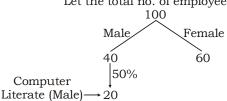
UP SI MOCK TEST - 46 (SOLUTION)

81. (B) Let the total no. of employees be



Total percentage of male computer literate = 20%

total percentage of female computer literate = 62% - 20% = 42%

Hence no. of female literates

$$= \frac{42}{100} \times 1600 = 672$$

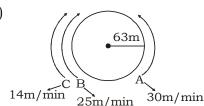
82. (A) Ist person
$$\rightarrow$$
 6 \longrightarrow 4

Ind person \rightarrow 8 \longrightarrow 24 \longrightarrow 3

I + II + child \rightarrow 3

Share of child =
$$\frac{200}{8}$$
 × 1 = ₹ 25

83. (A)



circumference of circular track = $2 \pi R$

$$= 2 \times \frac{22}{7} \times 63 = 396 \text{ m}$$

Speed of B against A = (30 + 25) = 55 m/minSpeed of C against A = (30 + 14) = 44 m/min(i) Time taken to meet together first time

$$= \frac{\text{Distance}}{\text{HCF(speed)}}$$

$$t_1 = \frac{396}{\text{HCF}(55, 44)} = \frac{396}{11}$$

 $t_1 = 36 \text{ min}$

84. (B) Ratio of values of 50 paise, 25 paise and 10 paise coins

$$= \frac{2}{2} : \frac{3}{4} : \frac{5}{10} = 1 : \frac{3}{4} : \frac{1}{2}$$
$$= 4 : 3 : 2$$

Sum of the ratios = 4 + 3 + 2 = 9

Value of 25 paise coins = $\frac{3}{9}$ × 90 = ₹ 30 Number of 25 paise coins = 30 × 4 = 120

85. (A) A 15
$$\rightarrow$$
 4 bricks/hour

60 Total work

B 20 \rightarrow 3 bricks

/hour

Together (A + B) can add (4 + 3) = 7 bricks/hour ATQ,

They build the wall in 12 hours

∴ per hour work =
$$\frac{60}{12}$$
 = 5 bricks/hour

(7 - 5) units $\rightarrow 280$ bricks 2 units $\rightarrow 280$ bricks

1 unit
$$\rightarrow \frac{280}{2}$$
 = 140 bricks

60 units \rightarrow 140 × 60 = 8400 bricks

86. (A) That month will have 5 sundays.
∴ Required average

$$= \frac{5 \times 510 + 25 \times 240}{30} = \frac{2550 + 6000}{30}$$

$$=\frac{8550}{30}=285$$

Required percentage = $\frac{7}{35} \times 100 = 20\%$

 \therefore Difference in time = 6 - 5 = 1 hour = 60 minutes

But the given difference = 15 + 5 = 20 min

i.e 60 → 20



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$$\therefore 210 \longrightarrow \frac{20}{60} \times 210 = 70 \text{ kms}$$

Hence, the required distance = 70 kms

89. (A) Let the rate of interest be r\% per annum,

ATQ,

$$4840 = P \left(1 + \frac{r}{100} \right)^2 \qquad ...(i)$$

and 5324 =
$$P\left(1 + \frac{r}{100}\right)^3$$
 ...(ii)

On dividing equation (ii) by equation (i), we have,

$$1 + \frac{r}{100} = \frac{5324}{4840} = 1 + \frac{484}{4840}$$

$$\Rightarrow \frac{r}{100} = \frac{484}{4840}$$

$$\Rightarrow r = 10\%$$

90. (A) Let the two numbers be A and B.

Then,
$$A + B = 22$$

and
$$A^2 + B^2 = 404$$

We know that

$$(A + B)^2 = A^2 + B^2 + 2AB$$

or
$$(22)^2 = 404 + 2AB$$

or
$$484 = 404 + 2AB$$

or
$$2AB = 80$$

or
$$AB = 40$$

 \therefore The product of the two numbers = 40

- 91. (D) $\frac{\sqrt{24} + \sqrt{216}}{\sqrt{96}} = \frac{2\sqrt{6} + 6\sqrt{6}}{4\sqrt{6}} = \frac{8\sqrt{6}}{4\sqrt{6}} = 2$
- 92. (A) Downstream speed (u) = $\frac{D}{T} = \frac{7}{35} \times 60$ = 12 km/h

upstream speed (v) =
$$\frac{D}{T} = \frac{2}{30} \times 60$$

= 4 km/h

Speed of boat in still water =
$$\frac{1}{2}(u + v)$$

$$=\frac{1}{2}(12+4)=8 \text{ km/h}$$

Speed of stream =
$$\frac{1}{2}(u - v) = \frac{1}{2}(12 - 4)$$

= 4 km/h

According to the question,

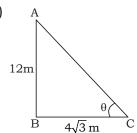
$$\frac{10000 \times 2 \times r}{100} + \frac{6000 \times 4 \times r}{100} = 4400$$

$$\Rightarrow 200r + 240r = 4400$$

$$\Rightarrow$$
 440 r = 4400

$$\Rightarrow r = \frac{4400}{440} = 10\%$$

94. (B)



$$AB = pole = 12 metre$$

Shadow = BC =
$$4\sqrt{3}$$
 metre

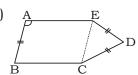
From ΔABC,

$$\tan\theta = \frac{AB}{BC} = \frac{12}{4\sqrt{3}} = \sqrt{3}$$

$$\Rightarrow \tan\theta = \tan 60^{\circ}$$

$$\Rightarrow \theta = 60^{\circ}$$

95. (B)



$$\angle$$
BCE = 102°, AB = CD = ED (given)

$$\therefore$$
 CD = ED = CE [\because AB = CE]

 Δ ECD is an equilateral triangle.

$$\therefore$$
 ∠ECD = 60°

$$\angle BCD = 102^{\circ} + 60^{\circ}$$

96. (D)
$$4\pi (r + 2)^2 - 4\pi r^2 = 704$$

$$\Rightarrow (r+2)^2 - r^2 = \frac{704}{4\pi}$$

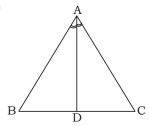
$$\Rightarrow r^2 + 4r + 4 - r^2$$

$$=\frac{704\times7}{4\times22}=56$$

$$\Rightarrow$$
 4 r = 56 – 4 = 52

$$\Rightarrow r = 13 \text{ m}$$

97. (A)



$$\frac{AB}{AC} = \frac{BD}{DC} = \frac{5}{7.5 - 5} = \frac{50}{25} = \frac{2}{1} = 2:1$$

98. (C) Leak
$$\longrightarrow$$
 6 \searrow 4 \searrow 1 L + Fill \longrightarrow 8 \searrow 24 \searrow 3

F = 1, Time = 24 hr

 $1 \min \rightarrow 4 \text{ litre}$

 \therefore capacity of tank = 4 × 60 × 24

= 5760 litre

99. (A) If the HCF =
$$H$$
, then

LCM = 44 H

∴ 44 H + H = 1125

 \Rightarrow 45 H = 1125

$$\therefore H = \frac{1125}{45} = 25$$

$$\therefore$$
 LCM = 44 × 25 = 1100

Now

1st number × 2nd number = LCM × HCF \Rightarrow 25 × 2nd number = 1100 × 25

$$\therefore \text{ Second number} = \frac{1100 \times 25}{25} = 1100$$

100. (B)
$$\sin 7x = \cos 11x$$

$$\Rightarrow \sin 7x = \sin (90^{\circ} - 11x)$$

$$\Rightarrow 7x = 90^{\circ} - 11x$$

$$\Rightarrow 18x = 90^{\circ}$$

$$\Rightarrow x = 5^{\circ}$$

 \therefore tan $9x + \cot 9x$

 $= \tan 45^{\circ} + \cot 45^{\circ}$

= 1 + 1 = 2

Copper =
$$\frac{4}{7} \times 63 = 36 \text{ kg}$$

Zinc =
$$\frac{3}{7}$$
 × 63 = 27 kg

Let x kg copper is extracted Remaining copper = 36 - x kg

New ratio =
$$\frac{10}{9}$$

$$\Rightarrow \frac{Cu}{Zn} = \frac{10}{9}$$

$$\Rightarrow \frac{36-x}{27} = \frac{10}{9}$$

$$\frac{36-x}{3}=\frac{10}{1}$$

$$36 - x = 30$$

$$x = 6 \text{ kg}$$

102. (C) Area of the base =
$$\frac{1}{2}$$
(sum of parallel sides) × perpendicular distance

$$=\frac{1}{2}(14+8) \times 8 = 88 \text{ sq. cm}$$

∴ Volume = Area of the base × height

$$\Rightarrow$$
 1056 = 88 × h

$$h = \frac{1056}{88} = 12 \text{ cm}$$

103. (D)
$$x^2 + \frac{1}{x^2} = 2\sin\left(\frac{\pi x}{2}\right)$$

$$\Rightarrow \left(x - \frac{1}{x}\right)^2 + 2 = 2 \sin\left(\frac{\pi x}{2}\right)$$

$$\Rightarrow x - \frac{1}{x} = 0$$

 $[\because \sin\theta \leq 1]$

104. (C)
$$a + b + c = 0$$

$$\Rightarrow a+b=-c$$
; $b+c=-a$; $c+a=-b$

$$\therefore \frac{a+b}{c} + \frac{b+c}{a} + \frac{c+a}{b}$$

$$\frac{a}{b+c} + \frac{b}{c+a} + \frac{c}{a+b}$$

$$= -1 - 1 - 1 = -3$$

$$\therefore \text{ Expression} = (-3) \times (-3) = 9$$

Bigger

Ratio of volume

Ratio of height

$$\sqrt[3]{64} = 4 \sqrt[3]{1} = 1$$

Smaller

i.e. 4 unit represent = 40

$$\Rightarrow$$
 4 unit = 40 cm

∴ 1 unit =
$$\frac{40}{4}$$
 = 10 cm

$$\therefore$$
 Required height = $h = 40 - 10$

105. (B)



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106. (C)
$$\angle BAC = \angle BDC = 30^{\circ}$$

(: made by same arc BC)

In $\triangle ABC$,

$$\angle x = 180^{\circ} - (100 + 30^{\circ}) = 50^{\circ}$$

107. (C)
$$\frac{24600}{\frac{20}{21} + \frac{400}{441}} = \frac{24600 \times 441}{820} = ₹ 13230$$

108. (D)
$$x^{\frac{1}{3}} = y^{\frac{1}{4}}$$

$$\Rightarrow \left(x^{\frac{1}{3}}\right)^{12} = \left(y^{\frac{1}{4}}\right)^{12}$$

$$\Rightarrow x^4 = y^3$$

$$\Rightarrow (x^4)^5 = (y^3)^5$$
$$\Rightarrow x^{20} = y^{15}$$

109. (C)
$$7 \times 8 : 9 \times y$$

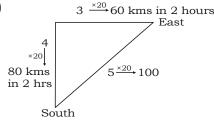
(*y* is the number of months for which B invests)

$$\Rightarrow \frac{7 \times 8}{9 \times y} = \frac{8}{9}$$

$$\Rightarrow \frac{56}{9y} = \frac{8}{9} \Rightarrow \frac{7}{y} = \frac{1}{1}$$

$$\therefore y = 7 \text{ months}$$

110. (B)



 \therefore Speed of the fastest swimmer = $\frac{80}{2}$

$$= 40 \text{ km/h}$$

111. (A) Avg. Height =
$$\frac{6 \times 1.15 + 8 \times 1.10 + 6 \times 1.12}{20}$$

$$= \frac{6.9 + 8.8 + 6.72}{20} = \frac{22.42}{20} = 1 \text{ m } 12.1 \text{ cm}$$

112. (A)

$$P + Q \rightarrow 90 \text{ Minutes}$$
 2 units/min
 $Q + R \rightarrow 60 \text{ Minutes}$ 3 Total capacity
 $Q + R \rightarrow 45 \text{ Minutes}$ 4 units/min

Efficiency of
$$(P + Q + R) = \frac{2+3+4}{2}$$

= 4.5 units/min

Efficiency of P = (4.5 - 3) = 1.5 units/min Efficiency of Q = (4.5 - 4) = 0.5 units/min Efficiency of R = (4.5 - 2) = 2.5 units/min

Required time for $P = \frac{180}{1.5} = 120 \text{ min}$

Required time for Q = $\frac{180}{0.5}$ = 360 min

Required time for R = $\frac{180}{2.5}$ = 72 min

114. (C) :: S.P. of house and shop is same.

: loss percent in the transaction

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

$$4\% = \frac{1}{25} \xrightarrow{\text{loss}}$$

$$\therefore$$
 SP = 25 - 1 = 24

Ratio of loss to S.P = 1:24

given SP of both house and shop = 2 lakh

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

∴ loss =
$$₹ \frac{1}{12}$$
 lakh

115. (D) $2\sin\alpha + 15\cos^2\alpha = 7$

or,
$$2\sin\alpha + 15(1 - \sin^2\alpha) = 7$$

or,
$$15\sin^2\alpha - 2\sin\alpha - 8 = 0$$

solving,
$$\sin \alpha = \frac{4}{5}$$

$$\therefore \cot \alpha = \frac{3}{4}$$

116. (C) Percentage decrease = $\left(\frac{6-5}{6} \times 100\right)\%$

$$= \frac{50}{3}\% = 16\frac{2}{3}\%$$

117. (B) Required ratio = 2:6 = 1:3

118. (A) Required Average sell



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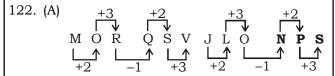
$$= \left(\frac{3+4+10+6+6}{5}\right) crore$$

$$=\frac{29}{5}$$
 = 5.8 crore

119. (D) Percentage increase

$$= \frac{10-4}{4} \times 100 = 150\%$$

- 120. (B) Required total sell = (10 + 6 + 6 + 5) crore = 27 crore
- 121. (A) 7 + 6 = 13 & 7 6 = 1, 13 1 = 129 + 4 = 13 & 9 - 4 = 5, 13 - 5 = 8



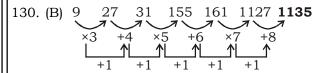
- 123. (C) An oar puts a rowboat into motion. A foot puts a skateboard into motion.
- 124. (D) 12 : 1584 :: 8 : 448 \downarrow \downarrow \downarrow \downarrow $12^2 \times (12-1)$ $8^2 \times (8-1)$ = 144 × 11 = 64 × 7
- 125. (B) A branch, leaf, and root are all parts of a tree. The dirt underneath is not a part of the tree.
- 126. (B) Except (73), all are the sum of squares of continuous natural numbers. $(3)^2 + (4)^2 + (5)^2 = 9 + 16 + 25 = 50$

$$(3)^2 + (4)^2 + (5)^2 = 9 + 16 + 25 = 50$$

 $(5)^2 + (6)^2 + (7)^2 = 25 + 36 + 49 = 110$
 $(6)^2 + (7)^2 + (8)^2 = 36 + 49 + 64 = 149$
 $(4)^2 + (5)^2 + (6)^2 = 16 + 25 + 36 \neq 73$

127. (C) B F K Q D H M S +4 +6 +4 +6

- 128. (C) $(4 \times 7) \div 4 = 7$ and $(6 \times 2) \div 3 = 4$ Therefore, $(6 \times 2) \div 2 = 6$
- 129. (D) $(5 \times 6) + 2 = 32$ $(7 \times 6) + 2 = 44$ $(7 \times 5) + 2 = 37$



- 131. (C) +2 +2 +2 +2 +2 +2 1 3 3 5 5 7 7 9 9 11 **1113**
- 132. (C)

 B

 E

 I

 H

 G

The simplest triangles are AEI, AIH, BEJ, BJF, CFK, CKG, DGL, DLH, EOJ, FOJ, FOG, LOG, HOL and HOE i.e. 14 in number.

Triangles composed of two components each are EAH, FBE, BEO, EOF, BFO, FCG, GDH, HOD, HOG and GOD i.e. 10 in number.

Triangles composed of three components each are EFH, EHG, FGH and EFG i.e. 4 in number.

Thus, there are 14 + 10 + 4 = 28 triangles in the given figure.

133. (D) Row 1 R P Row 2 Q Q



Q is in South-East of R.

134. (B) When Rahul was born, his brother's age = 6 yrs

His father's age = (6 + 32) years = 38 yrs His mother's age = (38 - 3) years = 35 yrs

His sister's age = (35 - 25) years = 10

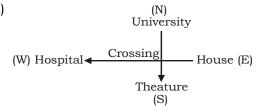
- 135. (B) 1, 5, 7 have two similar elements, one inside the other.
 - 2, 4, 8 have one element placed inside a different element.
 - 3, 6, 9 have two similar elements, one inside the other and the area between the two elements is shaded.

136. (D)

::	•	::	Top face
••	• •	::	Opposite face

When the given figure is folded to form a cube, then the face bearing six dots will lie opposite the face bearing three dots.

137. (A)



Therefore the University is in North direction.

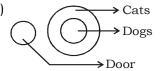
138. (B) Given: $2 + 8 \times 16 - 4 \div 2$

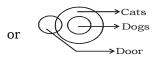
After interchanging the signs we have, = $2 \times 8 - 16 \div 4 \times 2$

$$= 2 \times 8 - 4 \times 2$$

$$= 16 - 8 = 8$$

139. (D)





1. 🗙

Hence, only (3) follows.

140. (A) $P @ Q \rightarrow P$ is the wife of Q ...(i)

 $Q \ \ T \rightarrow Q$ is the brother of T ...(ii)

T # U \rightarrow T is the daughter of U

Hence, Q is the son of U ...(iii)

 $U * W \rightarrow U$ is the father of W.

From (i) and (iii), we can conclude that U is the father-in-law of P.

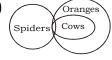
141. (C) Father of Kamal's daughter's father \rightarrow Kamal's father.

Hence, the person is the brother of Kamal's father.

Therefore, the person is the uncle of Kamal.

142. (B) Both Mercury and Zinc are metals.

143. (B)



1. Doubt 2. True

- 144. (C) After Studying the pattern carefully we can observe that in the first segment, two letters face right and the next two face left. The first letter in the second segment repeats the last letter of the previous segment. The same is true for the third segment. But in the fourth segment it changes again. Here, it is opposite of the first segment, so the last two letters must face right.
- 145. (D) The situation demands creating awareness among the people about the dangers of drinking polluted water so that they themselves refrain from the same and at the same time taking steps to provide safe drinking water. So, both the courses of action follow.

146. (C)

147. (A) 7 1 3 × 2 7 4 9 9 1 1 4 2 6 1 1 9 2 5 1

148. (B) $J_o > K_i & C_a$ $K_i > S_a$ $K_i > S_a > N_a$ $C_a > S_a$

So, Nancy is the shortest among all.

149. (B) The first person shook hands with 11 remaining people, the second person also shook hands with 11 people, but we count 10, as the hand shake with the first person has already been counted. Similarly add 9 for the third person, 8 for the fourth one & proceeding in this fashion we get:

11+10+9+8+7+6+5+4+3+2+1=66 So, 66 handshakes took place before the meeting and 66 after the meeting. So, the total no of hand shakes is **132**.

Shortcut: Put N = 12 and N (N - 1) is your answer \Rightarrow 12 (12 - 1) = **132**

150. (B)

151. (B) 1 2 3 def def ghi jkl mno

With the reference of given keypad,



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after pressing the digit 4 twice we will get 'H', the digit 3 twice we will get 'E', the digit 5 thrice we will get 'L' and so on.

After pressing the code in the given pattern we will get "HELLO FRIENDS".

152. (C) $20 \times 8 \div 8 - 4 + 2$

After changing the signs

$$\Rightarrow$$
 20 + 8 - 8 ÷ 4 × 2

$$\Rightarrow$$
 28 – 2 × 2 = **24**

- 153. (C) The colour of the human blood is 'red'. As it is given that 'red' is called 'yellow'. So, the colour of human blood is 'yellow'.
- 154. (A) Let the marks in Geography be G and History be H.

Eq 1: G + H = 160

Eq 2: G/3 = H/2

By the problem:

G = 160 - H

Therefore, putting the value of G in Eq 2: (160 - H)/3 = H/2

 \Rightarrow 320 – 2H = 3H

 \Rightarrow 3H + 2H = 320

 \Rightarrow 5H = 320

⇒ H = **64**

155. (A)

156. (B) The antonyms is **excite**.

laz**e**

unlax

recline

unw**i**nd

tranquilize

r**e**pose

- 157. (C) The third figure in each row comprises the parts common to the first two figures.
- 158. (B) Clearly we can observe that nine days ago, it was Thursday. Therefore today is Saturday.

159. (B)

160. (D) $\frac{\text{Always}}{5} \rightarrow \frac{\text{Generally}}{3} \rightarrow \frac{\text{Sometimes}}{2} \rightarrow \frac{\text{Seldom}}{4} \rightarrow \frac{\text{Never}}{1}$

UP SI ANSWER KEY - 46

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