## RPF (SI) MOCK TEST - 8 (SOLUTION)

51. (B) A.T.Q,
$\frac{1}{1+a^{p-q}}+\frac{1}{1+a^{q-p}}$
$=\frac{1}{1+\frac{a^{p}}{a^{q}}}+\frac{1}{1+\frac{a^{q}}{a^{p}}}$
$=\frac{a^{q}}{a^{q}+a^{p}}+\frac{a^{p}}{a^{p}+a^{p}}=\frac{a^{p}+a^{q}}{a^{p}+a^{q}}=1$
52. (D) A.T.Q,

Required time $=\frac{195-(27 \times 5)}{12}=5$ days
53. (C) A.T.Q.,

Efficiency A: B:C
1:2:6
Time $6: 3: 1$
Now, $\frac{1}{6 x}+\frac{1}{3 x}+\frac{1}{x}=\frac{1}{6}$
$\Rightarrow \frac{1+2+6}{6 x}=\frac{1}{6} \Rightarrow x=9$
$\therefore$ Required time $=9 \times 6=54$ hours
54. (B) A.T.Q.,

Initially share of each person $=\frac{1}{9}$
Now, share of each person $=\frac{1}{8}$
then, increase $=\frac{1}{8}-\frac{1}{9}=\frac{1}{72}$
$\therefore$ Required increment $=\frac{\frac{1}{72}}{\frac{1}{9}} \times 100=12 \frac{1}{2} \%$
55. (A)

$$
\begin{aligned}
& 1+\frac{2}{3+\frac{4}{5+\frac{6}{7+\frac{8}{9}}}}=1+\frac{2}{3+\frac{4}{5+\frac{54}{71}}} \\
& =1+\frac{2}{3+\frac{284}{409}}=1+\frac{818}{1511}=\frac{2329}{1511}
\end{aligned}
$$

56. (C) Required number
$=$ HCF of (89-47), (187-89) and (187-47)
$=$ HCF of 42,98 and $140=14$
57. (B) Required H.C.F
$=\frac{\text { HCFof } 9,12,18 \text { and } 21}{\text { LCM of } 10,25,35 \text { and } 40}=\frac{3}{1400}$
58. (A) A.T.Q.,


6 cm

$\therefore$ Required volume $=\frac{1}{3} \pi \times 6 \times 6 \times 8$
$=301.71 \mathrm{~cm}^{2}$
59. (C) A.T.Q.,

Volume of the water displaced
$=4 \times 3 \times 0.005=0.06 \mathrm{~cm}^{3}$
$\therefore$ Mass of the man $=0.06 \times 1000$

$$
\begin{equation*}
=60 \mathrm{~kg} \tag{i}
\end{equation*}
$$

60. (B) Total cost of (8 pens +5 pencils)
$=25 \times 13=₹ 525$
and, ( 4 pens +7 pencils)
$=21 \times 11=231$
On solving equation (i) and (ii)
$\therefore 1$ pen $=\frac{274}{18}$
and, cost of 1 pencil $=\frac{560}{18}$
$\therefore$ Required total cost $=18\left(\frac{274}{18}+\frac{560}{18}\right)$
= ₹834
61. (A) Let 12 positive number $=P_{1}+P_{2}+P_{3}$ $\ldots . P_{11}+P_{12}$
A.T.Q.,
$\mathrm{P}_{1}+\mathrm{P}_{2}+\mathrm{P}_{3} \ldots . \mathrm{P}_{11}+\mathrm{P}_{12}=12 x$
Now,
New average $=\frac{6}{5} \frac{\left(\mathrm{P}_{1}+\mathrm{P}_{2}+\mathrm{P}_{3} \ldots \ldots+\mathrm{P}_{11}+\mathrm{P}_{12}\right)}{12}$

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

$\therefore$ Required increment $=\frac{\frac{6 x}{5}-x}{x} \times 100$

$$
=\frac{x}{5 x} \times 100=20 \%
$$

62. (C) Taking option (C)
$C P=100$
$\mathrm{SP}=\frac{100 \times 172}{100}=₹ 172$
Second SP $=\frac{172}{4}=₹ 43$
$\therefore$ Loss $=57 \%$
Hence, option (C) is correct.
63. (A) Fare of a passenger $=\frac{32 \times 125}{100 \times 4}=₹ 10$

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Now, tatal fare of 5 passengers $=10 \times 5$
= ₹50
$\therefore$ Required profit $=\frac{20}{30} \times 100=66.67 \%$
64. (C) A.T.Q.,
$6 \times 9 \times A=8 \times 12 \times B$
$\Rightarrow \frac{\mathrm{A}}{\mathrm{B}}=\frac{16}{9}$
$\therefore$ Required number of days
$=\frac{6 \times 9 \times 16}{(16 \times 9+9 \times 9)}=\frac{864}{225}=3 \frac{21}{25}$
65. (B) A.T.Q.,

A can completes the whole
work $=\frac{14}{7} \times 11=22$ days
A and B together can complete the work
$=4 \times \frac{11}{4}=11$ days.
Now, $\mathrm{A}-22$
$\therefore$ Required number of days $=\frac{22}{1}=22$
66. (D) A.T.Q.,
$(9 M+6 B) \times 16=(24 M+42 B) \times 4$
$\Rightarrow 144 \mathrm{M}+96 \mathrm{~B}=96 \mathrm{M}+168 \mathrm{~B}$
$\Rightarrow 48 \mathrm{M}=72 \mathrm{~B}$
$\Rightarrow \frac{\mathrm{M}}{\mathrm{B}}=\frac{3}{2}$
$\therefore$ Required time $=\frac{(9 \times 3+6 \times 12) \times 16}{(20 \times 3+15 \times 2)}$
$=\frac{624}{90}=6 \frac{14}{15}$ days
67. (A)

68. (B) A.T.Q.,

Cost of ( 16 g of Ist +16 g of 2 nd )

$$
=₹ 147.2
$$

Cost of ( 1 g of Ist +1 g of 2 nd )

$$
\text { = ₹9. } 20
$$

$\therefore$ Cost of 1 g of 2 nd metal

$$
=9.2-5.80=₹ 3.40
$$

Now, 5.8

$\therefore$ Weight of second metal $=\frac{16}{12} \times 5=6 \frac{2}{3} \mathrm{~g}$
69. (D) A.T.Q.,

A covers the 200 m distance
$=\frac{200 \times 18}{8 \times 5}=90 \mathrm{sec}$
$B$ covers the 184 m distance $=90+6$

$$
=96 \mathrm{sec}
$$

$\therefore$ Speed of $B=\frac{184}{96} \times \frac{18}{5}=6.9 \mathrm{~km} / \mathrm{hr}$.
70. (C) Required time $=8 \times \frac{2}{75} \times 450=96 \mathrm{sec}$.
71. (D) Let the larger number $=x$
and, smaller number $=y$
A.T.Q.,
$x y=10816$
and, $\frac{x}{y}=16$
From equation (i) and (ii)
$y^{2}=\frac{10816}{16}=676$
$\Rightarrow y=26$
and, $x=\frac{10816}{26}=416$
$\therefore$ Required sum $=416+26=442$
72. (B) Let the he can raw 8 downstream or 6 km up tream in $x$ hour
A.T.Q.,
$\frac{72 x}{8}+\frac{72 x}{6}=7$
$\Rightarrow 12 x+9 x=7$
$\Rightarrow x=\frac{1}{3}$
$\therefore$ Speed of stream $=\frac{(8 \times 3-6 \times 3)}{2}$

$$
=3 \mathrm{~km} / \mathrm{hr}
$$

73. (B) $\frac{\text { Speed of A }}{\text { Speed of } \mathrm{B}}=\sqrt{\frac{\text { time taken by B }}{\text { time taken by A }}}=\sqrt{\frac{36}{25}}$ = 6:5
74. (A) Let the Rahul crosses Sneha in $t$ hours and, the distance travelled by Sneha in t hours $=x \mathrm{~km}$
$\therefore$ Distance travelled by Rahul in t hours
$=(x+10.5) \mathrm{km}$.
A.T.Q,
$\frac{x+10.5}{x}=\frac{5}{3}$
$\Rightarrow 3 x+31.5=5 x$
$\Rightarrow 2 x=31.5$
$\Rightarrow x=15.75$
$\therefore$ Required distance $=10.5+15.75$

$$
=26.25 \mathrm{~km}
$$

75. (C) Let the cost of a bike $=x$
cost of car $=\frac{x \times 400}{100}=4 x$
New cost of a bike $=\frac{x \times 140}{100}=\frac{7}{5} x$

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New cost of a car $=\frac{4 x \times 125}{100}=5 x$
Total increase
$=\underline{\left(6 \times 5 x+\frac{9 \times 7 x}{5}\right)-(6 \times 4 x+9 x)}$ $\times 100$
$=\frac{150 x+63 x-165 x}{33 x \times 5} \times 100=29.90 \%$
76. (C) A.T.Q,
$25=\frac{36 \times r \times r}{100}$
$\Rightarrow r^{2}=\frac{25}{3}=8 \frac{1}{3} \%$
77. (A) Simple interest $=\frac{2000 \times 4 \times 10}{100}=₹ 800$

Principal after 10 years $=2000+800$

$$
=₹ 2800
$$

$\therefore$ Time $=\frac{560 \times 100}{2800 \times 4}=5$
$\therefore$ Required time $=10+5=15$ years
78. (C) Required rate $=\frac{474.15-435}{435} \times 100$

$$
=\frac{39.15}{435} \times 100=9 \%
$$

79. (D) Required length $=$ HCF of 900,750 and $1575=75 \mathrm{~cm}$.
80. (A) Required average $=(80 \times 46)-71+17-83+38$

$$
=\frac{3581}{70}=51.16 \%
$$

81. (B) Required average price

$$
\begin{aligned}
& =\frac{17 \times 80+19 \times 75+14 \times 70}{17+19+14} \\
& =\frac{1360+1425+980}{50}=75.3 \%
\end{aligned}
$$

82. (C) Required increase $=\frac{168-198}{148} \times 10$

$$
=13.51 \%
$$

83. (B) Required annual
growth $=\frac{48-32}{32 \times 4} \times 100=12.5 \%$
84. (A) Required ratio
$=\frac{48+56+64+78+92}{5}: \frac{105+123+125+148+161}{5}$
= 338 : 662-169:331
85. (C) Increment in $2013=\frac{12}{333} \times 100=3.60 \%$

Increment in $2014=\frac{24}{345} \times 100=6.95 \%$
Increment in $2015=\frac{49}{369} \times 100=13.28 \%$
Increment in $2016=\frac{51}{418} \times 100=12.20 \%$
$\therefore$ Required year $=2015$
86. (A) Pork is the meet of pig while vanison is the meet of Dear.
87. (C) Flock is the group of ducks while Pride is the group of lions.
88. (D) As, $\mathrm{H} U \mathrm{M} \mathrm{A} N$

89. (C) As, $41-(1+4)=37$

Similarly, $62-(2+6)=54$
90. (A) As, $\frac{36 \times 3}{6}=18$

Similarly, $\frac{28 \times 2}{8}=7$
91. (A) Andaman and Nicobar is an island territory.
92. (A) Only '729' is the number whose square root and cube root can be found.
93. (D) Except '25', all others are in the form of $\left(x^{3}-x\right)$.
and $x=8,7,9$
94. (D) $8+7+4+2=21$
$6+4+7+4=21$
$5+6+2+8=21$
$7+4+2+9=\mathbf{2 2} \neq \mathbf{2 1}$
95. (C) Except ANXIOUS, all other contains all vowels.
96. (A) $7 \times 4+1=29$
$29 \times 4+1=117$
$6 \times 4+2=26$
$26 \times 4+2=106$
$5 \times 4+3=23$
$23 \times 4+3=95$
97. (B) $(8 \times 5)+(6+3)=49$
$(7 \times 9)+(16+4)=83$
$(11 \times 7)+(14+8)=\mathbf{9 9}$
98. (C)
99. (A)

100. (B) $\frac{(42 \times 8)-(21 \times 4)}{4+9 \times 3+12 \div 2}$

After changing the signs,
$=\frac{(42-8) \div(21-4)}{4 \times 9-3 \times 12+2}=\frac{34}{17 \times 2}=1$
101. (B)
102. (B)
103. (D)

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104. (B) $117+(7)^{2}=166$

$$
\begin{aligned}
& 166+(6)^{2}=202 \\
& 202+(2)^{2}=206 \\
& 206+(6)^{2}=\mathbf{2 4 2}
\end{aligned}
$$

105. (A)

$$
\begin{aligned}
& 2^{2}+1=5 \\
& 3^{2}+5=14 \\
& 4^{2}+14=30 \\
& 5^{2}+30=\mathbf{5 5} \\
& 6^{2}+55=91
\end{aligned}
$$

106. (B)

107. (A) Mandeep $>$ Nitin $>$ Naveen $>$ Parveen $>$ Manish
108. (A)

109. 

(C)
bababb / bababb
110. (D)

I. $\times$
II. $\times$
$\therefore$ Neither conclusion I nor II follows.
111. (D)
$=3+3^{2}+3^{3}=39$
$\mathrm{G}=7+7^{2}+7^{3}=399$
$\mathrm{H}=8+3^{2}+3^{3}=584$
$\mathrm{I}=9+9^{2}+9^{3}=819$
$B=2+2^{2}+2^{3}=14$
112. (A)
$(8 \times 4)+6-9=29$
$(3 \times 4)+9-8=13$
$(7 \times 6)+2-5=39$
$(5 \times 2)+4-6=8$
113. (B)
$\begin{array}{ccccccc}2 & 1 & 5 & 4 & 3 & 7 & 6 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ \mathbf{E} & \mathbf{A} & \mathbf{R} & \mathbf{W} & \mathbf{O} & \mathbf{R} & \mathbf{M}\end{array}$
114. (D)
115. (C)
116. (C)


Required distance $=\mathbf{1 0} \mathbf{~ m}$.
117. (D)

$\therefore$ Required number of students
$=60-(5+15+8+12+2+11+5)$ $=60-58=2$
118. (C)

$\therefore$ Required number of students $=5+8+2=\mathbf{1 5}$
119. (C) Required number of triangles $=\mathbf{1 5}$
120. (B)


## Answer key

| 1. (B) | 16. (D) | 31. (B) | 46. (B) | 61. (A) | 76. (C) | 91. (A) | 106. (B) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2. (C) | 17. (A) | 32. (B) | 47. (C) | 62. (C) | 77. (A) | 92. (A) | 107. (A) |
| 3. (C) | 18. (A) | 33. (A) | 48. (B) | 63. (A) | 78. (C) | 93. (D) | 108. (A) |
| 4. (D) | 19. (B) | 34. (B) | 49. (A) | 64. (C) | 79. (D) | 94. (D) | 109. (C) |
| 5. (D) | 20. (A) | 35. (A) | 50. (D) | 65. (B) | 80. (A) | 95. (C) | 110. (D) |
| 6. (B) | 21. (C) | 36. (A) | 51. (B) | 66. (D) | 81. (B) | 96. (A) | 111.(D) |
| 7. (A) | 22. (C) | 37. (B) | 52. (D) | 67. (A) | 82. (C) | 97. (B) | 112. (A) |
| 8. (B) | 23. (D) | 38. (C) | 53. (C) | 68. (B) | 83. (B) | 98. (C) | 113. (B) |
| 9. (A) | 24. (B) | 39. (B) | 54. (B) | 69. (D) | 84. (A) | 99. (A) | 114. (D) |
| 10. (A) | 25. (B) | 40. (C) | 55. (A) | 70. (C) | 85. (C) | 100. (B) | 115. (C) |
| 11. (C) | 26. (A) | 41. (C) | 56. (C) | 71. (D) | 86. (A) | 101. (B) | 116. (C) |
| 12. (C) | 27. (C) | 42. (B) | 57. (B) | 72. (B) | 87. (C) | 102. (B) | 117. (D) |
| 13. (D) | 28. (C) | 43. (D) | 58. (A) | 73. (B) | 88. (D) | 103. (D) | 118. (C) |
| 14. (C) | 29. (B) | 44. (C) | 59. (C) | 74. (A) | 89. (C) | 104. (B) | 119. (C) |
| 15. (B) | 30. (A) | 45. (D) | 60. (B) | 75. (C) | 90. (A) | 105. (A) | 120. (B) |

