KD Campus
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UP SI MOCK TEST – 60 (SOLUTION)

81. (C)

82. (C) Here, area $\Delta AMN = \frac{1}{2}$(area ΔABC)

or, $\frac{\text{area of } \Delta AMN}{\text{area of } \Delta ABC} = \frac{1}{2}$

or, $\left(\frac{AM}{AB}\right)^2 = \frac{1}{2}$

or, $\sqrt{2}\ AM = AB$

or, $\sqrt{2}\ AM = (AM + MB)$

or, $(\sqrt{2} - 1)\ AM = MB$

or, $\frac{AM}{BM} = \frac{1}{\sqrt{2}-1}$

or, $\frac{AM}{BM} = \frac{1}{\sqrt{2}-1} \times \frac{\sqrt{2}+1}{\sqrt{2}+1}$

$\therefore$ AM : BM = $(\sqrt{2}+1):1$

83. (D) S – 40, T – 48, U – 60 → 240 units (6, 5, 4)

2 days remaining work of T and 5 days remaining work of U done by 5.

Total remaining = 2 × 5 + 4 × 5
= 30 units

Now let, total units work = 270 units

$= \frac{270}{15}$ = 18 days

Total work done by S
= 18 × 6
240 units → ₹10800

18 × 6 units → $₹\frac{10800 \times 18 \times 6}{240}$

→ 4860

84. (B)

	A	:	C
efficiency	3	:	1

Total work = 4 × 22.5

Efficiency of C = $\frac{90}{15}$ = 6 units day

Efficiency → A : B : C
3 : 1 : 4

Total work done in 15 days
⇒ 15 × 4 = 60 units

Remaining work = $\frac{30 \text{ units}}{10}$ = 3 days.

85. (*) P + Q + R → 50% work in 2 days
P + Q + R → 100% work in 4 days

$\frac{P+Q+R}{\frac{1}{2}}$ $\quad$ $\frac{P+R}{\frac{1}{6}\times\frac{1}{2}}$

Remaining work done by R in 8 days 5/12

$\frac{5}{12}$ unit → 8 days

1 unit → $\frac{96}{5}$ days

One day's work done by R is $\frac{5}{96}$

Efficiency is P = $\frac{1}{12} - \frac{5}{96}$

$= \frac{8-5}{96} = \frac{3}{96}$

P does the whole work is 32 days.

86. (B) $a^3 + b^3 = (a + b)^3 - 3ab\,(a + b)$
$a^2 + b^2 = (a + b)^2 - 2ab$
$99 = (a + b)^2 - 2 \times 11$
$(a + b)^2 = 121$
$\Rightarrow a + b = 11$
$\Rightarrow a^3 + b^3 = (11)^3 - 3 \times 11 \times 11$
$\Rightarrow 1331 - 363 = 968$

87. (D) A → 36 hours (4 units/hour), B → 48 hour (3 units/hour) → 144 units

In 9 days total work done = 7 × 9
= 63 units

Remaining work = 144 – 63
= 81 units

Remaining work done by B in = $\frac{81}{3}$
= 27 days.

88. (A) Let the amount given at 4% per annum be ₹ x

$\therefore$ Amount given at 5% per annum
= ₹ (1200 – x)

$\therefore \frac{x \times 4 \times 2}{100} + \frac{(1200-x) \times 5 \times 2}{100} = 110$

$\Rightarrow \frac{-2x + 12000}{100} = 110$

$\Rightarrow x$ = ₹ 500

Also, (1200 – x) = 1200 – 500 = ₹ 700

89. (C) 2 kmph = $\left(\frac{2\times5}{18}\right)$ m/s = $\frac{5}{9}$ m/s.

and 4 kmph = $\frac{4\times5}{18}$ m/s = $\frac{10}{9}$ m/s

Let the length of the train be x m and its speed be y m/s. Then,

$$\frac{x}{y-\frac{5}{9}} = 9$$

$\Rightarrow 9y - 5 = x$

$\therefore 9y - x = 5$ ... (i)

and = $\frac{x}{y-\frac{10}{9}} = 10$

$\Rightarrow 10\,(9y - 10) = 9x$

$\Rightarrow 90y - 9x = 100$ ... (ii)

By equation (i) × 10 – equation (ii), we have

$$\begin{array}{r} 90y - 10x = 50 \\ 90y - 9x = 100 \\ \hline -x = -50 \end{array}$$

$\Rightarrow x = 50$ m

90. (A) Let the amount invested by A and B is $3x$ and $5x$ respectively and after 6 month C joined amount equal to B.
Then, Ratio of A, B and C in profit
= $3x \times 12 : 5x \times 12 : 5x \times 6 = 6 : 10 : 5$

91. (B) ATQ,
Side of first square = $\sqrt{81}$ = 9 cm
Side of second square = $\sqrt{64}$ = 8 cm
Sum of perimeter of both squares
= [(4 × 9) + (8 × 4)] = 68 cm

$\therefore$ Side of third square = $\frac{68}{4}$ = 17 cm

$\therefore$ Required area = 17^2 = 289 cm^2

92. (D) ATQ,

Required Rate = $\frac{32}{4}$ = 8% (Quarter)

Required time = 9 month = 3 Quarter

$$CI = P\left[\left(1+\frac{R}{100}\right)^T - 1\right]$$

$$= 15625\left[\left(1+\frac{8}{100}\right)^3 - 1\right]$$

$$= \left[15625\times\frac{27}{25}\times\frac{27}{25}\times\frac{27}{25}\right] - 15625$$

= 19683 – 15625 = ₹4058

93. (D) A.T.Q.,
Their HCF is 9
$\therefore$ Their LCM must be multiple of 9
$\therefore$ 64 cannot be their LCM

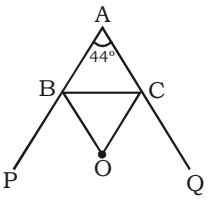
94. (B) $x = \sqrt{3} - \sqrt{2}$

$$\frac{1}{x} = \sqrt{3} + \sqrt{2} \;\; x - \frac{1}{x} = -2\sqrt{2}$$

$$= x^3 - \frac{1}{x^3} = 16\sqrt{2} + 3\left(-2\sqrt{2}\right)$$

$$= -16\sqrt{2} - 6\sqrt{2} = -22\sqrt{2}$$

95. (C)



$$\angle BOC = 90° - \frac{\angle A}{2}$$

$$= 90° - \frac{44°}{2} = 68$$

$$\frac{1}{2}\angle BOC = 34°$$

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

$$\frac{6\left(\frac{2x-3}{7}\right)}{4} + \frac{9}{2} = \frac{37}{7}$$

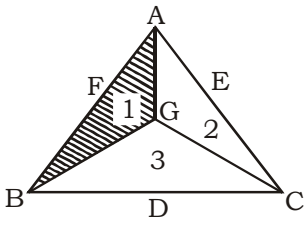
$$\Rightarrow \frac{12x-18}{28} = \frac{37}{7} - \frac{9}{2}$$

$$\Rightarrow 12x - 18 = 28\left(\frac{74-63}{14}\right)$$

$\Rightarrow 12x = 22 + 18$

$\Rightarrow x = \frac{40}{12} = \frac{10}{3}$

97. (D)



$$\frac{ar(\Delta ABG)}{ar(\Delta ABC)} = \frac{1}{3} = 1 : 3$$

98. (A) $(2(x+y))^3-(x-y)^3$
$= (2x+2y-x+y)\,[2(x+y)]^2 + (x-y) + 2(x+y^2)$
$= (x+3y)\,[4x^2+4y^2+8xy+x^2+y^2-2xy + 2x^2-2y^2]$
$= (x+3y)\,(7x^2+3y^2+6xy)$
Comparing with original equation
A = 7, B = 6, C = 3
A – B – C = –2

99. (C) diameter of Ist shere
diameter of 2nd shere = 2R
A.T.Q.,
$2r = 2 \times 2R$
$r = 2R$ ...(i)

and $4\pi r^2 = \frac{4}{3}\,\pi\, p^3$

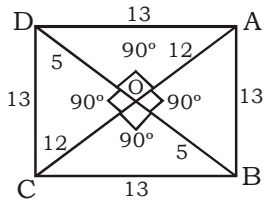
$\Rightarrow 3r^2 = R^3$

$\Rightarrow 3r^2 = \left(\frac{r}{2}\right)^3$

$= 3r^2 = \frac{r^3}{8}$

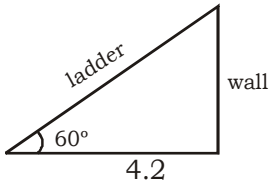
$\Rightarrow r^2 = 24$

100. (A)



In ΔAOB
$AD^2 = BO^2 + OA^2$
$= 144 + 25$
AB = 13
ABCD is a rhombus so opposite sides arc equal
AB = CD and BC = DA
Perimeter = 13 + 13 + 13 + 13
= 52 cm

101. (A) A.T.Q.,



$\tan 60° = \frac{h}{4.2}$
$h = 4.2 \tan 60°$
$= 4.2 \times \sqrt{3}$
= 7.3 meters

102. (A) $40 \times$ S.P. = 50 × C.P.

$\Rightarrow \frac{C.P}{S.P.} = \frac{40}{50}$

Profit = $\frac{(50-40)}{40} \times 100 = 25\%$

103. (A) Total age of 4 children = 12 × 4 = 48 years

$\frac{\text{Children + father}}{5} = 20$

48 years + father = 100
Father = 52 years.

104. (A) $\sin^2 60° - \cos^2 45° + \sec 60° + \cos^2 40° + \cos^2 50°$

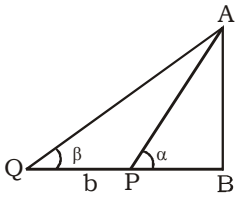
$\Rightarrow \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{1}{\sqrt{2}}\right)^2 + 2 + \sin^2 50° + \cos^2 50°$

$\Rightarrow \frac{3}{4} - \frac{1}{2} + 2 + 1 = \frac{13}{4}$

105. (A) Required percentage

$= 50 - 50 - \frac{50 \times 50}{100} = -25\%$

106. (D)



In ΔAQB

$\tan\beta = \frac{AB}{b+x}$

$b + x = AB \cot\beta$ ...(i)

In ΔAPB

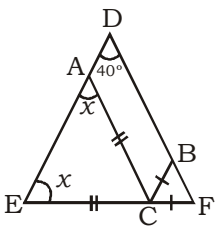
$\tan\alpha = \frac{AB}{x}$

$x = \cot\alpha\ AB$ ...(ii)

Now, from eqn (i) and (ii)
$b + AB \cot\alpha = AB \cot\beta$

$AB = \frac{b}{\cot\beta - \cot\alpha}$

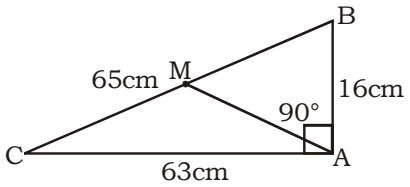
107. (C)



In ΔAEC
$\angle C = x + x$
$= 2x$ ...(i)
(by external angle theorem)

In ΔDEF
$\angle F = 180 - x - 40$
$= 140 - x$
$\angle B = 140 - x$ ($\because$ FC = BC)
In ΔFBC
$\angle C = 180 - (280 - 2x)$
$= 2x - 100$ ...(ii)
Now eqn (i) and (ii)
$\Delta ACB = 2x - 2x + 100$
$= 100^\circ$

108. (A)



ΔABC is right-angled triangle and AM is circumradius.

$\therefore$ AM $= \frac{65}{2} = 32.5$ cm

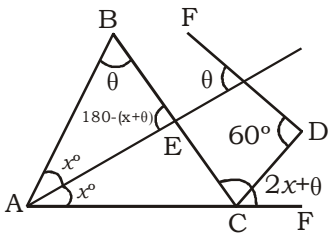
109. (D) M $\rightarrow$ Men
B $\rightarrow$ Boys
18 M = 36B
1 M = 2B
12M = 24B
Now,
$18M \times 6 \times 24 = (24M + 24B) \times 9 \times D$
$\Rightarrow 18M \times 6 \times 24 = (24M + 12M) \times 9 \times D$
$\Rightarrow 18M \times 6 \times 24 = 36M \times 9 \times D$
$\Rightarrow$ D = 8 days

110. (B) $6 \times$ S.P. $= 8 \times$ C.P

$\Rightarrow \frac{CP}{SP} = \frac{6}{8} = \frac{3}{4}$

Profit $= \frac{(4-3)}{3} \times 100 = 33\frac{1}{3}\%$

111. (A)



In ΔABE
$\angle C = 180 - (x + \theta)$
and In ΔAEC
$\angle E = x + \theta$
In $\square$EOCM
$\angle E = 180^\circ - (x + \theta)$
$\angle C$ is exterior angle is

ΔABC
$\angle C = 2x + \theta$
$= x + \frac{\theta}{2}$
In $\square$EDCM
$180 - \theta + 60 + x + \frac{\theta}{2} + 180 - (x + \theta)$
$= 360^\circ$
$\Rightarrow \frac{3\theta}{2} = 60^\circ$
$\theta = 40^\circ$

112. (D) x = 16 km/h
y = ?

Average speed $= \frac{2xy}{x+y} = \frac{64}{10}$

$\Rightarrow \frac{2 \times 16 \times y}{16 + y} = \frac{64}{10}$

$\Rightarrow y$ = 4 km/hr

113. (D) $\sin^2 42^\circ + \sin^2 48^\circ + \tan^2 60^\circ - \text{cosec } 30^\circ$
$\sin^2(90^\circ - 48^\circ) + \sin^2 48^\circ + (\sqrt{3})^2 - (2)$
$\cos^2 48^\circ + \sin^2 48 + 3 - 2$
$1 + 1 = 2$

114. (C) Factor of 72 = 9 × 8
If 55350x2 divisible by 72 then
55350x2 is also divided by 9 & 8 both
If 0x2 is divisible by 8 the possible value of x is 3 or 7
Now divisible of 9

$\frac{5+5+3+5+0+x+2}{9} = \frac{20+x}{9}$

$\Rightarrow$ Possible value of x is 7
$\Rightarrow x = 7$

115. (A) $3.8 - (4.2 \div 0.7 \times 3) + 5 \times 2 \div 0.5$

$\Rightarrow 3.8 - \left(\frac{4.2}{0.7} \times 3\right) + \frac{5 \times 2}{0.5}$

$\Rightarrow 3.8 - 18 + 20 = 5.8$

116. (B) Given that a + b + c = 11 and ab+bc+ca = 38
Now, $(a+b+c)^2 = (a^2 + b^2 + c^2) + 2(ab + bc + ca)$
$\Rightarrow 11^2 = a^2 + b^2 + c^2 + 2 \times 38$
$\Rightarrow a^2 + b^2 + c^2 = 121 - 76 = 45$
Now, $a^3 + b^3 + c^3 - abc$
$\Rightarrow (a + b + c)[a^2 + b^2 + c^2 - (ab + bc + ca)]$
$\Rightarrow 11(45 - 38) \Rightarrow 11 \times 7 = 77$

117. (D) Required Percentage $= \frac{9.5}{26.6} \times 100$

$= \frac{96}{266} \times 100 = 36$

118. (C) Minimum change of inflation in world = $\frac{1.4}{14.6} \times 100 = 9\%$

119. (A) USA had better control on inflation

120. (B) Required percentage

$= \frac{(36.2-16)}{16} \times 100 = 126.25$

121. (C)

122. (C) As, ACEG → IKMO (+8)

Similarly, QSUW → **YACE** (+8)

123. (A) $12 \Rightarrow (12 + 1) \times 3 = 39$

$15 \Rightarrow (15 + 1) \times 3 =$ **48**

124. (B) The unit of pressure is pascal whereas the unit of resistance is ohm.

125. (D) Except **EUROT** in all other option are 2 vowels.

126. (B) Except **133** all numbers are divisible by 11.

127. (C) Except solar energy all are non-renevelable source of energy.

128. (D) R F T O D O P B N O Z K **N X H**

(−1, −2, −3 between each pair)

129. (B) 6 19 60 185 **562**

(×3+1, ×3+3, ×3+5, ×3+7)

130. (A) As, $(3^3 + 9^3) - (5^3 + 4^3) = 569$

and $(8^3 + 6^3) - (2^3 + 7^3) = 377$

Similarly,

$(11^3 + 5^3) - (4^3 + 6^3) =$ **1176**

131. (B) As, $\frac{10688}{4} = 2672$

and $\frac{2672}{4} = 668$

Similarly, $\frac{668}{4} =$ **167**

132. (C) Total number of triangle is 28.

133. (C) $128 + 9 - 16 \times 4$

After changing the signs as per the given details,

$128 \times 9 + 16 \div 4$

$= 128 \times 9 + 4$

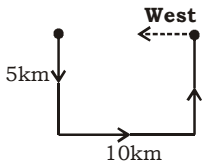
$= 1152 + 4$

$= 1156$

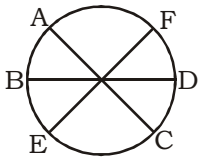
134. (B) Required age = (36 + 14 + 1) years

= **51 years**

135. (B)



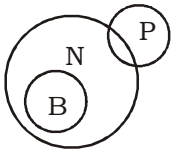
136. (D)



B and F are the neighbours of A.

137. (D) CENTRAL

138. (B)



I. × II. ✓

∴ Only conclusion II follows.

139. (A) Let number of deer = x

Number of peacocks = y

A.T.Q.,

$x + y = 120$

$\Rightarrow y = 120-x$ ...(i)

and,

$4x + 2y = 320$ ...(ii)

Solving eqn (i) and (ii),

$4x + 2(120- x) = 320$

$\Rightarrow 4x + 240 - 2x = 320$

$\Rightarrow 2x = 80$

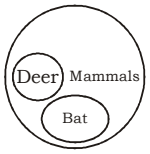
$\Rightarrow x = 40$

and $y = 80$

∴ Number of peacocks = 80

140. (A)

141. (C)



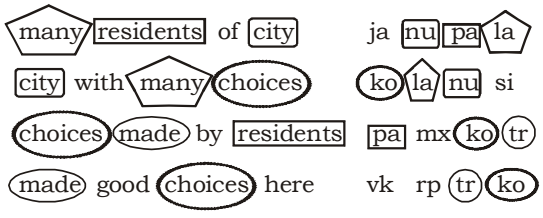
142. (C)

143. (C) According to the statement. The campaign did not get any response from citizens. This means that people are not interested in keeping the city clean and the campaign has failed.

∴ Both I and II are implicit

144. (C) **FEGH** represents plumbers who are either bakers or jugglers.

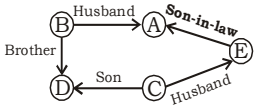
145. (C)



∴ with = si

146. (B) Made by residents = **mx pa tr**

147. (B)



148. (D) A.T.Q.,

Let uncle age is x

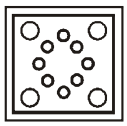
$$\Rightarrow \frac{42 + x}{3} = 36$$

$\Rightarrow 42 + x = 108$

$x = 108 - 42$

$= 66$

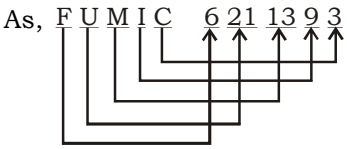
149. (D)



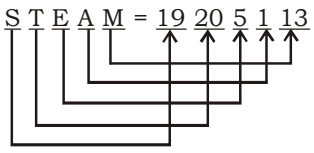
150. (D)

151. (C) THM**D**OBF

152. (C) As,



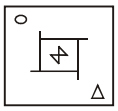
Similarly,



PROP = 16 18 15 16

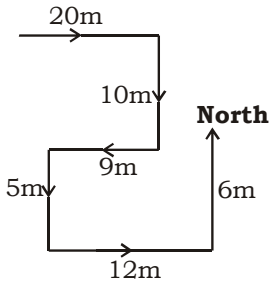
153. (D) 'Harsh has only one sister'.

154. (B)

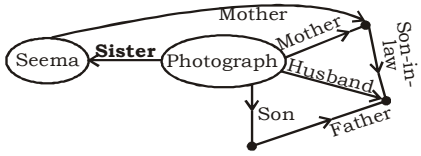


155. (A)

156. (C)



157. (A)



158. (B)

159. (B) 15 × 26 ⇒ 6 5 1 2
ab cd d b a c
29 × 36 ⇒ 6 9 2 3
ab cd d b a c
46 × 54 ⇒ **4 6 4 5**
ab cd **d b a c**

160. (B) Total number of smaller cubes
= $12(n - 2) = 12(5 - 2) = 36$

UP SI ANSWER KEY - 60

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