac{1}{6}$

S13. Ans.(d)
Sol. $(1300-1)^2 = 1690000 - 2600 + 1$
$= 1687400 + 1$
$= 1687401$

S14. Ans.(d)
Sol.

	Initial	Final
Ratio of time	4	3
Ratio of speed	3	4

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

S15. Ans.(d)

Sol.	**Milk**	**Water**
Container I	7	2
Container II	5	4
Container III	12	8

Milk to Water = 3 : 2
Water of Milk = 2 : 3

S16. Ans.(d)
Sol.

$\sqrt{(37+20\sqrt{3})}-\sqrt{61+28\sqrt{3}}$

$\sqrt{(5+2\sqrt{3})^2}-\sqrt{(7+2\sqrt{3})^2}$

$= 5 + 2\sqrt{3} - 7 - 2\sqrt{3}$

$= -2$

S17. Ans.(c)
Sol. Let CP = 100x
Initial SP = 120x.
New CP = 60x
New SP = 140x.
Now, ATQ : →
140x – 120x = 115
20x = 115
⇒ 100x = 575

S18. Ans.(b)
Sol.

$\sin^2\theta - \sin\theta - 2\sin\theta + 2 = 0$
$\sin\theta(\sin\theta - 1) - 2(\sin\theta - 1) = 0$
$(\sin\theta - 2)(\sin\theta - 1) = 0$
$\sin\theta = 1$
$\sin\theta \neq 2$
$\theta = 90°$

S19. Ans.(a)
Sol. ATQ,
If we calculated 20% per annum for two year

$= \left(20 + 20 + \frac{20\times20}{100}\right) = 44\%$

If Interest calculated half yearly, then,

$\left(10\% + 10\% + \frac{10\times10}{100}\right) = 21\%$

Then $\left(21\% + 10\% + \frac{21\times10}{100}\right) = 31 + 2.1 = 33.1\%$

Again successive for last six month.

$\left(33.1\% + 10\% + \frac{33.1\times10}{100}\right) = 46.41\%$

So, If Difference given = 241

& Difference in percentage = 46.41% – 44%

$\Rightarrow 2.41\% = 241$

$100\% = \frac{241}{2.41} \times 100$

= 10000

S20. Ans.(d)

Sol. $x^2 + 1 = 3x$

$x + \frac{1}{x} = 3$

$x^3 + \frac{1}{x^3} = 27 - 3 \times 3$

$= 27 - 9 = 18$

S21. Ans.(c)

Sol.

$\frac{2x + y}{3x} = \frac{2}{1}$

2x + y = 6x

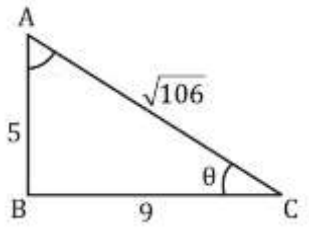
y = 4x ℓtr

Vol. of initial mixture = 5x

% added $= \frac{4x}{5x} \times 100\% = 80\%$

S22. Ans.(b)

Sol.



$= \frac{5\sin\theta + 9\cos\theta}{5\sin\theta - 9\cos\theta}$

$= \frac{\frac{5\times5}{\sqrt{106}} + \frac{9\times9}{\sqrt{106}}}{\frac{5\times5}{\sqrt{106}} - \frac{9\times9}{\sqrt{106}}}$

$= \frac{106}{-56}$

$= \frac{-53}{28}$

S23. Ans.(d)

Sol. X + 4, said to be a factor of the eqn. if x = –4, satisfy the given eqn.

So,

$3(-4)^2 + K(-4) + 8 = 0$

$48 - 4K + 8 = 0$

$4K = 56$

$K = 14$

S24. Ans.(b)

Sol. S.I for 4 years = 1200 - 840 = 360

S.I for 3 years=270

Principal = 840 – 270 =570

S25. Ans.(b)

Sol.

$\text{cosec}^2\theta + \cot^2\theta = 7$

$\text{Cosec}^2\theta - \cot^2\theta + 2\cot^2\theta = 7$

$1 + 2\cot^2\theta = 7$

$\text{Cot}^2\theta = 3$

$\theta = 30°$

S26. Ans.(a)

Sol.

	Vessel I			Vessel II		
	M	:	W	M	:	W
Ratio	1	:	3	2	:	1
Parts	$\frac{1}{4}$		$\frac{3}{4}$	$\frac{2}{3}$		$\frac{1}{3}$

\+ \+

New mixture ratio $\left(\frac{1}{4}+\frac{2}{3}\right) : \left(\frac{3}{4}+\frac{1}{3}\right)$

$\Rightarrow 11 : 13$

S27. Ans.(b)

Sol. $(a+b)^2 - (a-b)^2 = 4ab$

A.T.Q $\frac{(525+252)^2-(525-252)^2}{525\times252}$

$= \frac{4\times525\times252}{525\times252}$

$=4.$

S28. Ans.(d)
Sol. Area = 456
$\frac{1}{2} \times$ base $\times$ height $= 456$
Base $= \frac{456 \times 2}{24} = 38$

S29. Ans.(b)
Sol. $4082 \div 157 - 23 = 3$

S30. Ans.(c)
Sol. 1.5 kg of sugar solution 40% sugar
1500 gm solution $= \frac{1500 \times 40}{100} = 600$ gm sugar
900 gm water
Making 50% add 300 gm sugar = 0.3 kg

S31. Ans.(d)
Sol. Number of players in a basketball team is 5 similarly, number of players in a team in football is 11

S32. Ans.(a)
Sol. $3^2 + 3 = 12 : 3 \times 10 = 30$
Similarly, $4^2 + 4 = 20 : 4 \times 10 = 40$

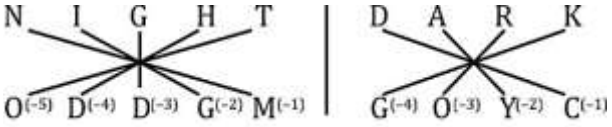
S33. Ans.(a)
Sol. $5^3 - 1 = 124$
$6^3 - 1 = 215$

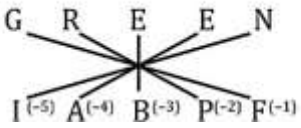
S34. Ans.(a)
Sol. Squares and cubes of prime numbers except option (c)

S35. Ans.(d)
Sol. Pair of opposite letters. Sequence, except CWDX.

S36. Ans.(d)
Sol. Except 203, all other are divisible by 9.

S37. Ans.(a);
Sol.





S38. Ans.(a)
Sol. $4 \times 3 - 6 \div 2 + 7 = 8$
$4 \times 3 + 6 \div 2 - 7 = 8$
$12 + 3 - 7 = 8$
$8 = 8$

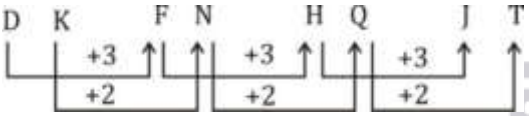
S39. Ans.(d)
Sol. Number of married adults is 18+23 = 41

S40. Ans.(d)
Sol. According to option (d).
$18 \div 6 \times 8 + 12 = 36$
$24 + 12 = 36$
So, only option (d) correct.

S41. Ans.(b)
Sol. PEN – TAN = 35 – 35 = 0
P + E + N = 35
DEN – COB = (4 + 5 + 14) – (3 + 15 + 2) = 3

S42. Ans.(a)

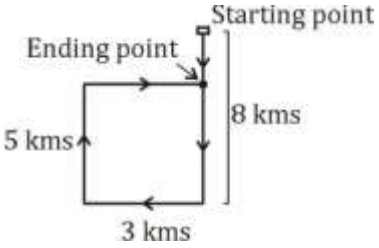
S43. Ans.(b)
Sol.



S44. Ans.(c)
Sol. $2 \times 2 + 1 = 5$ $17 \times 4 + 3 = 71$
$5 \times 3 + 2 = 17$ $71 \times 5 + 4 = 359$

S45. Ans.(d)
Sol. $= 2 \div 6 \times 6 \div 2$
$= 2 + 6 \div 6 + 2$
$= 2 + 1 + 2 = 5$

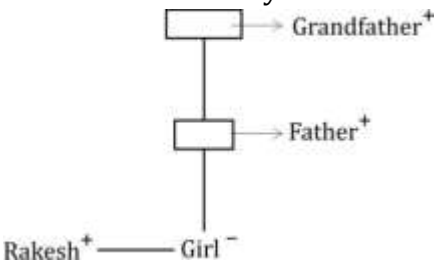
S46. Ans.(d)
Sol. South



S47. Ans.(b)
Sol. Two alternate series ie. +25 series and ×3series

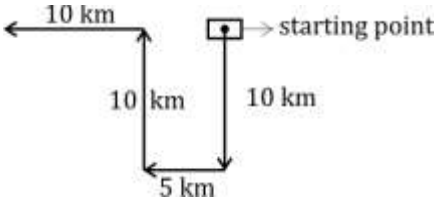
S48. Ans.(d)
Sol.
5, $\underset{+6}{\_\_}$ 11, $\underset{+6}{\_\_}$ 17, $\underset{+8}{\_\_}$ 25, $\underset{+8}{\_\_}$ 33, $\underset{+10}{\_\_}$ 43, $\underset{+10}{\_\_}$ 53

S49. Ans.(a)
Sol. From the family tree —



So, Rakesh is brother of Girl.

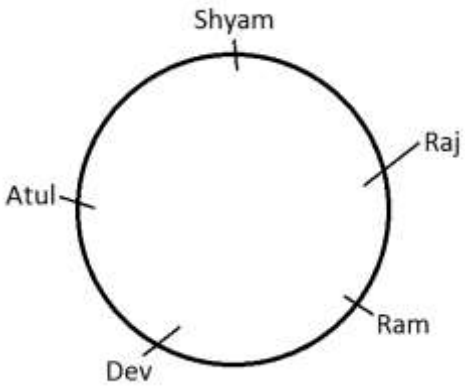
S50. Ans.(d)
Sol.



Req. Distance = 10 + 5 = 15 km

S51. Ans.(c)

Solutions (52-54):



S52. Ans.(a)
S53. Ans.(b)
S54. Ans.(a)

S55. Ans.(a)

Sol.

Row – 1	S	R	Q	P	Vacant
Row – 2	A	C	D	Vacant	B

S56. Ans.(a)
S57. Ans.(b)
S58. Ans.(c)
S59. Ans.(c)
S60. Ans.(a)
S61. Ans.(c)
S62. Ans.(d)
S63. Ans.(b)
S64. Ans.(b)
S65. Ans.(a)
S66. Ans.(d)
S67. Ans.(a)
S68. Ans.(b)
S69. Ans.(a)
S70. Ans.(b)
S71. Ans.(b)
S72. Ans.(a)
S73. Ans.(c)
S74. Ans.(a)
S75. Ans.(b)
S76. Ans.(b)
S77. Ans.(b)
S78. Ans.(d)
S79. Ans.(c)
S80. Ans.(b)
S81. Ans.(d)
S82. Ans.(a)
S83. Ans.(b)
S84. Ans.(c)
S85. Ans.(d)
S86. Ans.(a)
S87. Ans.(c)
S88. Ans.(a)
S89. Ans.(c)
S90. Ans.(a)
S91. Ans.(b)
S92. Ans.(c)
S93. Ans.(b)
S94. Ans.(a)
S95. Ans.(c)
S96. Ans.(b)
S97. Ans.(c)
S98. Ans.(b)
S99. Ans.(a)
S100. Ans.(a)