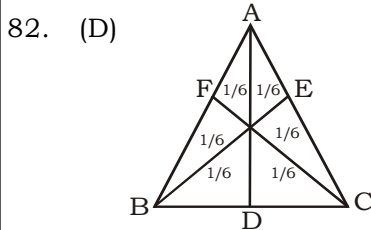


UP SI MOCK TEST - 53 (SOLUTION)

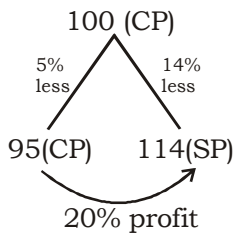
81. (A) Marks obtained by A
= 360 marks
- Marks obtained by C = $\frac{360}{125} \times 100$
= 288 marks
- Marks obtained by = $\frac{288}{80} \times 100$
= 360 marks
- Required percent marks obtained by D
= $\frac{360}{500} \times 100 = 72\%$



One part = $\frac{1}{6} \times 60 = 10 \text{ cm}^2$
Area of two part = $2 \times 10 = 20 \text{ cm}^2$

83. (C) Let CP = 100 units
SP = 130 units
130 units \rightarrow ₹1690
100 units \rightarrow $\frac{₹1690}{130} \times 100$
 \rightarrow ₹1300

84. (C) A.T.Q,
Let original price = 100



14% .

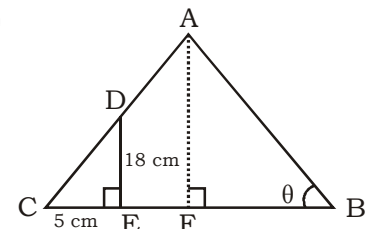
85. (A) Total surface area of tank without top
TSA = $30 \times 20 + 2(12 \times 20) + 2(30 \times 12)$
= 1800 m^2
 \therefore area of iron sheet = T.S.A without top
 \Rightarrow Length \times width = 1800
 \Rightarrow Length = $\frac{1800}{3} = 600 \text{ m}$
 \therefore Cost = $600 \times 10 = ₹ 6000$
86. (B) $a^3 + b^3 + c^3 - 3abc = 0$
 $\Rightarrow a + b + c = 0$
 $3x - 1 + 4x - 3 + 2x + 1 = 0$
 $9x - 3 = 0$

$\Rightarrow x = \frac{1}{3}$ But $x \neq \frac{1}{3}$
 $\Rightarrow a = b = c$
 $\Rightarrow 3x - 1 = 4x - 3$
 $\Rightarrow x - 2 = 0$
 $\Rightarrow x = 2$

87. (B) Given $x^2 - \frac{1}{x^2} = 6$ then

$x^6 - \frac{1}{x^6} = 234$
 $x^6 - \frac{1}{x^6} - 5 \left(x^2 - \frac{1}{x^2} \right) + 5 = 234 - 5(6) + 5 = 209$

88. (A)



Draw a line A from AF \perp BC
Let $\angle ABC = \theta$
A.T.Q.,

$\tan \theta = \frac{AF}{BF} = 3.6$

From diagram

$\tan \angle ACB = \frac{18}{5} = 3.6$

$\angle ACB = \angle ABC$

Hence, ABC is an equilateral
 \therefore F will be midpoint of BC

$\frac{AC}{CD} = \frac{CF}{CE}$

[$\therefore \Delta ACE$ and ΔCDF congruence]

$\frac{2CF}{2CE} = \frac{BC}{2CE}$

$AC : CD = BC : 2CE$

89. (C) Single discount

= $20 + 40 - \frac{20 \times 40}{100} = 52\%$

90. (B) Percent discount

= $\frac{1200 - 1100}{1200} \times 100 = 8\frac{1}{3}\%$

91. (C) Time = $18 + 28 + 31 + 30 + 31 + 8 = 146$ days
Simple interest

= $\frac{12,000 \times 146 \times 15}{365 \times 100}$

Simple interest = ₹ 720

Amount = ₹ (12,000 + 720)

= ₹ 12,720

92. (B)

$\xrightarrow{2 \text{ years}}$ $\xrightarrow{5 \text{ years}}$
 PA \longrightarrow 720 \longrightarrow ₹1020
 $\longleftrightarrow 300 \longleftrightarrow$

\Rightarrow According to figure
 \Rightarrow SI for 5 years = ₹ 300
 \Rightarrow SI for 1 years = ₹ 60
 \Rightarrow SI for 2 years = $60 \times 2 = 120$
 \Rightarrow Principal amount = Amount after 2 years - 2 years SI = $720 - 120$
 \Rightarrow Principal amount = ₹ 600

93. (D)

ΔABC is equilateral,
 $\Rightarrow \angle BCD = \angle DCA = 30^\circ$ (\because CD bisectors $\angle ACB$)
 $\therefore \angle ACE = 180^\circ - 30^\circ = 150^\circ$
 $AC = CE$
 $\therefore \angle CAE = \angle CEA = \frac{30}{2} = 15^\circ$

94. (D) A.T.Q.,
 SP of the mixture = ₹320
 Gain = 20%

\therefore CP of the mixture = $320 \times \frac{100}{120}$
 $= ₹ \frac{800}{3}$

Now using allegation method.

Tea - 1	Tea - 2	
180	280	
\swarrow \nearrow $\frac{800}{3}$ \swarrow \nearrow		

$280 - \frac{800}{3} = \frac{40}{3}$ $\frac{800}{3} - 180 = \frac{260}{3}$
 Ratio of $\rightarrow 40 : 260$
 Quantity $\rightarrow 2 : 13$

95. (C) A.T.Q.,

	Water	Syrup	Total
Initial	3	5	= 8
	\swarrow \nearrow 2 unit add Same		
Final	$1_{x5} = 5$	$1_{x5} = 5$	= 10

Water add in final

$= \frac{2}{10} = \frac{1}{5}$

96. (B) A.T.Q.,
 $AB \parallel CD$

$x = \frac{4}{3}y$ (given)
 $x : y = 4 : 3$
 $y = \frac{3}{8}z$ (given)
 $y : z = 3 : 8$
 $\therefore x : y : z = 4 : 3 : 8$
 $x = \frac{4}{15} \times 180^\circ = 45^\circ$
 In ΔABD
 $\angle BAD = 180^\circ - (x + 36^\circ)$
 $= 180^\circ - 48^\circ - 36^\circ$
 $= 96^\circ$

97. (A) Let their monthly income $8x$ and $5x$
 A.T.Q.,

$\frac{8x - 12000}{5x - 10000} = \frac{5}{3}$
 [Income - saving = expenditure]
 $\Rightarrow 24x - 36000$
 $= 25x - 50000$
 $x = 14000$
 Diff. in monthly income
 $= 8x - 36000$
 $= 25x - 5000$
 Diff. in monthly income
 $= 8x - 5x = 3x$
 $x = 14000$
 $3x = 14000 \times 3$
 $= ₹ 42000$

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

$\frac{11 - x}{15 - x} = \frac{2}{3}$
 $\Rightarrow 33 - 3x = 30$
 $\Rightarrow x = 3$

99. (C) $\frac{(A^3 - B^3)}{(A - B)} = A^2 + AB + B^2$

$= \frac{135(\sqrt{5}x^3 - 2\sqrt{2}y^3)}{(3\sqrt{5}x - \sqrt{2}y)}$
 $= 45x^2 + 2y^2 + 3\sqrt{10}xy$
 $A + B - 9C = 47 - 27 = 20$

100. (B) $(8x^3 + 27y^3) \div = Ax^2 + Bxy + Cy^2$

$(2x+3y) [(2x)^2 - (2x)(3y) + (3y)^2]$
 $[(2x)^2 - (2x)(3y) + (3y)^2]$
 $(2x + 3y)$
 $= Ax^2 + Bxy + Cy^2$
 $\Rightarrow (4x^2 - 6xy + 9y^2) = Ax^2 + Bxy + Cy^2$

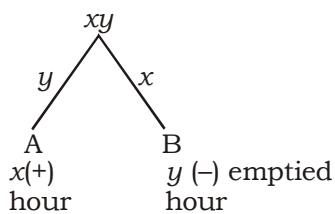
Comparing both sides, we have
 $A = 4, B = 6, C = 9$
 $\Rightarrow (5A + 4B + 3C) = 5 \times 4 - 4 \times 6 + 3$
 $= 20 - 24 + 27 = 23$

101. (D) $\frac{90 \text{ men} \times 16 \text{ days} \times 12 \text{ hours}}{1 \text{ work}}$
 $= \frac{70 \text{ men} \times 24 \text{ days} \times 8 \text{ hours}}{W \text{ work}}$
 $90 \times 16 \times 12 = \frac{70 \times 24 \times 8}{W}$
 $9W = 7, W = \frac{7}{9}$

102. (B) A.T.Q.,
 $\Rightarrow 2A = 3B$
 $\Rightarrow \frac{A}{B} = \frac{3}{2}$
 \Rightarrow Then efficiency ratio $A : B = 3 : 2$
 \Rightarrow We know that time is inverse proportional to efficiency
 \Rightarrow The time taken by them in ratio $A : B = 2 : 3$
 $A : B = 2 : 3$
 $\begin{matrix} & 4 \times \downarrow & & \downarrow 4 \times \\ & 8 \text{ days} & & 12 \text{ days} \end{matrix}$
 \therefore A can do the work in 8 days
 \Rightarrow i.e. 2 units \rightarrow 8
 1 unit \rightarrow 4
 \Rightarrow Time taken by B \rightarrow 3 units
 $= 3 \times 4$
 $= 12 \text{ days}$

103. (B) $\angle ADP = \frac{1}{2} \angle AOB = \frac{1}{2} \times 100 = 50^\circ$
 $\angle DAP = 30^\circ$
 In $\triangle ADP$
 $\angle APB = \angle DAP + \angle ADP$
 $= 30^\circ + 50^\circ$
 $= 80^\circ$

104. (D)



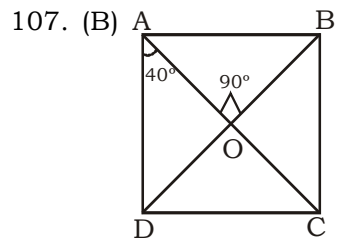
Time will be taken by with of them to fill the tank
 $= \frac{xy}{y-x}$

105. (C) Usual Ratio : New Ratio
 of speed $\rightarrow 4 : 3$
 Ratio of time $\rightarrow 3 : 4$
 $\xrightarrow{\text{1 unit late (more)}}$

$\left\{ \text{Speed} \propto \frac{1}{\text{Time}} \right\}$

It is given that he takes 2 hours more than the usual time i.e.
 1 unit = 2 hours
 3 units = $3 \times 2 = 6$ hours
 So, the usual time taken by man to cover the distance = 6 hours

106. (D) Second train covers the 120 kms more distance only because of its exceed speed of
 $(60 - 50) \text{ km} = 10 \text{ kmph}$
 \Rightarrow Time, taken by trains to meet each other = $\frac{90 \text{ kms}}{10 \text{ km/h}} \Rightarrow 9 \text{ hours.}$
 \Rightarrow Distance covered by first train = $9 \times 50 = 450 \text{ km}$
 \Rightarrow Distance covered by the second train = $9 \text{ hours} \times 60 \text{ kmph} \Rightarrow 540 \text{ km.}$
 \Rightarrow Total distance between A and B $\Rightarrow 540 + 450 = 990 \text{ km.}$



$\triangle AOD \sim \triangle BOC$
 $\therefore \angle ADB = \angle DBC$
 [Alternate angle]
 In $\triangle AOD$
 $\angle DAO + \angle AOD + \angle ADO = 180^\circ$
 $\Rightarrow \angle ADO = 180^\circ - (90^\circ + 40^\circ)$
 $\angle DBC = 50^\circ$

108. (C) Speed of man in still water, $x = 3 \text{ km/hr.}$
 Speed of the stream, $y = 2 \text{ km/hr.}$
 Upstream speed = $x - y = 1 \text{ km/hr.}$
 Upstream time = $\frac{\text{Distance}}{\text{Upstream speed}}$
 $= \frac{10 \text{ km}}{1 \text{ km/hr}} = 10 \text{ hr.}$
 Downstream speed = $x + y = 5 \text{ km/hr}$

Downstream time

$$= \frac{\text{Distance}}{\text{Upstream speed}}$$

$$= \frac{10 \text{ km}}{5 \text{ km/hr}} = 2 \text{ hours}$$

Total time = U.T. + D.T.

$$= 10 \text{ hr} + 2 \text{ hr}$$

$$= 12 \text{ hrs.}$$

109. (A) Let the numbers be $7x$ and $9x$

A.T.Q.,

$$7x \times 9x = 1575$$

$$63x^2 = 1575$$

$$x^2 = 25$$

$$x = 5$$

Then greater number = 45

110. (A) $3^{50} \rightarrow (3^5)^{10} \rightarrow (243)^{10}$

$$4^{40} \rightarrow (4^4)^{10} \rightarrow (256)^{10} \leftarrow \text{Largest}$$

$$5^{30} \rightarrow (5^3)^{10} \rightarrow (125)^{10}$$

$$6^{20} \rightarrow (6^2)^{10} \rightarrow (36)^{10}$$

111. (C) $(\sqrt{3} + 1)(10 + \sqrt{12})(\sqrt{12} - 2)(5 - \sqrt{3})$

$$\Rightarrow (\sqrt{3} + 1)(10 + 2\sqrt{3})(2\sqrt{3} - 2)(5 - \sqrt{3})$$

$$\Rightarrow (\sqrt{3} + 1) \times 2(5 + \sqrt{3}) \times 2(\sqrt{3} - 1)(5 - \sqrt{3})$$

$$\Rightarrow 4(\sqrt{3} + 1)(\sqrt{3} - 1)(5 + \sqrt{3})(5 - \sqrt{3})$$

$$\Rightarrow 4[(\sqrt{3})^2 - 1^2][(5)^2 - (\sqrt{3})^2]$$

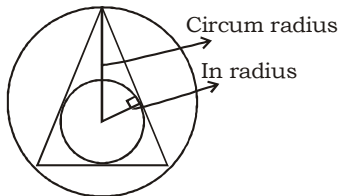
$$\Rightarrow 4 \times 2 \times 22 \Rightarrow 176$$

112. (B) $(0.2)^3 \times 200 \div 2000$ of $(0.2)^2$

$$\Rightarrow \frac{0.2 \times 0.2 \times 0.2 \times 200}{2000 \times 0.2 \times 0.2} \Rightarrow \frac{0.2 \times 200}{2000}$$

$$\Rightarrow \frac{40.0}{2000} \Rightarrow \frac{1}{50}$$

113. (C)



Circum radius of equilateral triangle =

$$\frac{(\text{side})}{\sqrt{3}}$$

In radius of equilateral triangle =

$$\frac{(\text{side})}{2\sqrt{3}}$$

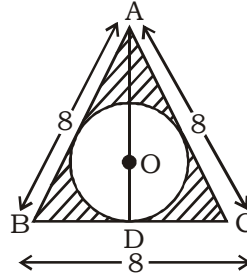
$$\frac{\text{side}}{\sqrt{3}} = 8$$

$$\text{Side} = 8\sqrt{3}$$

\therefore In radius of equilateral triangle

$$= \frac{(\text{side})}{2\sqrt{3}} = \frac{8\sqrt{3}}{2\sqrt{3}} = 4 \text{ cm}$$

114. (B)



A.T.Q.,

Here OC = radius

$$\therefore r = \frac{a}{2\sqrt{3}} = \frac{8}{2\sqrt{3}}$$

$$r = \frac{4}{\sqrt{3}}$$

Required area of shaded portion

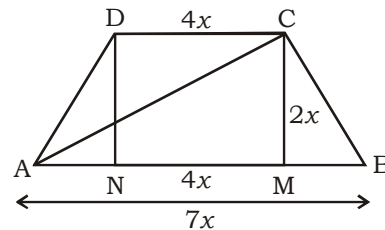
$$= \frac{\sqrt{3}}{4} \times (8)^2 - \pi \times \frac{16}{\sqrt{3}}$$

$$= \sqrt{3} \times 16 - \frac{22}{7} \times \frac{16}{3}$$

$$= 10.95 \text{ m}^3$$

$$= 11 \text{ m}^2$$

115. (A)



Area = $\frac{1}{2}$ (sum of parallel sides) \times distance between them

$$\frac{1}{2} (7x + 4x) \times 2x = 176$$

$$11x^2 = 176 \Rightarrow x^2 = 16$$

$$\Rightarrow x = 4$$

$$AB = 7 \times 4 = 28 \text{ cm}$$

$$CD = 4 \times 4 = 16 \text{ cm}$$

$$CM = 2 \times 4 = 8 \text{ cm}$$

$$AM = AN + NM$$

$$= AN + 16$$

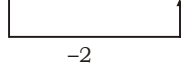
$$\Rightarrow 6 + 16 = 22 \text{ (AN = BM = } \frac{12}{2} = 6)$$

$$AC^2 = CM^2 + AM^2$$

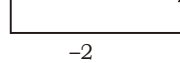
$$AC = \sqrt{64 + 484} \Rightarrow \sqrt{548} \Rightarrow 2\sqrt{137}$$

138. (D) Neither conclusion I nor conclusion II follows

139. (C) As, MOTHER KMRFCP



Similarly, HOUSE FMSQC

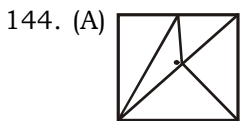


140. (A) $56 \times 11 \Rightarrow 56 - 11 = 45 \Rightarrow 4 + 5 = 9$
 $37 \times 13 \Rightarrow 37 - 13 = 24 \Rightarrow 2 + 4 = 6$
 $42 \times 12 \Rightarrow 42 - 12 = 30 \Rightarrow 3 + 0 = 3$
 $87 \times 77 \Rightarrow 87 - 77 = 10 \Rightarrow 1 + 0 = 1$

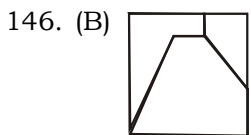
141. (C) Blackboard is in Class and Class is in the School.

142. (C) Both conclusion I and II follow.

143. (C) From options (3),
 $(10 \times 7) - 2 < (10 - 2) \times 7$
 After changing the signs as per the given details,
 $(10 + 7) \times 2 < (10 \times 2) + 7$
 $\Rightarrow 34 < 27$
 But, 34 is not less than 27



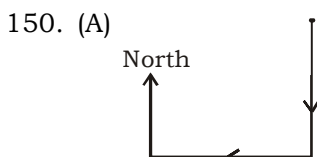
145. (B) The Age of Teacher = $20 + 21 = 41$ years



147. (B) 'The only daughter of the father of X's mother' means mother of X.
 Hence X is the son of the lady in the photograph.

148. (B) N U M E R A L
 1 2 3 4 5 6 7
 U E A L R M N
 2 4 6 7 5 3 1
 Similarly,
 A L G E B R A
 1 2 3 4 5 6 7
L E R A B G A
 2 4 6 7 5 3 1

149. (C)



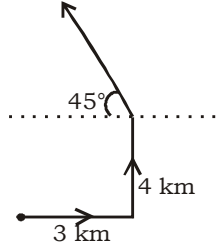
151. (D) As, $37 + 14 = 51 \Rightarrow \frac{51}{3} = 17$

$69 + 33 = 102 \Rightarrow \frac{102}{3} = 34$

$91 + 125 = 216 \Rightarrow \frac{216}{3} = 72$

Similarly, $28 + 56 = 84 \Rightarrow \frac{84}{3} = 28$

152. (B) North-West



153. (B) CURTAIN

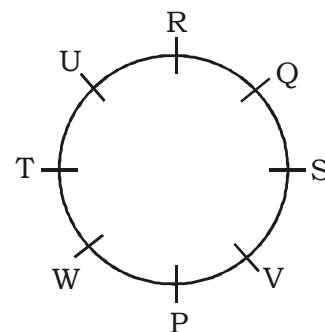
154. (D) **PANDA, TOAD** and **DONKEY** are the animals which can be formed after including the vowels.

APPLE can also be formed after including vowels A & E but **Apple** is not an animal.

155. (D) $10 \times 10 = 5 \times 10 + 50 @ 10$

After changing the signs as per the given details,
 $10 \times 10 - 5 \times 10 + 50 \div 10$
 $= 100 - 50 + 5$
 $= 55$

Directions (156 - 160): Answer



156. (B)
 158. (D)
 160. (A)

157. (D)
 159. (C)

UP SI ANSWER KEY - 53

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

