UP SI MOCK TEST – 50 (SOLUTION)

81. (C) ATQ,

$$\frac{M_1D_1}{W_1} = \frac{M_2D_2}{W_2} \Rightarrow \frac{7\times7}{7} = \frac{1\times1}{x} \Rightarrow x = 7$$

82. (D) ATQ,

$$150 \times \frac{100-20}{100} \times \frac{(100-x)}{100} = 108$$

$\Rightarrow x = 10\%$

83. (B) Let the smallest no. be x

ATQ,

$x^3 + 8x^3 + 27x^3 = 4500$

$\Rightarrow 36x^3 = 4500$

$\Rightarrow x^3 = 125$

$\Rightarrow x = 5$

$\therefore$ Smallest number =5

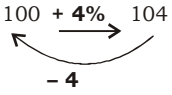
84. (B) ATQ,

120% = 390

$$100\% = \frac{390}{120}\times100 = ₹\,325$$

$\therefore$ Cost price = ₹ 325

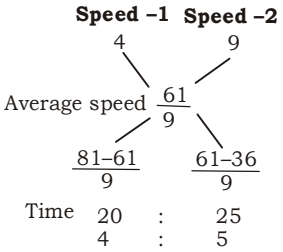
85. (D) Initial volume = 100



$$\text{Required percentage} = \frac{4}{104}\times100$$

$$= 3\frac{11}{13}\%$$

86. (A)



$\therefore$ Required Distance = 4 × 4

=16 *km*

87. (C)

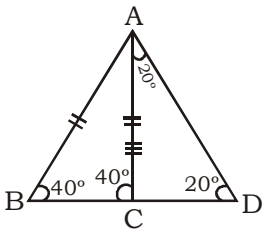
S.I. = ₹ 100

$$\text{Time} = 16\frac{2}{3} = \frac{50}{3}\text{ yrs}$$

$$\text{Rate} = \frac{100\times100\times3}{100\times50} = 6\%$$

88. (D) Sum of two sides of a triangle is greater than third side and difference of two sides is smaller than the third side. So $x < z - y$ is false.

89. (A)



Given

AB AC and CD = CA

$\angle ACB = \angle ADC + \angle CAD$

$= 20° + 20 = 40°$

Exterior angle

$\therefore$ AB = AC

$\angle B = \angle C = 40°$

90. (D) $\dfrac{\left(\sqrt{5}x\right)^3 - \left(3\sqrt{3}y\right)^3}{\sqrt{5}x - 3\sqrt{3}y}$

As we know,

$$\Rightarrow \frac{a^3-b^3}{a-b} = \frac{(a-b)(a^2+b^2+ab)}{a-b}$$

$= a^2 + b^2 + ab$

Here, $a = \sqrt{5}x$

$b = 3\sqrt{3}y$

$$\Rightarrow \frac{\left(\sqrt{5}x\right)^3 - \left(3\sqrt{3}x\right)^3}{\sqrt{5}x - 3\sqrt{3}y} = \left(\sqrt{5}x\right)^2 + \left(3\sqrt{3}y\right)^2 + \sqrt{5}x \times \sqrt{3}y$$

$= 5x^2 + 27y^2 + 3\sqrt{15}xy$

Comparing it with,

$Ax^2 + By^2 + Cxy$

$\Rightarrow A = 5, B = 27, C = 3\sqrt{15}$

$\Rightarrow 6A + B - \sqrt{15}C$

$= 6(5) + 27 - \sqrt{15}\left(3\sqrt{15}\right)$

$= 30 + 27 - 45$

$= 57 - 45 = 12$

91. (A) As we know,

$(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$

Here, $zx = y^2$

$361 = 133 + 2(xy + yz + y^2)$

$228 = 2y(x + y + z)$

$$y = \frac{114}{19} = 6$$

$x + z = 13$

By squaring $(xz = y^2\ (6)^2 = 36)$

$x^2 + z^2 = 97$

By hit and trial $x = 4$, $z = 9$

Diff. between z and x is = 5

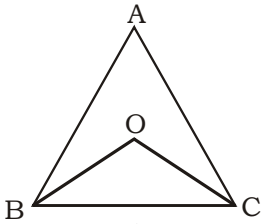
92. (B) Let x be the maximum marks
Then pass marks = 28% of x + 12 = 30% of x + 6
2% of x = 6

Maximum marks $x = \frac{6}{2} \times 100 = 300$

Passing marks = $\frac{30}{100} \times 300 + 6 = 96$.

93. (D) Simple interest of 2 years = 20%
Compound interest of 2 years = 21%
Diff. between simple and compound interest = 1%
$\downarrow \times 130$
130
$\therefore$ Principal = 130 × 100
= ₹ 13000

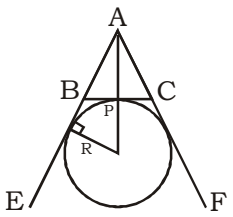
94. (B)



In-center is O,

$\therefore \angle BOC \Rightarrow 90^\circ + \frac{\angle A}{2}$

95. (C)



In ΔABP
AB = a and $\angle A = \angle B = 45^\circ$

$BP = \frac{a}{\sqrt{2}}$

So, $BC = \sqrt{2}a$

$\Rightarrow$ Area of ABC = $\frac{1}{2} \times a^2 = x^2$

$$x = \frac{a}{\sqrt{2}}$$

$OD = AE = a + \frac{a}{\sqrt{2}} = R$

$$R = \frac{a\left(1+\sqrt{2}\right)}{\sqrt{2}}$$

Area of circle = $\pi r^2 = \frac{\pi a^2\left(3+2\sqrt{2}\right)}{2}$

$$= \pi x^2\left(3+2\sqrt{2}\right)$$

96. (D) $x^4 + \frac{1}{x^4} = 194$

$x^2 + \frac{1}{x^2} = 14$

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

97. (D) $(4x)^2 + (3y)^2 + (2x)^2 - 24x + 24y + 24z + 61 = 0$
$(4x-3)^2 + (3y-4)^2 + (2z-6)^2 = 0$

$\Rightarrow x = \frac{3}{4}, y = \frac{4}{3}, z = 3$

$\Rightarrow xy + 2z = \frac{3}{4} \times \frac{4}{3} + 2 \times 3 = 7$

98. (C) $\because$ S.P. of house and shop is same.
$\therefore$ loss percent in the transaction

$= \frac{x^2}{100} = \frac{(20)^2}{100} = 4\%$

$4\% = \frac{1}{25} \rightarrow$ loss
$\rightarrow$ cp
$\therefore$ SP = 25 – 1 = 24
Ratio of loss to S.P = 1 : 24
Given SP of both house and shop = 2 lakh
24 units = 2

1 unit = $\frac{2}{24} = \frac{1}{12}$

$\therefore$ Loss = ₹ $\frac{1}{12}$ lakh

99. (D) $87\overline{)13851(}159$
$\frac{87}{515}$
$\frac{435}{801}$
$\frac{783}{18}$

$\therefore$ Required No. = 87 – 18 = 69

100. (D) Efficiency A : B
2 : 1
Total work = (2 + 1)16 = 48
Time taken by A alone

$= \frac{\text{Total work}}{\text{Efficiency of A}} = \frac{48}{2} = 24$ days

101.(C)

Money	**Interest**
$10x$	$3x$

ATQ,

$\frac{10x \times 6 \times T}{100} = 3x$

$\Rightarrow$ T = 5yrs.

102. (B) $\angle ADP = \frac{1}{2}\angle AOB = \frac{1}{2} \times 100 = 50°$

$\angle DAP = 30°$

In ΔADP

$\angle APB = \angle DAP + \angle ADP$

$= 30° + 50°$

$= 80°$

103. (D) From figure

$\angle APC = 2\ \angle ABC$

$\angle APC = 2 \times 35$

$= 70°$

In ΔAPC

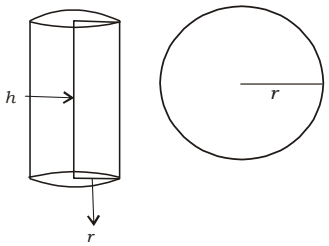
AP = PC (radius)

$\therefore\ \angle PAC = \angle PCA$

$\therefore$ PCA $= \frac{(180 - 70)}{2}$

$= \frac{110}{2} = 55°$

104. (D)



ATQ,

$\frac{4}{3}\pi r^3 = \pi r^2 h$

$\Rightarrow \frac{h}{r} = \frac{4}{3}$

$h : r$

4 : 3

105. (C) $\sin\theta - \cos\theta = 0$

$\therefore\ \theta = 45°$

$\sec\theta + \text{cosec}\,\theta$

$\sqrt{2} + \sqrt{2} = 2\sqrt{2}$

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

A	:	B
3000	:	2400
15	:	12

Loss bear by B $= \frac{12 \times ₹720}{27} = ₹320$

107. (C) As we know,

$x^3 + y^3 + z^3 - 3xyz = (x + y + z)\ ((x + y + z)^3 - 3(xy + yz + zx))$

A.T.Q.,

$\sqrt{x^3 + y^3 + z^3 - 3xyz}$

$= \sqrt{(19)\ (361 - 3 \times 114)}$

$= \sqrt{19 \times 19} = 19$

108. (C) Let the numbers are $12a$ and $12b$

ATQ,

$144ab = 2160$

$\Rightarrow\ ab = 15$

Prime factor of 15 is (1, 15) (3, 5)

Hence, two digit numbers are (3×12, 5×12)

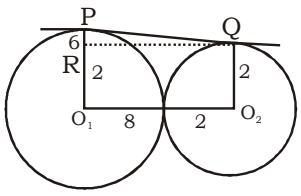
= (36,60)

109. (B)

M	**:**	**W**
4	:	1
20	:	5
		+ 3
20	:	8
5	:	2

$\therefore$ Required ratio = 5 : 2

110. (B)



Length of common tangents

(PQ) $= \sqrt{(d)^2 - (r_1 - r_2)^2}$

$= \sqrt{10^2 - 6^2}$

= 8 cm.

111. (A) $1 - \frac{\sin^2 A}{1 + \cos A} + \left[\frac{1 + \cos A}{\sin A} - \frac{\sin A}{1 - \cos A}\right]$

$= 1 - (1 - \cos A) + \left[\frac{1 - \cos^2 A - \sin^2 A}{\sin A(1 - \cos A)}\right]$

$= \cos A + \left[\frac{1 - 1}{\sin A(1 - \cos A)}\right]$

$= \cos A$

112. (D) $\frac{a\sin\theta + b\cos\theta}{a\sin\theta - b\cos\theta} = \frac{a\tan\theta + b}{a\tan\theta - b}$

[Dividing numerator and denominator by $\cos\theta$]

$\frac{a \times \frac{a}{b} + b}{a \times \frac{a}{b} - b} = \frac{\left(\frac{a^2 + b^2}{b}\right)}{\frac{\left(a^2 - b^2\right)}{b}} = \frac{a^2 + b^2}{a^2 - b^2}$

113. (C) $A + B = 90° \Rightarrow A = 90° - B$

$\Rightarrow \sin A = \sin(90° - B) = \cos B$

Similarly,

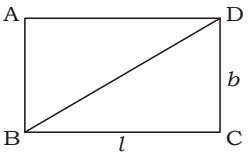
$\Rightarrow \cos A = \sin B$, $\tan A = \cot B$

$\therefore \sin A \cdot \cos B + \cos A \cdot \sin B - \tan A \cdot \tan B + \sec^2 A - \cot^2 B$

$= \cos^2 B + \sin^2 B - \cot B \cdot \tan B + \sec^2 A - \tan^2 A$

$= 1 - 1 + 1 = 1$

[$\because$ tan B. cot B = 1, $\sec^2 A - \tan^2 A = 1$]

114. (D) 

BD = length of diagonal
= Speed × Time

$= \frac{52}{60} \times 15 = 13$ metre

BD = $\sqrt{l^2 + b^2}$

$\Rightarrow l^2 + b^2 = 169$ ...(i)

Again,

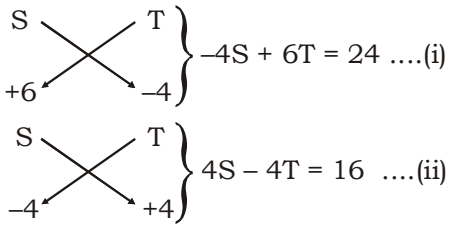
$(l + b) = \frac{68}{60} \times 15 = 17$ metre ...(ii)

$\therefore (l + b)^2 = l^2 + b^2 + 2\,lb$

$\Rightarrow 17^2 = 169 + 2\,lb$

$\Rightarrow 2\,lb = 289 - 169 = 120$

$\Rightarrow lb = \frac{120}{2} = 60\ m^2$

115. (A) 

From equation (i) & (ii)

$$\begin{array}{r} -4S + 6T = 24 \\ \hline 4S - 4T = 16 \end{array}$$

On adding, $2T = 40 \Rightarrow T = 20$ hours

Put in equation (ii)

$4S - 80 = 16 \Rightarrow S = 24$ km/h

Distance = $t \times S = 24 \times 20$

= 480 km

On adding, $\Rightarrow T = 20$ hours

put in equation (ii)

$4S - 80 = 16 \Rightarrow S = 24$ km/h

Distance = $t \times S = 24 \times 20$

= 480 km

116. (C) We know that if last three digits of any number is divisible by 8, than the number is also divisible by 8.

$\therefore$ The Least value of * = 3

117. (B) 135° = 31500

$75° = \frac{31500}{135} \times 75 = 17500$

$\therefore$ Price of gold in 2011 = ₹ 17500

118. (B) Required ratio = 45 : 135 = 1 : 3

119. (D) Required Percentage

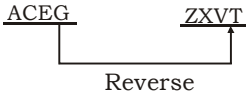
$= \left(\frac{135 - 75}{75}\right) \times 100 = 80$

120. (B) Required Ratio

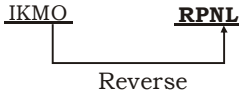
$= \frac{(105 - 75) \times 100}{75} : \frac{(135 - 105)}{105} \times 100$

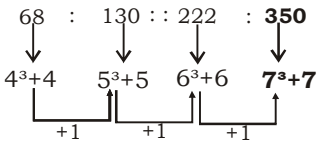
$\Rightarrow \frac{30}{75} : \frac{30}{105} \Rightarrow 7 : 5$

121. (C) Men use foot and horses use hoof for the same purpose.

122. (C) As, 

Similarly,



123. (D) 

124. (D) Earth is a planet whereas moon is a satellite

125. (A) 41 – 72 ⇒72 – 41 = 31⇒ 3+ 1 = **4**

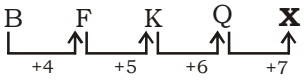
12 – 30 ⇒32 – 12 = 18⇒ 1+ 8 = 9

51 – 42 ⇒51 – 42 = 09⇒ 0+ 9 = 9

20 – 11 ⇒20 – 11 = 09⇒ 0+ 9 = 9

126. (A) Except ALO , others have vowel.

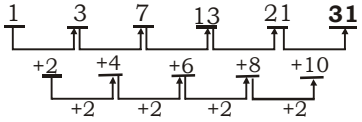
127. (C) Penisula, Island and Cape are the land forms whereas Bay is the body of water.

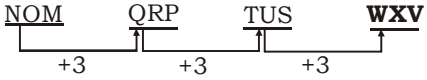
128. (A) 

129. (D) $\frac{14 \times 24}{8} = 42$

$\frac{64 \times 12}{8} = 96$

$\frac{32 \times 18}{8} = \mathbf{72}$

130. (C) 

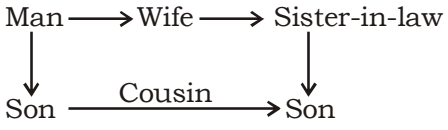
131. (C) 

132. (C) Total numbers of triangles = 14

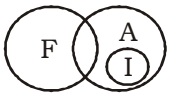
133. (D) Monday

134. (C)

135. (B) We can't see 'D' with 'A' in the four cubes. So, D is opposite to face A.

136. (A) 

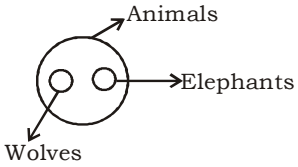
137. (C) Let number of horses = number of men = x.
The, number of legs = $4x + 2\ (x/2) = 5x$.
So, $5x = 70$ or $x = 14$.

138. (B) 

1. ×
2. ✓
∴Only conclusion II follows

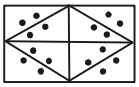
139. (A) 14N10L42P2M8
= 14 × 10 + 42 ÷ 2 – 8
= 140 + 21 – 8
= **153**

140. (D) Komal's rank from last
= (16 + 10 =) 26th
Komal's rank from beginning
= (54 – 26 +1 =) 29th

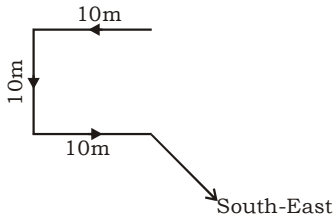
141. (A) 

142. (B) Only conclusion II follows.

143. (A) gfe**i/**ig**f**e/ii**g**f/ei**i**g/f**e**ii

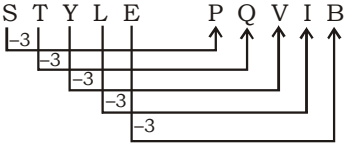
144. (A) 

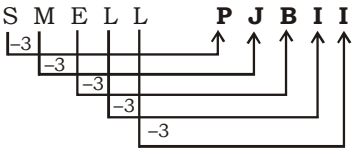
145. (B) 

146. (C) 

∴ He is walking in South-East direction.

147. (A) In the time 4:42 hour hands of the clock is between 12:00 to 6:00 and the minute hand of the clock is between 6:00 to 12 :00.
Hence we Subtract that time from 5:90
5:90 - 4:42 = 1 : 48

148. (D) As,


Similarly,


149. (C)

150. (B) Required time
= 06 : 40 + 00 : 25 + 00 : 15
⇒ 7 : 20 AM

151. (A)

	Husband	:	Wife
	4	:	3
Age at present ⇒	8	:	6
Age after 4 years ⇒	9	:	7

1 unit = 4
∴ 8 units = 4 × 8 = 32 years &
6 units = 4 × 6 = 24 years
Now,

	Husband	:	Wife
Age at time of marriage ⇒	5	:	3
Present age ⇒	8	:	6

∴ 1 unit = 4
∴ 3 units = 4 × 3 = 12 years
∴ Required Answer = 12 years

152.(C) 16 ÷ 4 × 10 – 5 + 8
After changing the signs as per the given details,
16 + 4 – 10 ÷ 5 × 8
= 16 + 4 – 2 × 8
= 16 + 4 – 16
= 4

153. (B) Required number = 5

154. (A) ta

155. (C)

156. (C)

N	O	R	M	A	L
2	4	5	3	6	1

Direction (157 – 160): Answer

Car/कार	Person (Family)/व्यक्ति (परिवार)		
I	$D_{(-)}$ (X)	$F_{(-)}$ (Y)	$H_{(+)}$ (Z)
II	$E_{(+)}$ (X)	$C_{(-)}$ (Y)	$G_{(+)}$ (Z)
III		$A_{(+)}$ (Y)	$B_{(-)}$ (Z)

Family/परिवार	Member/सदस्य
1. X	D and E
2. Y	A, C and F
3. Z	B, G and H

X : $D_{(-)} \Leftrightarrow E_{(+)}$

Y : C $F_{(-)} \Leftrightarrow A_{(+)}$

Z : $B_{(-)}$ $H_{(+)} \Leftrightarrow G_{(+)}$

157. (D) 158. (C) 159. (A) 160. (D)

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UP SI ANSWER KEY - 50

1.	(C)	21.	(A)	41.	(B)	61.	(A)	81.	(C)	101.	(C)	121.	(C)	141.	(A)
2.	(D)	22.	(C)	42.	(B)	62.	(A)	82.	(D)	102.	(B)	122.	(C)	142.	(B)
3.	(D)	23.	(A)	43.	(B)	63.	(C)	83.	(B)	103.	(D)	123.	(D)	143.	(A)
4.	(A)	24.	(A)	44.	(C)	64.	(C)	84.	(B)	104.	(D)	124.	(D)	144.	(A)
5.	(A)	25.	(A)	45.	(D)	65.	(D)	85.	(D)	105.	(C)	125.	(A)	145.	(B)
6.	(A)	26.	(B)	46.	(B)	66.	(B)	86.	(A)	106.	(B)	126.	(A)	146.	(C)
7.	(B)	27.	(D)	47.	(D)	67.	(A)	87.	(C)	107.	(C)	127.	(C)	147.	(A)
8.	(C)	28.	(A)	48.	(D)	68.	(B)	88.	(D)	108.	(C)	128.	(A)	148.	(D)
9.	(A)	29.	(B)	49.	(C)	69.	(C)	89.	(A)	109.	(B)	129.	(D)	149.	(C)
10.	(A)	30.	(D)	50.	(C)	70.	(A)	90.	(D)	110.	(B)	130.	(C)	150.	(B)
11.	(B)	31.	(C)	51.	(A)	71.	(A)	91.	(A)	111.	(A)	131.	(C)	151.	(A)
12.	(A)	32.	(C)	52.	(A)	72.	(D)	92.	(B)	112.	(D)	132.	(C)	152.	(C)
13.	(D)	33.	(B)	53.	(C)	73.	(A)	93.	(D)	113.	(C)	133.	(D)	153.	(B)
14.	(D)	34.	(C)	54.	(D)	74.	(A)	94.	(B)	114.	(D)	134.	(C)	154.	(A)
15.	(A)	35.	(A)	55.	(C)	75.	(D)	95.	(C)	115.	(A)	135.	(B)	155.	(C)
16.	(A)	36.	(D)	56.	(B)	76.	(C)	96.	(D)	116.	(C)	136.	(A)	156.	(C)
17.	(A)	37.	(A)	57.	(D)	77.	(B)	97.	(D)	117.	(B)	137.	(C)	157.	(D)
18.	(B)	38.	(B)	58.	(B)	78.	(A)	98.	(C)	118.	(B)	138.	(B)	158.	(C)
19.	(A)	39.	(A)	59.	(A)	79.	(A)	99.	(D)	119.	(D)	139.	(A)	159.	(A)
20.	(B)	40.	(C)	60.	(A)	80.	(B)	100.	(D)	120.	(B)	140.	(D)	160.	(D)