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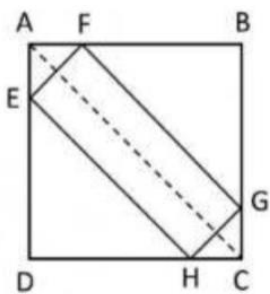


**CSIR NET General Aptitude Questions Answers With Solutions**

**Q1. Two cards are drawn together at random from a deck of 52 playing cards. What is the probability to get one red and one black card?**

- (a) 13/51
- (b) 26/51
- (c) 13/102
- (d) 13/204

**Q2. ABCD is a square. EFGH is a rectangle inscribed within the square with its sides parallel to the diagonal AC of the square. The perimeter of the rectangle EFGH is 16. The side of the square is**

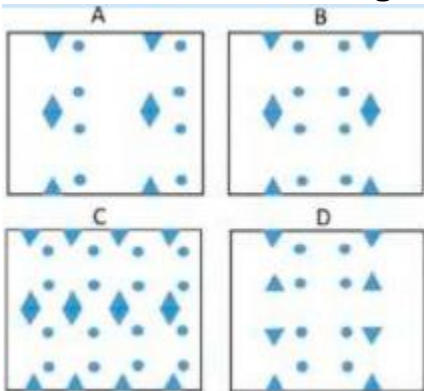


- (a) 4
- (b) 8
- (c) 6
- (d) 2

**Q3. A square paper is folded twice to a square shape one-fourth in area to the original square. Then equilateral triangles and circles are cut as shown in the figure.**



**Which one of the following is a possible pattern on the fully unfolded paper?**



- (a) A
- (b) B
- (c) C
- (d) D

**Q4. Mary and Mike are married to each other. John is Mary's brother while Douglas is Mike's brother. In a gathering of 2 children of Mary and Mike, 3 of John and 2 of Douglas, the number of first-cousin pairs (sibling's children are first-cousins to each other) is**

- (a) 3
- (b) 16
- (c) 10
- (d) 21

**Q5. The possible number of integers between 1000 and 10000 containing two 2's, one 0 and one 3 (for example, 2023 is such an integer) is**

- (a) 6
- (b) 9
- (c) 12
- (d) 24

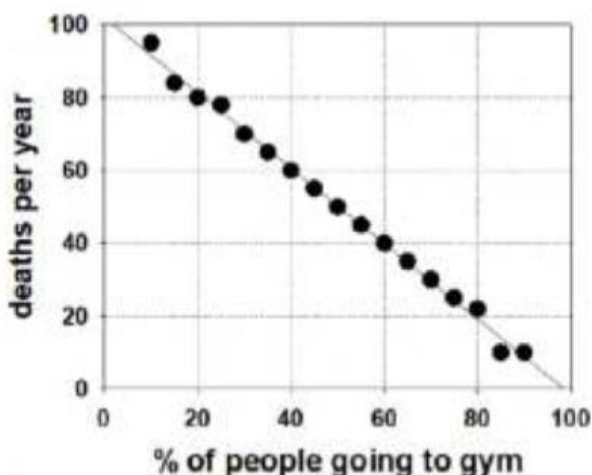
**Q6. In a round-robin tournament (each team plays with all other teams once) between 8 teams, a win fetched 3 points and a draw 1. After each team had played 4 matches, the total of the points of the teams was 34. The number of drawn games among those played till then was**

- (a) 7
- (b) 2
- (c) 6
- (d) 14

**Q7. Choose the option that will make the following statement correct: THE NUMBER OF TIMES THE LETTER 'T' OCCURS IN THIS SENTENCE IS**

- (a) FOUR
- (b) FIVE
- (c) SIX
- (d) SEVEN

**Q8. Given graph depicts the data of people going to gym and deaths per year in different cities. Which of the following can be definitely concluded from the graph?**



- (a) Gym makes people fit and improves their health
- (b) None will die if all go to gym
- (c) Gym helps people to save their lives in cities
- (d) In the city where on the average 50% people go to gym, 50 people die per year

**Q9. If the difference between the two-digit numbers made from digits a and b is 27, the difference between a and b is**

- (a) 2
- (b) 1
- (c) 4
- (d) 3

**Q10. Two cylindrical candles A and B are of the same height. The radius of A is twice that of B. If A takes 120 minutes to completely burn, how long does B take to burn half its initial height?**

- (a) 60 min
- (b) 30 min
- (c) 15 min
- (d) 10 min

**Q11. P starts a business with an investment of Rs. 30 lakh. Two months later Q joined with Rs.90 lakh. Subsequently R joined with Rs. 180 lakh. The year-end profit of Rs. 1.2 crore was distributed in proportion of the investment and duration in the partnership. If the profit received by R was Rs. 60 lakh, how many months after Q. did R join?**

- (a) 3
- (b) 4
- (c) 5
- (d) 7

**Q12. A, B, C, D and E are members of a family. A is a doctor and wife of a lawyer. B is the brother of C and husband of a teacher. C is an engineer and daughter of the lawyer. Which of the following inferences can be definitely made?**

- (a) D is the lawyer
- (b) E is the teacher
- (c) A is the wife of D
- (d) B is the son of A

**Q13. Four villages A,B, C and D are connected in that order by a circular road. A car traveling with a uniform speed covers the distance between A and B in 43 minutes. B and C in 23 minutes, C and D in 19 minutes and D and A in 47 minutes. Which of the following will be closest to the time (in minutes) taken to travel from A to C with the same speed along a straight road?**

- (a) 42
- (b) 66
- (c) 45
- (d) 21

**Q14.** If 6 students occupy a bench, one bench will be left completely unoccupied. If 5 students occupy each bench, instead, one student will not find a seat. The number of students is

- (a) 30
- (b) 31
- (c) 36
- (d) 42

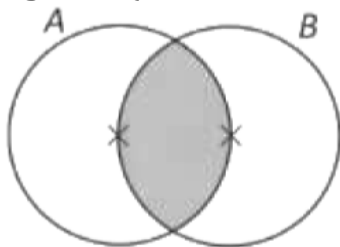
**Q15.** A test consists of 20 questions and the students are awarded 4 marks for a correct answer, -1 mark for a wrong answer and 0 mark for an unattempted question. Which of the following could be a possible number of questions attempted by a student who secured 27 marks?

- (a) 15
- (b) 16
- (c) 17
- (d) 18

**Q16.** Suppose  $72922381x^2 = 3729322812x = 3$ . The value of  $x$  is

- (a) -21
- (b) -21.5
- (c) -22
- (d) -20.5

**Q17.** A and B are circles of unit radius. Their centres are marked by  $\times$ . The area of the shaded region is (hint: area of an equilateral triangle of unit side length is )



- (a)  $\frac{2\pi}{3} - \frac{\sqrt{3}}{2}$
- (b)  $\left(\frac{2\sqrt{3}}{4} - \pi\right)$
- (c)  $\frac{2\pi}{3} + \frac{\sqrt{3}}{2}$
- (d)  $\frac{2\pi}{3} - \frac{\sqrt{3}}{4}$

**Q18.** Which of the following is INCORRECT?

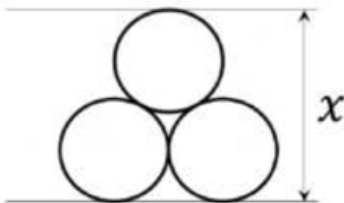
- (a)  $312+312+312=312 \times 312 \times 312$
- (b)  $413+413+413+413=413 \times 413 \times 413 \times 413$
- (c)  $514+514+514+514+514=514 \times 514 \times 514 \times 514$
- (d)  $616+616+616+616+616+616=616 \times 616 \times 616 \times 616$

**Q19. Which of the following correspond to x,y and z. respectively in the following square where sum of elements in each column, row, and diagonal is the same?**

16	11	x
17	y	13
z	19	14

- (a) (17,15,13)  
 (b) (18,15,12)  
 (c) (12,15,17)  
 (d) (17,16,14)

**Q20. Three identical rings of radius 1 unit are stacked as shown in the figure. The length x is**



- (a)  $2+3+3$   
 (b)  $2+2+2$   
 (c)  $2+2+2+2+2+2$   
 (d) 3

## Solutions

**S1. Ans.(b)**

**Sol.** Number of cards = 52

Number of black card = 26

Number of red card = 26

Way to get one red and one black card =  ${}^{26}C_1 \times {}^{26}C_1$

Probability =

$$\frac{{}^{26}C_1 \times {}^{26}C_1}{{}^{52}C_2} = \frac{26 \times 26}{51 \times 26} = \frac{26}{51}$$

Thus the correct answer is option (b)

**S2. Ans.(b)**

**Sol. Given :**

The perimeter of rectangle EFGH is 16

**Formula Used :**

$$\text{Diagonal} = \sqrt{(\text{Length})^2 + (\text{Width})^2}$$

$$\text{Perimeter} = 2 \times (\text{Length} + \text{Width})$$

**Solution :**

Let the side of the square be Then the diagonal AC has length  $\sqrt{2}$  (by the Pythagorean theorem).

The perimeter of EFGH is given as 16, so

$$2 \times (\text{Length} + \text{Width}) = 16 \Rightarrow \text{Length} + \text{Width} = 8$$

Let the sides of the rectangle parallel and perpendicular to the diagonal be  $x$  and, respectively. Thus:  
 $x+y=8$

From the equation  $x+y=8$ , we substitute  $y=8-x$  into the diagonal equation:

$$x^2+(8-x)^2 = s^2$$

Solving the above equation

$$x^2-8x+32=s^2 \quad x^2-8x+32=s^2$$

$$s=x^2-8x+32 \quad s=x^2-8x+32$$

The possible solutions for are

$$x=4-4\sqrt{3} \text{ or } x=4+4\sqrt{3} \quad x=4-4\sqrt{3} \text{ or } x=4+4\sqrt{3}$$

Since must be a positive length and less than 8 (as  $x+y=8$ ), the valid solution is:

$$x=4-4\sqrt{3} \quad x=4-4\sqrt{3}$$

Using this, we will calculate, the side of the square

The side length of the square is approximately  $s=8$ .

Thus, the side of the square ABCD is 8 units

Thus the correct answer is option (B) 8

### S3. Ans.(d)

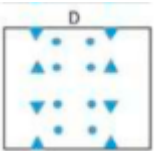
**Sol. Given:-**

A square paper is folded twice to a square shape one-fourth in area to the original square.

**Solution:-**

Then equilateral triangles and circles are cut.

From the above statement it is clear that the figure that contains equilateral triangle is right.



Only this figure contains equilateral triangle

Thus, the correct answer is (D)

### S4. Ans.(b)

**Sol. Given:-**

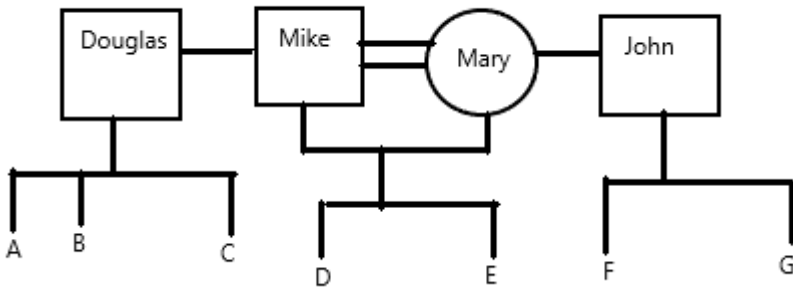
Mary and Mike are married to each other.

Mary has 2 children and a brother, John, who has 3 children.

Mike has a brother, Douglas, who has 2 children.

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
=	Married Couple
—	Siblings
	Difference Of Generation

**Solution:-**



Mary and Mike's children: 2

John's children: 3

Douglas's children: 2

Mary and Mike's children with John's children:

Each of the 2 children of Mary and Mike is a first cousin to each of the 3 children of John.

Total pairs =  $2 \times 3 = 6$ .

Mary and Mike's children with Douglas's children:

Each of the

2 children of Mary and Mike is a first cousin to each of the 2 children of Douglas.

Total pairs =  $2 \times 2 = 4$ .

John's children with Douglas's children:

Each of the 3 children of John is a first cousin to each of the 2 children of Douglas.

Total pairs =  $3 \times 2 = 6$ .

Total number of first-cousin pairs =  $6 + 4 + 6 = 16$ .

Thus, the correct answer is **(B) 16**.

**S5. Ans.(b)**

**Sol. Given :**

We are tasked with forming four-digit integers using the digits 2, 2, 0, and 3.

**Solution :**

The number must be a four-digit integer (cannot start with 0)

Each number must use exactly the given digits (two 2's, one 0, and one 3)

Total Permutations of Digits

The total number of permutations of the digits 2, 2, 0, 3 is given by:

Total permutations =  $\frac{4!}{2!2!} = \frac{24}{2 \times 2} = 12$

The division by  $2!2!$  accounts for the fact that the two 2's are indistinguishable.

If the number starts with 0, it is not a valid four-digit number. To find how many permutations start with 0:

$\frac{3!}{2!1!} = \frac{6}{2} = 3$

Thus, there are 3 invalid cases where the number starts with 0

Valid permutations =  $12 - 3 = 9$

Thus the correct answer is option **(b) 9**



**S6. Ans.(d)**

**Sol. Given :**

Total teams = 8

Points earn for win = 3

Points earn for draw = 1

total points scored by all teams is = 34

**Solution :**

Each team plays 4 matches, and there are 8 teams. However, each match involves 2 teams, so the total number of matches played so far is:  $8 \times 4 \div 2 = 16$

For a win: 3 points are awarded to the winning team, and the losing team gets 0 points.

For a draw: 1 point is awarded to each team, resulting in 2 points in total for that match.

Let the number of drawn games be  $x$

Each drawn match contributes 2 points (1 point per team), so the total points from draws is  $2x$

The remaining  $16 - x$  matches are wins, and each win contributes 3 points.

Therefore, the total points from wins is  $3(16 - x)$

Adding these together:  $2x + 3(16 - x) = 34$

Solve for  $x$

$2x + 48 - 3x = 34 \Rightarrow -x + 48 = 34 \Rightarrow x = 48 - 34 = 14$ .

The number of drawn games is 14

Thus the correct answer is option **(d) 14**

**S7. Ans.(b)**

**Sol. Given:-**

THE NUMBER OF TIMES THE LETTER 'I' OCCURS IN THIS SENTENCE IS"

**Solution:-**

THE → 0 'I's

NUMBER → 0 'I's

OF → 0 'I's

TIMES → 1 'I'

THE → 0 'I's

LETTER → 0 'I's

'I' → 1 'I'

OCCURS → 0 'I's

IN → 1 'I'

THIS → 1 'I'

SENTENCE → 0 'I's

IS → 1 'I'

Total Count:

$1 + 1 + 1 + 1 + 1 = 5$

Thus, the correct answer is **(B) FIVE**

**S8. Ans.(d)**

**Sol.** The graph shows a negative linear correlation between the percentage of people going to the gym and the number of deaths per year. Let's analyze the options:

(a) Gym makes people fit and improves their health.

This cannot be definitively concluded from the graph. The graph only shows correlation, not causation. There could be other factors responsible for the decrease in deaths, such as better medical facilities or healthier lifestyles in general.

(b) None will die if all go to gym.

This cannot be definitively concluded either. While the trend in the graph suggests a decrease in deaths as gym attendance increases, it is unrealistic to claim that no one will die if everyone attends the gym. This is a hypothetical assumption.

(c) Gym helps people to save their lives in cities.

This is not definitive because the graph does not establish causation. The correlation could be influenced by other factors, such as socioeconomic conditions or access to healthcare.

(d) In the city where on the average 50% people go to gym, 50 people die per year.

This can be definitively concluded because the graph is linear and directly shows that when 50% of people go to the gym, the deaths per year are 50. This conclusion is based on the data presented in the graph.

Final Answer: (d) In the city where on the average 50% people go to gym, 50 people die per year.

Thus the correct answer is (d) In the city where on the average 50% people go to gym, 50 people die per year.

**S9. Ans.(d)**

**Sol. Given:-**

Two two-digit numbers made using the digit a and b.

The difference between these numbers is 27.

**Formula Used:-**

For a two-digit number, the general representation is:

Number =  $10 \times (\text{tens digit}) + (\text{units digit})$ .

**Solution:-**

$10a + b$  (where a is the tens digit and b is the units digit).

$10b + a$  (where b is the tens digit and a is the units digit).

Difference between these numbers:

$$(10a + b) - (10b + a) = 27.$$

$$9a - 9b = 27$$

$$a - b = 3.$$

Thus, the correct answer is option **(D) 3**

**S10. Ans.(a)**

**Sol. Relation Between Candle Volumes:** The volume of a cylinder is proportional to the square of the radius.

Let the radius of B be so the radius of A is  $2r$ .

The volumes of A and are:

$$\text{Volume of A} = \pi(2r)^2(2r)2h = 4\pi r^2 r 2h \quad \text{Volume of B} = \pi r^2 r 2h$$

Thus, A's volume is 4 times that of B.

**Burning Rates:** Since A burns completely in 120 minutes, its burning rate is:

$$\text{Burning rate of A} = \frac{\text{Volume of A}}{120} = \frac{4\pi r^2 r 2h}{120} = \frac{4\pi r^3 h}{30}$$

Given that B's volume is  $\frac{1}{4}$  of A's, its burning rate is:

$$\text{Burning rate of B} = \frac{\pi r^2 h}{120} = \frac{1}{2} \pi r^2 h$$

Burn Time for Half of B's Height: When B burns to half its height, its volume burned is:

$$\text{Burned volume} = \frac{1}{2} \pi r^2 h = \frac{1}{2} \pi r^2 h$$

Using B's burning rate:

$$\text{Time taken} = \frac{\text{Burned volume}}{\text{Burning rate}} = \frac{\frac{1}{2} \pi r^2 h}{\frac{1}{2} \pi r^2 h} = 120 = 60 \text{ minutes}$$

**S11. Ans.(d)**

**Sol. Given:-**

P, Q, and R start a business with investments:

$$P = 30 \text{ lakh,}$$

$$Q = 90 \text{ lakh, and}$$

$$R = 180 \text{ lakh.}$$

The year-end profit is

$$1.2 \text{ crore} = 120 \text{ lakh.}$$

Profits are distributed in proportion to investment  $\times$  time.

R's profit is 60 lakh.

**Formula Used:-**

Share of profit = Investment  $\times$  Time (in months).

**Solution:-**

$$P = 12 \text{ months.}$$

$$Q = 12 - 2 = 10 \text{ months.}$$

R = X where X is the time R was in the business.

The shares of profit for P, Q, and R are proportional to:

$$P: 30 \times 12 = 360$$

$$Q: 90 \times 10 = 900$$

$$R: 180 \times X = 180X$$

$$\text{Total profit share} = 360 + 900 + 180X$$

$$R's \text{ profit is} = \frac{180X \times 360 + 900 + 180X \times 120}{360 + 900 + 180X} = 60$$

$$180X \times 360 + 900 + 180X \times 120 = 60(360 + 900 + 180X)$$

$$360 + 900 + 180X = 360X$$

$$1260 = 180X$$

$$X = 7$$

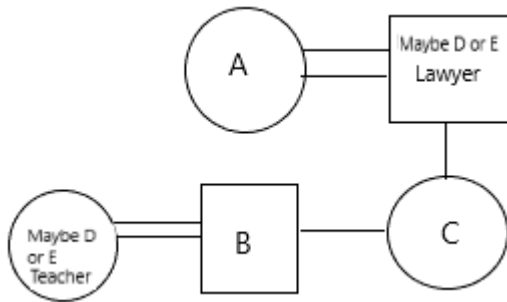
Thus, the correct answer is **(D) 7**

**S12. Ans.(d)**

**Sol. Given :-**

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
==	Married Couple
—	Siblings
	Difference Of Generation

**Solution:-**



A is the wife of maybe D or E (Lawyer) And C is the daughter of lawyer and sister of B  
 Thus, the correct answer is **(D)**  
**B is the son of A**

**S13. Ans.(a)**

**Sol. Given:-**

Villages A,B,C, and D are connected by a circular road.

Times to travel between adjacent villages:

A→B=43 min

B→C=23 min

C→D=19 min

D→A=47 min

**Formula Used:-**

Distance Proportionality with Time:

The car travels with uniform speed, the time taken is proportional to the distance.

Straight-line time from A to C =  $k \times$  straight-line distance from A to C,

k is the proportionality constant.

**Solution:-**

Total Travel Time Around the Circle:  $(A \rightarrow B) + (B \rightarrow C) + (C \rightarrow D) + (D \rightarrow A) = 43 + 23 + 19 + 47 = 132$  minutes.

Proportional Relationship:

A→B→C =  $43 + 23 = 66$  min (along the circular road).

The straight distance from A→C forms the diameter of the circular road.

For a circular path, the straight distance (diameter) between opposite points is proportional to half the circular travel time.

Time for A→C along a straight road  $\approx$  half of A→B→C.

Time from A→C =  $66 \div 2 = 33$  min

Thus, the correct answer is **(A) 42 minutes.**

**S14. Ans.(c)**

**Sol. Given :-**

If 6 students occupy a bench, 1 bench is left unoccupied.

If 5 students occupy each bench, 1 student is left without a seat.

**Solution:-**

Number of students when 6 occupy a bench =  $6(x-1)$ , where x is the total number of benches.

Number of students when 5 occupy a bench =  $5x+1$ .

$$6(x-1) = 5x + 1$$

$$6x - 6 = 5x + 1$$

$$6x - 5x = 1 + 6$$

$$x = 7$$

Number of students =  $6(x-1) = 6(7-1) = 6 \times 6 = 36$ .

Thus, the correct answer is option **(C) 36**.

### S15. Ans.(d)

**Sol. Given :**

Total Question = 20

Marks awarded for correct answer = 4

Marks awarded for wrong answer = -1

Marks awarded for unattempted question = 0

**Solution:**

To solve the problem, let the number of correct answers be C and the number of wrong answers be W. The student attempted C+W questions, and the unattempted questions are  $20 - (C+W)$

The total marks equation =  $4C - W = 27$

The total attempted questions =  $C+W =$  Attempted questions

Picking option (d) for

$C+W=18$ , then  $20-18=2$  unattempted questions. Substituting  $W=18-C$  into  $4C-W=27$

$$4C - (18 - C) = 27$$

$$4C - 18 + C = 27 \Rightarrow 5C = 45 \Rightarrow C = 9$$

$$\text{This gives } W = 18 - 9 = 9$$

$$\text{Correct answers} = C = 9$$

$$\text{Wrong answers} = W = 9$$

$$\text{Marks scored } 4C - W = 4(9) - 9 = 36 - 9 = 27$$

This satisfies the condition. Hence, Option (d) is valid.

Thus the correct answer is option (d) 18

### S16. Ans.(b)

**Sol. Formula used :**

$$(am)^n = am \cdot n \quad (am)^n = am \cdot n$$

**Solution :**

$$729 = 3^6 \text{ and } 81 = 3^4$$

Substitute these values into the equation:

$$(3^6)^{2x} \cdot (3^4)^x = 3^{32} \cdot (3^4)^{2x}$$

The equation becomes:

$$3^{12x} \cdot 3^{4x} = 3^{32} \cdot 3^{8x}$$

$$x = -4322 - 43 = -21.5$$

### S17. Ans.(a)

**Sol. Given :**

The two circles have Radius  $r=1$ .

Distance between centers = 1 (which is the same as the radius)

**Formula Used:**

$$2R^2(\pi - 34)(3\pi - 43)$$

**Solution :**

The total shaded area is the segment area:

$$\text{Total Area} = 2 \times 12(\pi - 34) = 2\pi - 322 \times 12(3\pi - 43) = 32\pi - 23$$

Thus the correct answer is option **(A)**  $2\pi - 3232\pi - 23$

**S18. Ans.(d)**

**Sol.**  $312 + 312 + 312 = 312 \times 312 \times 312$

$$\text{Left Side} = 31/2 + 31/2 + 31/2 = 3 \cdot 31/2 = 31/2 + 1 = 33/2$$

Right side

$$= 31/2 \times 31/2 \times 31/2 = 3(1/2) + (1/2) + (1/2) = 33/2$$

$$413 + 413 + 413 + 413 = 413 \times 413 \times 413 \times 413$$

$$\text{Left Side} = 4^{1/3} + 4^{1/3} + 4^{1/3} + 4^{1/3} = 4 \cdot 4^{1/3} = 4^{(1+(1/3))} = 4^{(4/3)}$$

$$\text{Right side} = 4 \left( \frac{1}{3} \right) + \left( \frac{1}{3} \right) + \left( \frac{1}{3} \right) + \left( \frac{1}{3} \right) = 4^{(4/3)} \text{ correct}$$

$$5^{1/4} + 5^{1/4} + 5^{1/4} + 5^{1/4} + 5^{1/4} = 5^{1/4} \times 5^{1/4} \times 5^{1/4} \times 5^{1/4} \times 5^{1/4}$$

$$\text{Left Side} = 5 \cdot 5^{1/4} = 5^{(4+1)/4} = 5^{5/4}$$

$$\text{Right side} = (5^{1/4})^5 = 5^{5/4} \text{ correct}$$

$$6^{1/6} + 6^{1/6} + 6^{1/6} + 6^{1/6} + 6^{1/6} + 6^{1/6} = 6^{1/6} \times 6^{1/6} \times 6^{1/6} \times 6^{1/6} \times 6^{1/6} \times 6^{1/6}$$

$$\text{Left Side} = 6 \cdot 6 - (-6) = 6(6 + (-6)) = 6(76) \cdot 6 - (-6) = 6(6 + (-6)) = 6(67)$$

$$\text{Right side} = (6(66)) = 6(6(66)) = 6 \text{ Incorrect}$$

Thus, the correct answer is **(D)**

**S19. Ans.(b)**

**Sol.** Summing the row and comparing total

Choosing the option no.(b) (18,15,12)

$$16 + 11 + 18 = 45$$

$$17 + 15 + 13 = 45$$

$$12 + 19 + 14 = 45$$

Hence all condition satisfied

Thus the correct answer is option (b) (18,15,12)

**S20. Ans.(a)**

**Sol.** The three identical rings have a radius of 1 unit

The distance between the center of the top ring and the ground includes:

The radius of the bottom rings (1 unit)

The vertical distance between the center of the top ring and the line joining the centers of the bottom two rings

The centers of the three rings form an equilateral triangle, where each side equals 2 (the diameter of a ring)

---

$$h = 3 \times 2 = 6, h = 2 \times 3 = 6.$$

This is the vertical height of the equilateral triangle. The center of the top ring is at this height above the centers of the bottom two rings.

$$x = 1 + 3 + 1 = 5, x = 1 + 3 + 1 = 5$$

Thus the correct answer is option **(A)** 2+3+3

