UP SI MOCK TEST - 53 (SOLUTION)

(A) Marks obtained by A = 360 marks

Marks obtained by C =
$$\frac{360}{125} \times 100$$

= 288 marks

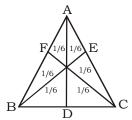
Marks obtained by =
$$\frac{288}{80} \times 100$$

= 360 marks

Required percent marks obtained by D

$$= \frac{360}{500} \times 100 = 72\%$$

82. (D)



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

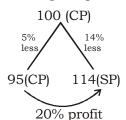
130 units → ₹1690

100 units →
$$\frac{₹1690}{130} \times 100$$

→ ₹1300

84. (C) A.T.Q,

Let original price = 100



14%.

- 85. (A) Total surface area of tank without top $TSA = 30 \times 20 + 2(12 \times 20) + 2(30 \times 12)$ $= 1800 \text{ m}^2$
 - : area of iron sheet = T.S.A without top \Rightarrow Length × width = 1800

$$\Rightarrow$$
 Length = $\frac{1800}{3}$ = 600 m

86. (B)
$$a^3 + b^3 + c^3 - 3abc = 0$$

$$9x - 3 = 0$$

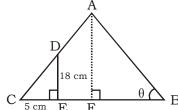
 $\Rightarrow a + b + c = 0$ 3x - 1 + 4x - 3 + 2x + 1 = 0

- $\Rightarrow x = \frac{1}{3} \text{ But } x \neq \frac{1}{3}$ $\Rightarrow 3x - 1 = 4x - 3$ $\Rightarrow x - 2 = 0$
- 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 | BC Let $\angle ABC = \theta$

A.T.Q.,

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

From diagram

$$tanABC = \frac{18}{5} = 3.6$$

Hence, ABC is an equilateral

∴ F will be midpoint of BC

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

[∴ ∆ACE and ∆ACF congruence]

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

$$AC : CD = BC : 2CE$$

89. (C) Single discount

=
$$20 + 40 - \frac{20 \times 40}{100} = 52\%$$
(B) Percent discount

90.

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

(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)

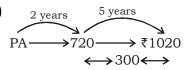
= ₹12,720

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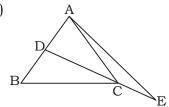
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92. (B)



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

93. (D)



ΔABC is equilateral,

- $\Rightarrow \angle BCD = \angle DCA = 30^{\circ} (\because CD \text{ bisectors} \\ \angle ACB)$
- \therefore $\angle ACE = 180^{\circ} 30^{\circ} = 150^{\circ}$ AC = CE

$$\therefore \angle CAE = \angle CEA = \frac{30}{2} = 15^{\circ}$$

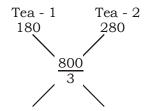
94. (D) A.T.Q.,

SP of the mixture = ₹320 Gain = 20%

 \therefore CP of the mixture = 320 × $\frac{100}{120}$

$$= \frac{800}{3}$$

Now using allegation method.

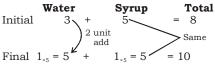


$$280 - \frac{800}{3} = \frac{40}{3} \cdot \frac{800}{3} - 180 = \frac{260}{3}$$

Ratio of $\rightarrow 40$: 260

Quantity $\rightarrow 2$: 13

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



Water add in final

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

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

AB||CD

$$x = \frac{4}{3}y$$
 (given)

$$x: y = 4:3$$

$$y = \frac{3}{8}z$$
 (given)

$$u:z=3:8$$

$$x: y: z = 4:3:8$$

$$x = \frac{4}{15} \times 180^{\circ} = 45^{\circ}$$

In ΔABD

$$\angle BAD = 180^{\circ} - (x + 36^{\circ})$$

$$= 180^{\circ} - 48^{\circ} - 36^{\circ}$$

= 96°

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

$$=8x-5x=3x$$

$$x = 14000$$

$$3x = 14000 \times 3$$

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)
$$(8x^3 + 27y^3) = Ax^2 + Bxy + Cy^2$$

$$(2x+3y)$$
 $\left[(2x)^2 - (2x)(3y) + (3y)^2 \right]$

$$\frac{\left[(2x)^{2} - (2x)(3y) + (3y)^{2}\right]}{(2x+3y)}$$

$$= Ax^2 + Bxy + Cy^2$$

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



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Comparing both sides, we have

A = 4, B = 6, C = 9

$$\Rightarrow$$
 (5A + 4B + 3C) = 5 × 4 - 4 × 6 + 3
= 20 - 24 + 27 = 23

101. (D)
$$\frac{90 \text{ men} \times 16 \text{ days} \times 12 \text{ hours}}{1 \text{ work}}$$

$$= \frac{70 \text{ men} \times 24 \text{ days} \times 8 \text{ hours}}{\text{W work}}$$

$$90 \times 16 \times 12 = \frac{70 \times 24 \times 8}{W}$$

$$9W = 7, W = \frac{7}{9}$$

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

$$\Rightarrow$$
 2A = 3B

$$\Rightarrow \frac{A}{B} = \frac{3}{2}$$

- \Rightarrow Then efficiency ratio A : B = 3 : 2
- ⇒ We know that time is inverse proportional to efficiency
- ⇒ The time taken by them in ratio

$$A : B = 2 : 3$$

A: B = 2: 3

$$4\times$$
 $4\times$
 $4\times$
8 days 12 days

- · 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 days

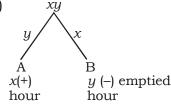
103. (B)
$$\angle ADP = \frac{1}{2} \angle AOB = \frac{1}{2} \times 100 = 50^{\circ}$$

$$\angle DAP = 30^{\circ}$$

In ΔADP

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

= 30° + 50°
= 80°



Time will be taken by with of them to fill the tank

$$= \frac{xy}{y-x}$$

Usual New 105. (C)

Ratio

of speed $\rightarrow 4$:

Ratio

of time

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

It is given that he takes 2 hours more than the usual time i.e.

1 unit = 2 hours

 $3 \text{ units} = 3 \times 2 = 6 \text{ hours}$

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

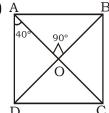
(60 - 50) km = 10 kmph

⇒ 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 × 50 = 450 km
- ⇒ Distance covered by the second train = $9 \text{ hours} \times 60 \text{ kmph}$
- \Rightarrow 540 km.
- ⇒ Total distance between A and B
- \Rightarrow 540 + 450 = 990 km.

107. (B) A



ΔAOD ~ ΔBOC

∴ ∠ADB = ∠DBC

[Alternate angle]

In ∆AOD

$$\angle DAO + \angle AOD + \angle ADO = 180^{\circ}$$

$$\Rightarrow$$
 \angle ADO = 180° - (90° + 40°)

 $\angle DBC = 50^{\circ}$

108. (C) Speed of man in still water, x = 3 km/hr. Speed of the stream, y = 2 km/hr. Upstream speed = x - y = 1 km/hr.

Upstream time = $\frac{1}{\text{Upstream speed}}$

$$=\frac{10 \text{ km}}{1 \text{ km/hr}} = 10 \text{ hr}.$$

Downstream speed

Downstream time

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

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

109. (A) Let the numbers are
$$7x$$
 and $9x$ A.T.Q.,

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

$$63x^2 = 1575$$

$$x^2 = 25$$

$$x = 5$$

Then greater number = 45

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

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

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

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

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

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

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

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

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

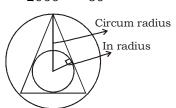
$$\Rightarrow$$
 4 × 2 × 22 \Rightarrow 176

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 =

$$2\sqrt{3}$$

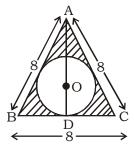
$$\frac{\text{side}}{\sqrt{3}} = 8$$

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

.. 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

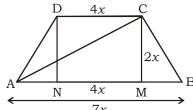
$$= \frac{\sqrt{3}}{4} \times (8)^2 - \pi \times \frac{16}{\sqrt{3}}$$

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

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

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

115. (A)



Area = $\frac{1}{2}$ (sum of parallel sides) ×

distance between them

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

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

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

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

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

$$AM = AN + NM$$
$$= AN + 16$$

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

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

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



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116. (A) Ratio of parallel sides = 5:3Let sides are = 5x and 3x

 $\frac{1}{2}$ (sum of parallel sides) × perpendicular distance = 1440 m²

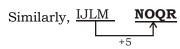
$$\frac{1}{2}(5x + 3x) \times 24 = 1440$$

$$4x \times 24 = 1440$$

$$x = \frac{1440}{4 \times 24} = 15 \text{ m}$$

:. Length of longer side = 5x

- $= 5 \times 15 = 75 \text{ m}$
- 117. (B) Required percentage = $\frac{225}{474} \times 100$ = 47.5
- 118. (A) Required percentage = $\frac{23}{474} \times 100$ = 4.9
- 119. (B) $A = \frac{15}{73} \times 100 = 20.54\%$ = 21Appox.
- 120. (C) Required percentage = $\frac{73}{225} \times 100$ = 32.44 = 32 Appox.
- 121. (C) As Microphone makes sound louder similarly Microscope makes the object magnified.
- 122. (A) As, ABDE FGIJ



- 124. (D) Students are in college and patients are in hospital.
- 125. (B) $443 \Rightarrow 4 + 4 + 3 = 11$ $633 \Rightarrow 6 + 3 + 3 = 12$ $821 \Rightarrow 8 + 2 + 1 = 11$ $245 \Rightarrow 2 + 4 + 5 = 11$
- 126. (C) Letters A W
 Position 1 23

 Odd Odd
 Position position

D	√ Odd osition	Odd Position
Position	1	7
Letters	A	G

- 127. (B) Except Ounce all others are unit of length.
- 128. (B) In this series, each number is repeated, then 13 is subtracted to arrive at the next number.
- 129. (A) Triangle $1 \rightarrow 3^2 = 9$ and $4^2 = 16$ hence 916

 Triangle $2 \rightarrow 2^2 = 4$ and $5^2 = 25$ hence 425

 Similarly, $1^2 = 1$ and $7^2 = 49$
- Hence, 149 is the right answer. 130. (C) Here is how we get the sequence 1049760/58320 = 18 58320/3888 = 15 3888/324 = 12 (we can observe a 324/36 = 9 difference of 3 in each of the Then, 6/? = 3 obtained result.)
- 131. (C) There are two alphabetical series here. The first series is with the first letters only: STUVW. The second series involves the remaining letters: CD, EF, GH, IJ, KL.
- 132. (C) Total numbers triangle of 24.

 \Rightarrow ? = 6/3 = **2**

- 133. (C)
- 134. (D)



135. (A) Hence D is the letter which is missing and it is opposite to face A.

Top face	Α	В	F	
Bottom face	Α	Е	С	

- 136. (A) A is the mother of B, B is the brother of C and C is the daughter of D. Hence, D is the father.

Here, the one which are bold are females (A, C) and not bold are males (B, D).

137. (B)





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- 138. (D) Neither conclusion I nor conclusion II follows
- 139. (C) As, MOTHER KMRFCP

Similarly, HOUSE FMSQC

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

144. (A)



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



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

Similarly,

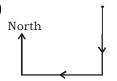
A L G E B R A

1 2 3 4 5 6 7

L E R A B G A

2 4 6 7 5 3 1

- 149. (C)
- 150. (A)



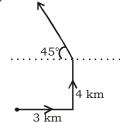
151. (D) As, 37+14 = 51 $\Rightarrow \frac{51}{3}$ = 17

$$69 + 33 = 102 \Rightarrow \frac{104}{3} = 34$$

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

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.

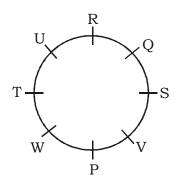
155. (D) 10*10 = 5* 10 ? 50 @ 10

After changing the signs as per the given details,

10×10-5×10+50÷10

$$= 100 - 50 + 5$$

Directions (156 - 160): Answer



- 156. (B)
- 157. (D)
- 158. (D)
- 159. (C)

160. (A)



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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)
I												

