



# All India Civil Services Coaching Centre

(Under the aegis of Government of Tamil Nadu)

General Studies: Paper II – CSAT

Answer Key Explanation

Maximum Questions: 80

Maximum Marks: 200

Solutions (Q. No. 1 - 3) :

**1. Correct Option: (c)**

**Explanation :**

As D, E are captains, so they can't go in the same team. So, option (b) can be eliminated. Option (d) can be eliminated on the ground that having no captain.

The statement 4 states that R must be in a team with either A or D or both. So, option (a) can be eliminated.

Hence, (c) is the right option as it does not violate any of the conditions.

**2. Correct Option: (b)**

**Explanation :**

A team consisting of R, C and D in the Saviours team would violate the condition that C and D be the captains of their respective teams.

**3. Correct Option: (d)**

**Explanation :**

Combination (a) is not possible as E and P cannot be in the same team.

Combination (b) E, R and S is not possible as R must be in the team with either A or D or both.

Combination (c) E, R and Q is not possible, as R must be in a team with either A or D or both.

Hence option (d) is the right choice as E, S and Q do not violate any rule.

**4. Correct Option (c)**

**Explanation :**

Let Mrs. Joshi's saving = 3s

Let Mrs. Joshi's expenditure = 2s

Therefore his initial total income becomes 5s

Now her income increases by 10 %

So New income will be 5.5s

Her expenditure increases by 20 % and therefore Her new expenditure

= 3s × 120% = 3.6s

Therefore her new saving is = 5.5s – 3.6s = 1.9s

Percentage change in savings

$$= \frac{(1.9 - 2s)}{2s} \times 100 = 10\%$$

**5. Correct Option (d)**

**Explanation :**

Option (a) is incorrect because the author' only tells us about the death of the tenant whether he is sad about It or not known.

Option (b) is incorrect because the author found the books in the waste room but was not specifically looking for any book.

Option (c) incorrect because the sentence "Air, musty from having.. with old useless papers." Tell us that the air in the room was musty but does not tell us that the author felt suffocated inside the house.

Option (d) is correct because from the sentence "Air, musty from having...with old useless papers." clearly tells us that he saw some useless papers in the waste room behind the kitchen.

#### **6. Correct Option (b)**

##### **Explanation :**

The passage only tells us that the author found some books in the waste room. This in no way confirms that the tenant in the author's house was an avid reader. Hence statement 1 is invalid. Statement 2 is valid because the sentence "He had been a...house to his sister." makes it clear that according to the author the priest was a philanthropic personality.

Hence, option (b) is the correct answer.

#### **7. Correct Option (a)**

##### **Explanation :**

Option (a) is correct because the sentence "I found the late tenant's rusty bicycle pump." clearly tells us that the priest owned a bicycle-pump. Option (b) is incorrect because the author only tells that there was an apple tree in the garden but does not tell who planted it.

Option (c) is incorrect because the author mentions that the priest had a sister.

Option (d) is incorrect because any information given in the passage does not indicate that the priest was a reserved man.

#### **8. Correct Option (d)**

##### **Explanation :**

Option (d) is correct because the sentence "Little Chandler's thoughts...where Gallaher lived: clearly tells us that Gallaher invited Little Chandler.

Options (a), (b) and (c) are incorrect because no information given the passage indicates that Gallaher had a very high social status. he was a relative of Little Chandler's or he liked Little Chandler a lot.

#### **9. Correct Option (c)**

##### **Explanation :**

Option (a) is incorrect because as per the passage Little Chandler simply thought about Gallaher's invitation. There is no mention of any wonder or amazement at Gallaher's invitation.

Option (b) is incorrect because the passage- tells us that Little Chandler had White and small hands and not that he had small and dark hands. The author only cites the reasons why Little Chandler was called little. This no way means that he thought of himself as a small man.

Option (c) is correct because the sentence "He took the greatest...discreetly on his handkerchief." tells us that he was a man with silken hair.

#### **10. Correct Option (a)**

##### **Explanation :**

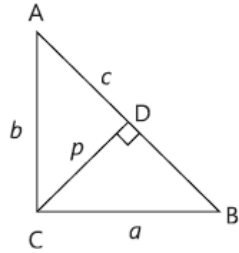
Statement 1 is not valid because the word "discreetly" used here denotes that he used the perfume carefully and sparingly, rather than applying it excessively on his handkerchief.

Statement 2 is invalid because the sentence "The half-moons of his...of childish white teeth." tells us that when he smiled one got a glimpse of a row of his childish white teeth. This does not mean that he had a beautiful smile.

Hence, option (a) is the correct answer.

**11. Correct Option (b)**

**Explanation :**



$$BC = a, AB = b$$

$$\therefore AB = \sqrt{AC^2 + BC^2} = \sqrt{b^2 + a^2}$$

Area of  $\Delta ABC$

$$= \frac{1}{2} \times BC \times AC$$

$$= 1ab$$

Again, area of  $\Delta ABC$

$$= \frac{1}{2} \times AB \times CD$$

$$= \frac{1}{2} \times \sqrt{a^2 + b^2} \times p$$

$$\therefore \frac{1}{2} ab = \frac{1}{2} \sqrt{a^2 + b^2} \times p$$

$$\Rightarrow ab = \sqrt{a^2 + b^2} \times p$$

On squaring both sides.

$$a^2b^2 = (a^2 + b^2)p^2$$

$$\Rightarrow \frac{1}{p^2} = \frac{a^2 + b^2}{a^2b^2}$$

$$\Rightarrow \frac{1}{p^2} = \frac{a^2}{a^2b^2} + \frac{b^2}{a^2b^2}$$

$$\Rightarrow \frac{1}{p^2} = \frac{1}{b^2} + \frac{1}{a^2} = \frac{1}{a^2} + \frac{1}{b^2}$$

**12. Correct Option (b)**

**Explanation :**

By rule 1, option (a) is eliminated.

By rule 3, option (c) is eliminated.

By rule 3, option (d) is eliminated.

So, correct option is (b)

**13. Correct Option (d)**

**Explanation :**

From the given directions, we find out that F and I don't work for the same factory.

**14. Correct Option (c)**

**Explanation :**

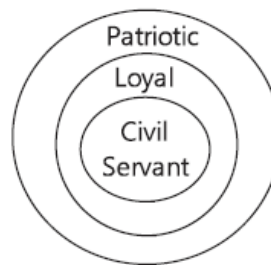
$$9 - 8 = 1 ; (1)^3 = 1$$

$$6 - 4 = 2 ; (2)^3 = 8$$

$$10 - 7 = 3 ; (3)^3 = 27$$

**15. Correct Option (b)**

**Explanation :**



conclusion (b) is not valid.

**16. Correct Option (d)**

**Explanation :**

Ratio of the male Engineers and Designers to the same-occupation

females professionals =

$$\frac{18}{100} \times \frac{40}{100} + \frac{16}{100} \times \frac{65}{100} : \frac{18}{100} \times \frac{60}{100} + \frac{16}{100} \times \frac{35}{100}$$

$$= 1760 : 1640$$

$$= 44 : 41$$

### 17. Correct Option (b)

**Explanation :**

Difference between the total no. of male engineers and total no. of female Doctors

$$= 10500 \left( \frac{40 \times 18}{10000} - \frac{21 \times 20}{10000} \right)$$

$$\frac{105}{10} (72 - 42) = 315$$

### 18. Correct Option (a)

**Explanation :**

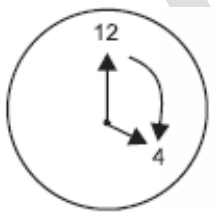
Ratio of the number of male architects to the number of male teachers

$$= 300 \times \frac{45}{100} = 135$$

$$= 11 : 5$$

### 19. Correct Option (d)

**Explanation :**



at 4 o'clock, min hand is ahead by hr hand with 20 div. and we need to create a difference of 30 div. So total 20 + 30 = 50 div.

$$\text{for } 50 \text{ div} = 50 \times \frac{12}{11} = \frac{600}{11} \text{ min.}$$

$$= 54 \frac{6}{11} \text{ min.}$$

Required time = 4-54'-33"

### Alternate Solution

Angle between hr and min hand of a clock is  $\rightarrow$

$$\Rightarrow \left| \frac{11M - 60H}{2} \right|^\circ = 180^\circ$$

$$\Rightarrow 11M - 60 \times 4 = 360$$

$$\Rightarrow 11M = 600$$

$$\Rightarrow M = \frac{600}{11} = 54 \frac{6}{11} \text{ min.}$$

### 20. Correct Option (c)

**Explanation :**

Total students who got distinction

$$= 300 \times \frac{45}{100} = 135$$

According to the question,

No. of girls who got distinction = 50 & no. of boys who got distinction = 85

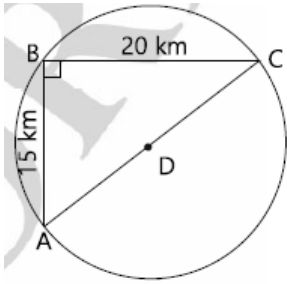
Now, 40% = 50

Therefore, 100% = 125 = total no. of girls

So, total no. of boys = 300 - 125 = 175

### 21. Correct Option (c)

**Explanation :**



$$AC = \sqrt{15^2 + 20^2} = \sqrt{25^2} = 25 \text{ km}$$

Total distance = AB + BC + circular path with radius AD

$$= 15 + 20 + 2\pi \times \frac{25}{2}$$

$$= 35 + 25\pi \text{ km}$$

**22. Correct Option (d)**

**Explanation :**

Let the capacity of cistern = LCM of (4, 8, 12, 40) = 120 Liters

Efficiency of pipe P = 120 / 4

= 30 Liter/hr.

Efficiency of pipe Q = 120 / 8 = 15 Liter/hr.

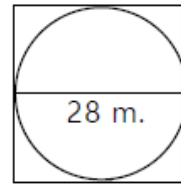
Efficiency of pipe R = 120 / 12 = 10 Liter/hr.

Efficiency of pipe S = 120/40 = 3 Liter/hr.

Now, by options, we can deduce that when pipes P, Q and S are open then they will take less time than others.

**23. Correct Option (d)**

**Explanation :**



Area of space left out

= Area of square – Area of circle

$$= (\text{side})^2 - \pi r^2$$

$$= (28)^2 - \frac{22}{7} \times (14)^2 = 168 \text{ m}^2$$

**24. Correct Option (a)**

**Explanation :**

From the statements, we can deduce conclusions.

As per the given statements, only conclusion 1 logically follows.

**25. Correct Option (d)**

**Explanation :.**

From the statements, we can deduce conclusions.

As per the given statements, Neither conclusion 1 nor conclusion 2 follows logically,

**26. Correct Option (d)**

**Explanation :**

From the statements, we can deduce conclusions.

As per the given statements, Neither conclusion 1 nor conclusion 2 follows logically.

**27. Correct Option: (d)**

**Explanation :**

Neither statement follows from the passage. Statement 1 is incorrect since the author is, doubtful whether the seaman will learn his lesson from the storm or not- "... if he will hut learn the

lesson ..,"Statement 2 directly contradicts the passage—' ' Sometimes he is unfortunate, the decks are clean, he has nothing to do."

**28. Correct Option: (d)**

**Explanation :**

Neither statement follows from the passage.

Though the author gives a description of a whale sighting, it does not follow that whales are seen only in cairn seas. The second statement is also incorrect. While the author states that the whaleman "thoroughly dependent at all times for life, safety, and success, upon the arm of God" this does not mean that he survives by chance alone and not through his own efforts.

**29. Correct Option: (a)**

**Explanation :**

Only statement 1 follows from the passage— "There are few things in this world that fill me with such wonder as the fact that man can kill a whale."

Statement 2 is incorrect. The author only states that the whaleman is dependent on God, not that God always protects him.

**30. Correct Option (c)**

To be completely divisible by 72, the number should also be divisible by 9.

So, Make the sum of the digits divisible by 9,

We get \* = 6.

**Solutions (31–33) :**

	Horti.	Phys.	Journ.	Ind.	Adv.
<b>A (Tea)</b>	✓	X	X	X	X
<b>B (Coffee)</b>	X	X	X	✓	X
<b>C (Tea)</b>	X	✓	X	X	X
<b>D (Coffee)</b>	X	X	✓	X	X
<b>E (Tea)</b>	X	X	X	X	✓

**31. Correct Option (b)**

**Explanation :**

B is an Industrialist.

**32. Correct Option (d)**

**Explanation :**

None of the option groups include a person who likes tea but is not an Advocate.

**33. Correct Option (b)**

**Explanation :**

B is the person who likes coffee but is not the Journalist.

**34. Correct Option (d)**

**Explanation :**

As per the table, Group discussion and Motivation are the first & last lectures.

**35. Correct Option (c)**

**Explanation :**

As per the table, there are 3 Lectures – Leadership, Decision Making, Assessment Centre.

**36. Correct Option (d)**

**Explanation :**

As per the table,

On Thursday, Leadership lecture will be organized.

**37. Correct Option (c)**

**Explanation :**

As per the table,

On Tuesday, there is no lecture.

**38. Correct Option (d)**

**Explanation :**

As per the table,

We can say that all statements are required.

**39. Correct Option: (d)**

**Explanation :**

The first sentence clearly tells us that the author is a smoker. All other options are not mentioned in the passage.

**40. Correct Option: (c)**

**Explanation :**

The last line of the second paragraph makes it quite clear that the author gives more priority to his chimney than himself.

The last sentence of the passage tells us that swallows build their nests and the chimney serves as a home for these birds.

Hence, option (c) is the correct answer.

**41. Correct Option: (a)**

**Explanation :**

The use of the word 'monster' by the author while comparing suggests that this comparison has been made in order to emphasize the enormity of the author's chimney. Options (h) and (c.) are not suggested in the passage.

**42. Correct Option: (d)**

**Explanation :**

Statement 1 is invalid because the passage only tells us that "extensive changes" were introduced In NWDPPRA.

Whether the improvements have been made or not is not known. Statement 2 is invalid because there was a proposal for a liberalised central assistance. This does not mean that the central assistance was lowered. Hence, option (d) is the correct answer.

**43. Correct Option: (a)**

**Explanation :**

Statement 1 is valid based on the sentence "Use vegetative barriers is the principal means to prevent soil erosion and to conserve moisture." Statements 2 is not valid because the sentence "In developing the micro watersheds, a holistic approach is to be adopted" does not tell us whether a holistic approach will help in developing micro watersheds or not.' Hence, option (a) is the correct answer

**44. Correct Option: (c)**

**Explanation :**

The passage tells us that "Extensive changes were introduced in this major programme for the development of the rainfed agriculture" this clearly means that rainfed agriculture development is a component of NWDPPRA From the sentence "Extension Support through local progressive farmers is another critical element." we can say that support through local progressive farmer is important for NWDPPRA. Hence, option (c) is the correct answer.

**45. Correct Option: (b)**

**Explanation :**

The sentence "A substantial proportion... as first Referral Units. "tells us that CHCs are unable to function as First Referral Units. This does not mean that First Referral Units are an impediment in the functioning of CHC's. The passage clearly mentions



that there is a serious lacuna in the establishment of the referral system and consequently the system needs to be rectified. Thus, statement 2 is valid and option (b) is the answer.

**46. Correct Option: (b)**

**Explanation :**

Statement 1 is invalid because from the sentence "Improving the service.... the needed services." It is clear that improving the service conditions is essential to ensure that specialists in CHCs do stay and provide the needed services.

This does not mean that Presence of Public Health Specialists is crucial to the improvement of the service conditions in CHCs. Statement 2 is valid because the first 2 sentences of the passage clearly mention this.

Hence option (b) is the correct answer.

**47. Correct Option: (a)**

**Explanation :**

From the sentence "Services of Anaesthetist... will not be possible." It is clear that Anaesthetist's services are important for the execution of surgeries in CHCs. The passage does not suggest that specialists are expected to handle multiple responsibilities. Hence, option (a) is the correct answer.

**48. Correct Option (b)**

**Explanation :**

Option 1 is mentioned at the beginning of passage.

Option 2 is wrong as it is 'caste based quotas' not 'class-based'.

Due to vote bank politics politicians are supporting reservation. So, option 3 is also correct. In the passage it is mentioned that for 1st generation learner reservation is needed i.e. education

backwardness. If doesn't talk about economic backwardness.

**49. Correct Option (d)**

**Explanation :**

The passage above is based on the increase in smuggling activities due to huge profits in it. Hence, the passage best supports the option (d).

**50. Correct Option: (a)**

**Explanation :**

Wheels will complete 1 revolution in

$$\frac{60}{24} \cdot \frac{60}{36} \text{ and } \frac{60}{24} \text{ seconds}$$

$$\Rightarrow 1, \frac{5}{3} \text{ and } \frac{5}{2} \text{ seconds}$$

$$\text{Hence, required time} = \text{LCM of } \left(1, \frac{5}{3}, \frac{5}{2}\right)$$

$$= \frac{\text{LCM of } (1, 5, 5)}{\text{HCF of } (3, 2)} = \frac{5}{1} = 5 \text{ Seconds.}$$

**51. Correct Option: (c)**

**Explanation :**

Number of dots is increasing in the circles in clockwise direction. Similarly, Shaded portion is moving 1 quarter in clockwise direction.

**52. Correct Option (c)**

**Explanation :**

Option (a) is incorrect as it nowhere mentioned in the passage. Option (b) is incorrect because according to the passage \she had a long nose whether it was ugly or not is not known. Option (c) is correct because the sentence "She talked a little... always soothingly" clearly tells us that she was a gentle conversationalist. Option (d) is incorrect because the passage only tells us that "Maria was a very, very small person". This does not mean that she was a small kid.

**53. Correct Option (d)**



**Explanation :**

Options (a) and (b) are incorrect because there is no information in the passage that tells us that Ginger Mooney Was a brash woman or that Maria had a quality of being truthful.

Option (c) is incorrect because the sentence "One day the matron...had heard the compliment" only tell us that sub-matrons heard the compliment given by the matron,

This does not mean that the matron thought that the sub-matrons used to spy on her, Option (d) is correct because the sentence "One day the...a veritable Peace-maker!" tells us that the matron thought that Maria was a true reconciler.

**54. Correct Option (b)**

**Explanation :**

Statement 1 is Invalid because the sentence "She was always,..succeeded in making peace: tells us that Maria was the one who made peace between the quarrelling women, However, this does not imply that the women could never make peace among themselves.

Statement 2 is correct because the sentence "And Ginger Mooney,..fond of Maria," tells us that Ginger Mooney had a liking for Maria. Hence option (b) is the correct answer

**55. Correct Option (b)**

**Explanation :**

Only statement 2 follows from the passage". When he found that Abe was teaching himself to write, he was quite proud of the boy.

**56. Correct Option (d)**

**Explanation :**

Neither statement follows from the passage. It's mentioned that Abe read especially in the long

winter evenings. This does not mean that he did not read at other times. Also, lamps and candles are said to have been expensive for the settlers not fire per se.

**57. Correct Option (c)**

**Explanation :**

Both statements follow from the passage 1 follow from the line - "When spring came round and they were working together in the fields.." Statement 2 follows from the line-" ...he practices writing his own name in the snow or with a charred stick on slabs of wood." And from the last line of the passage.

**58. Correct Option (c)**

**Explanation :**

$(1 \oplus 2) \otimes (3 \oplus 4)$

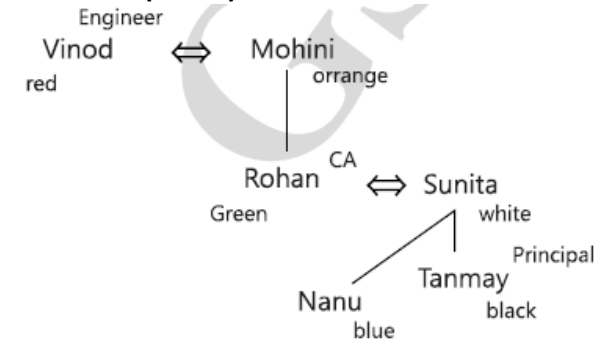
$= (1^2 + 2^1) \otimes (3^4 + 4^3)$

$= (3) \otimes (145)$

$= \text{LCM}(3, 145) + \text{GCD}(3, 145)$

$= 435 + 1 = 436$

**Solutions (62-64)**



**59. Correct Option (d)**

**Explanation :**

Sunita's profession cannot be determined.

**60. Correct Option (a)**

**Explanation :**

Mohini-Vinod and Rohan-Sunita is correct pair of two couples.

**61. Correct Option (a)**

**Explanation :**

Green colour is liked by CA.

**62. Correct Option (d)**

**Explanation :**

There are 5 different numbers.

So, two of them can be selected in  ${}^5C_2$  ways.

So, sample space =  ${}^5C_2 = 10$

Now there are 4 pairs where the product of two terms = 0 i.e. (-3, 0), (-1, 0), (0, 2), (0, 4)

So, required probability =  $\frac{4}{10} = \frac{2}{5}$ .

**63. Correct Option (c)**

**Explanation :**

$15 \times 16 \times 18 \times 25 \times 35 \times 24 \times 20$

The given expression can be rewritten as

$$= 5 \times 3 \times 2^4 \times 2 \times 3^2 \times 5^2 \times 5 \times 7 \times 2^3 \times 3 \times 2^2 \times 5$$

$$= 2^{10} \times 3^4 \times 5^5 \times 7$$

$$= 2^5 \times 3^4 \times 2^5 \times 5^5 \times 7$$

$$= 2^5 \times 3^4 \times 7 \times 10^5$$

So, no. of zeroes at the end of product = 5

**64. Correct Option (c)**

**Explanation :**

Discount given by A

$$= 25 + 15 - \frac{25 \times 15}{100} = 36.25\%$$

Discount given by B

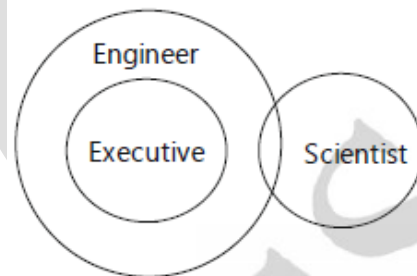
$$= 10 + 30 - \frac{10 \times 30}{100} = 37\%$$

Discount given by C = 36%

Hence B's offer is best.

**65. Correct Option (a)**

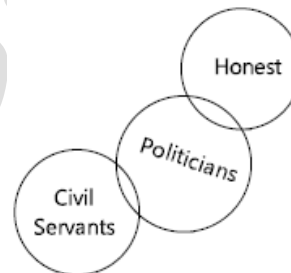
**Explanation :**



As per the given statement, we can say that only conclusions 3 & 4 follow.

**66. Correct Option (d)**

**Explanation :**



As per the given statement, we can say that none of the above conclusions follow

**67. Correct Option (c)**

**Explanation :**

So, 22 December 1984 will be Saturday.

**68. Correct Option (a)**

**Explanation :**

There are 2 numbers which are divisible by 9 and have all prime digit nos. are – 225 and 252.

**69. Correct Option (d)**

**Explanation :**

diagonal of square =  $2r$

$\therefore$  side of square =  $\sqrt{2}r$

area of square =  $2r^2$

area of shaded portion =  $2r^2 / 2 = r^2$

**70. Correct Option (d)**

**Explanation :**

By first two cubes, we can say that the no. adjacent to 6 are 1, 4, 3, 5.

So, 6 is opposite to 2.

**71. Correct Option (a)**

**Explanation :**

Let length of train =  $x$  m.

Then, the train covers  $x$  metres in 8 seconds and  $(x + 180)$  metres in 20 seconds.

$$\frac{180 + x}{20} = \frac{x}{8}$$

$$\Rightarrow 1440 + 8x = 20x$$

$$\Rightarrow 12x = 1440$$

$$\Rightarrow x = 120 \text{ m}$$

$$\text{Speed of train} = \frac{120}{8} \times \frac{18}{5} = 54 \text{ km/h.}$$

**72. Correct Option (d)**

**Explanation :**

Let no. of articles = 100 of 1 Rs. each

So, Total CP = Rs. 100

ATQ, required SP =  $100 + 20 = \text{Rs. } 120$

$\therefore$  SP of each article = Rs. 1.2

SP of 25% articles =  $\frac{1}{2} \times 25 = \text{Rs. } 12.5$

Remaining articles =  $100 - 25 - 5 = 70$

SP of 70 articles =  $70 \times 1.2 = \text{Rs. } 84$

Total SP =  $84 + 12.5 = \text{Rs. } 96.5$

Loss =  $100 - 96.5 = 3.5$

Loss% =  $(3.5 / 100) \times 100$

= 3.5%

**73. Correct Option (a)**

**Explanation :**

Let 'x' more workers are required

By MDH formula,

$$\frac{200 \times 50}{\frac{1}{4}} = \frac{(200 + x) \times 100}{\frac{3}{4}}$$

$$\Rightarrow x = 100$$

So, 100 more workers are required.

**74. Correct Option (b)**

**Explanation :**

Temperature of (Mon. + Tue. + Wed.) =  $60 \times 3 = 180^\circ \text{C}$

Temperature of (Tue. + Wed. + Thu.) =  $65 \times 3 = 195^\circ \text{C}$   
Temperature of (Thu. – Mon)

=  $195 - 180 = 15^\circ \text{C}$

Temperature of Monday =  $62 - 15 = 47^\circ \text{C}$

**75. Correct Option (a)**

**Explanation :**

$$\left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\dots\dots\dots\left(1 - \frac{1}{n}\right)$$

$$= \frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \dots\dots\dots \frac{n-1}{n} = \frac{1}{n}$$

**76. Correct Option (c)**

**Explanation :**

area of square = 200 m<sup>2</sup>

Side of square =  $\sqrt{\text{area}}$

=  $\sqrt{200} = 10\sqrt{2}$  m

diagonal of square = side  $\sqrt{2}$

=  $10\sqrt{2} \times \sqrt{2} = 20$  m

diagonal of new square =  $20\sqrt{2}$  m

area of new square = (side)<sup>2</sup>

=  $(20\sqrt{2})^2 = 400$  m<sup>2</sup>

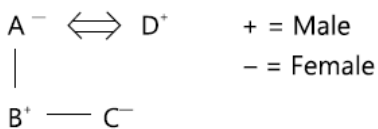
**77. Correct Option: (a)**

**Explanation :**

A # B means A is mother of B

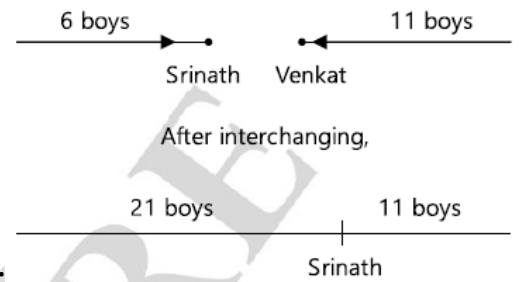
B \$ C means B is brother of C

So, we can draw the following diagram :



D is the father.

**78. Correct Option: (c)**



**Explanation :**

Total boys = 21 + 1 + 11 = 33

**79. Correct Option: (a)**

**Explanation :**

Let Sum deposited = 100%

Interest generated in post office

=  $12 \times 4 = 48\%$

Interest generated in Bank

=  $5 \times 15 = 75\%$

Difference in interest

=  $(15 \times 5)\% - (12 \times 4)\% = 1350$

27% = 1350

∴ 100% = 5000 Rs.

**80. Correct Option: (d)**

**Explanation :**

No. of squares in  $n \times n$  order grid =  $\sum n^2$

No. of squares in  $4 \times 4$  order grid =  $\sum 4^2$

$$= \frac{4 \times 5 \times 9}{6} = 30$$