

# CAT 2008

## Quant

### Instructions [1 - 2]

In a single elimination tournament, any a player is eliminated with a single loss. The tournament is played in multiple rounds subject to the following rules :

(a) If the number of players, say  $n$ , in any round is even, then the players are grouped into  $n/2$  pairs. The players in each pair play a match against each other and the winner moves on to the next round.

(b) If the number of players, say  $n$ , in any round is odd, then one of them is given a bye, that is he automatically moves on to the next round. The remaining  $(n-1)$  players are grouped into  $(n-1)/2$  pairs. The players in each pair play a match against each other and the winner moves on to the next round. No player gets more than one bye in the entire tournament.

Thus, if  $n$  is even, then  $n/2$  players move on to the next round while if  $n$  is odd, then  $(n+1)/2$  players move on to the next round. The process is continued till the final round, which obviously is played between two players. The winner in the final round is the champion of the tournament.

1. What is the number of Matches played by the champion?

A. The entry list for the tournament consists of 83 players?

B. The champion received one bye.

- A Q can be answered from A alone but not from B alone.
- B Q can be answered from B alone but not from A alone.
- C Q can be answered from A alone as well as from B alone.
- D Q can be answered from A and B together but not from any of them alone.
- E Q cannot be answered even from A and B together.

**Answer:** D

### Explanation:

If we consider statement a then 2 possibilities occur , the champion may or may not receive bye and the answer for both possibilities would be different.

If we consider both statements a & b together we can find the exact answer to the question.

2. If the number of players, say  $n$ , in the first round was between 65 and 128, then what is the exact value of  $n$ ?

A. Exactly one player received a bye in the entire tournament.

B. One player received a bye while moving on to the fourth round from the third round.

- A Q can be answered from A alone but not from B alone.
- B Q can be answered from B alone but not from A alone.
- C Q can be answered from A alone as well as from B alone.
- D Q can be answered from A and B together but not from any of them alone.
- E Q cannot be answered even from A and B together.

**Answer:** D

**Explanation:**

Using only statement A, we cannot say anything because the player might have received the bye in any round and the total number of players differs if the round in which the player got a bye changes.

Using only statement B, we cannot say anything because there might be players who received a bye in other rounds.

Using both the statements, we know that only 1 player got a bye in the whole tournament and that happened in round 3.

If the number of players were between 65 and 128, then the number of rounds is 7.

=> In the fourth round there would be 16 people.

One person got a bye here => 31 people in round 3 => 62 people in round 2 => 124 people in round 1.

Hence, we can answer the question using both the statements together.

3. The integers 1, 2, ..., 40 are written on a blackboard. The following operation is then repeated 39 times: In each repetition, any two numbers, say  $a$  and  $b$ , currently on the blackboard are erased and a new number  $a + b - 1$  is written. What will be the number left on the board at the end?

A 820

B 821

C 781

D 819

E 780

**Answer: C**

**Explanation:**

Let the first operation be  $(1+40-1) = 40$ , the second operation be  $(2+39-1) = 40$  and so on

So, after 20 operations, all the numbers are 40. After 10 more operations, all the numbers are 79

Proceeding this way, the last remaining number will be 781

4. What are the last two digits of  $7^{2008}$ ?

A 21

B 61

C 01

D 41

E 81

**Answer: C**

**Explanation:**

$$7^4 = 2401 = 2400 + 1$$

So, any multiple of  $7^4$  will always end in 01

Since 2008 is a multiple of 4,  $7^{2008}$  will also end in 01

5. If the roots of the equation  $x^3 - ax^2 + bx - c = 0$  are three consecutive integers, then what is the smallest possible value of  $b$ ?

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- A  $-\frac{1}{\sqrt{3}}$
- B  $-1$
- C  $0$
- D  $1$
- E  $\frac{1}{\sqrt{3}}$

**Answer: B**

**Explanation:**

$b$  = sum of the roots taken 2 at a time.

Let the roots be  $n-1$ ,  $n$  and  $n+1$ .

Therefore,  $b = (n-1)n + n(n+1) + (n+1)(n-1) = n^2 - n + n^2 + n + n^2 - 1$

$b = 3n^2 - 1$ . The smallest value is  $-1$ .

6. A shop stores  $x$  kg of rice. The first customer buys half this amount plus half a kg of rice. The second customer buys half the remaining amount plus half a kg of rice. Then the third customer also buys half the remaining amount plus half a kg of rice. Thereafter, no rice is left in the shop. Which of the following best describes the value of  $x$ ?

- A  $2 \leq x \leq 6$
- B  $5 \leq x \leq 8$
- C  $9 \leq x \leq 12$
- D  $11 \leq x \leq 14$
- E  $13 \leq x \leq 18$

**Answer: B**

**Explanation:**

After the first sale, the remaining quantity would be  $(x/2)-0.5$  and after the second sale, the remaining quantity is  $0.25x-0.75$

After the last sale, the remaining quantity is  $0.125x-(7/8)$  which will be equal to 0

So  $0.125x-(7/8) = 0 \Rightarrow x = 7$

7. Let  $f(x) = ax^2 + bx + c$ , where  $a$ ,  $b$  and  $c$  are certain constants and  $a \neq 0$ ?

It is known that  $f(5) = -3f(2)$ . and that 3 is a root of  $f(x) = 0$ .

What is the other root of  $f(x) = 0$ ?

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- A  $-7$

- B** - 4
- C** 2
- D** 6
- E** cannot be determined

**Answer: B**

**Explanation:**

$$f(3) = 9a + 3b + c = 0 \quad f(5) = 25a + 5b + c$$

$$f(2) = 4a + 2b + c$$

$$f(5) = -3f(2) \Rightarrow 25a + 5b + c = -12a - 6b - 3c$$

$$\Rightarrow 37a + 11b + 4c = 0 \rightarrow (1)$$

$$4(9a + 3b + c) = 36a + 12b + 4c = 0 \rightarrow (2)$$

$$\text{From (1) and (2), } a - b = 0 \Rightarrow a = b$$

$$\Rightarrow c = -12a$$

$$\text{The equation is, therefore, } ax^2 + ax - 12a = 0 \Rightarrow x^2 + x - 12 = 0$$

$$\Rightarrow -4 \text{ is a root of the equation.}$$

8. Let  $f(x) = ax^2 + bx + c$ , where  $a, b$  and  $c$  are certain constants and  $a \neq 0$  ?

It is known that  $f(5) = -3f(2)$ . and that 3 is a root of  $f(x) = 0$ .

What is the value of  $a + b + c$ ?

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- A** 9
- B** 14
- C** 13
- D** 37
- E** cannot be determined

**Answer: E**

**Explanation:**

$$f(3) = 9a + 3b + c = 0 \quad f(5) = 25a + 5b + c$$

$$f(2) = 4a + 2b + c$$

$$f(5) = -3f(2) \Rightarrow 25a + 5b + c = -12a - 6b - 3c$$

$$\Rightarrow 37a + 11b + 4c = 0 \rightarrow (1)$$

$$4(9a + 3b + c) = 36a + 12b + 4c = 0 \rightarrow (2)$$

$$\text{From (1) and (2), } a - b = 0 \Rightarrow a = b$$

$$\Rightarrow c = -12a$$

$$\text{The equation is, therefore, } ax^2 + ax - 12a = 0 \Rightarrow x^2 + x - 12 = 0$$

$$a + b + c = a + a - 12a = -10a.$$

But the value of  $a$  is not given. Therefore, the value cannot be determined.

9. The number of common terms in the two sequences 17, 21, 25,..., 417 and 16, 21, 26,..., 466 is

- A** 78
- B** 19
- C** 20
- D** 77
- E** 22

**Answer:** C

**Explanation:**

The terms of the first sequence are of the form  $4p + 13$

The terms of the second sequence are of the form  $5q + 11$

If a term is common to both the sequences, it is of the form  $4p+13$  and  $5q+11$

or  $4p = 5q - 2$ . LHS =  $4p$  is always even, so,  $q$  is also even.

or  $2p = 5r - 1$  where  $q = 2r$ .

Notice that LHS is again even, hence  $r$  should be odd. Let  $r = 2m+1$  for some  $m$ .

Hence,  $p = 5m + 2$ .

So, the number =  $4p+13 = 20m + 21$ .

Hence, all numbers of the form  $20m + 21$  will be the common terms. i.e  $21, 41, 61, \dots, 401 = 20$ .

10. **How many integers, greater than 999 but not greater than 4000, can be formed with the digits 0, 1, 2, 3 and 4, if repetition of digits is allowed?**

- A** 499
- B** 500
- C** 375
- D** 376

**Answer:** D

**Explanation:**

We have to essentially look at numbers between 1000 and 4000 (including both).

The first digit can be either 1 or 2 or 3.

The second digit can be any of the five numbers.

The third digit can be any of the five numbers.

The fourth digit can also be any of the five numbers.

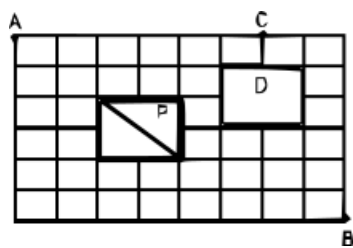
So, total is  $3 \times 5 \times 5 \times 5 = 375$ .

However, we have ignored the number 4000 in this calculation and hence the total is  $375+1=376$

**Instructions [11 - 12]**

Directions for the next two questions: The figure below shows the plan of a town. The streets are at right angles to each other. A

rectangular park (P) is situated inside the town with a diagonal road running through it. There is also a prohibited region (D) in the town.



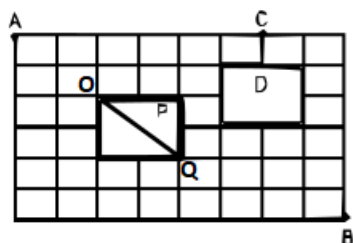
11. Neelam rides her bicycle from her house at A to her office at B, taking the shortest path. Then the number of possible shortest paths that she can choose is

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- A 60
- B 75
- C 45
- D 90
- E 72

**Answer: D**

**Explanation:**



The shortest route from A to B is via the diagonal OQ in the square P. One can travel from A to O in  $4!/2!*2!$  ways. The shortest way from O to Q is through the diagonal only. From Q to B can be travelled in  $6!/4!*2!$  ways.

The total number of ways is, therefore,  $(4!/2!*2!) * (6!/4!*2!) = 6*15 = 90$

12. Neelam rides her bicycle from her house at A to her club at C, via B taking the shortest path. Then the number of possible shortest paths that she can choose is

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- A 1170
- B 630
- C 792
- D 1200
- E 936

**Answer: A**

**Explanation:**

The shortest route from A to B is via the diagonal in the square P. A to the north-west corner of square P can be travelled in  $4!/2!*2!$  ways. Number of ways to travel from the south-east corner of square P to B is  $6!/4!*2!$ .

B to the north-east corner of D can be travelled in  $6!/5!$  ways. From there to C can be travelled in 2 ways. There is 1 other way of travelling from B to C (along the perimeter of the field).

The total number of ways is, therefore,  $(4!/2!*2!) * (6!/4!*2!) * (6!/5! * 2 + 1)$   
 $= 6*15*13 = 1170$

13. Let  $f(x) \neq 0$  for any 'x' be a function satisfying  $f(x)f(y) = f(xy)$  for all real x, y. If  $f(2) = 4$ , then what is the value of  $f\left(\frac{1}{2}\right)$ ?

- A** 0
- B**  $1/4$
- C**  $1/2$
- D** 1
- E** cannot be determined

**Answer:** B

**Explanation:**

$$f(1)^2 = f(1) \Rightarrow f(1) = 1$$

$$f(2) * f(1/2) = f(1) \Rightarrow 4x = 1$$

$$\text{So, } f(1/2) = 1/4$$

14. Suppose, the seed of any positive integer n is defined as follows:

seed(n) = n, if  $n < 10$

seed(n) = seed(s(n)), otherwise, where s(n) indicates the sum of digits of n.

For example, seed(7) = 7,

seed(248) = seed(2 + 4 + 8) = seed(14) = seed(1 + 4) = seed(5) = 5 etc.

How many positive integers n, such that  $n < 500$ , will have seed (n) = 9?

- A** 39
- B** 72
- C** 81
- D** 108
- E** 55

**Answer:** E

**Explanation:**

For seed (n) = 9, all the numbers below 500 must have a digit sum of 9.

These numbers are all divisible by 9.

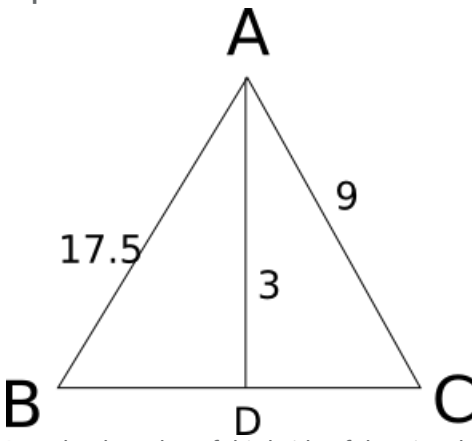
So total number of numbers below 500 and divisible by 9 is 55.

15. In a triangle ABC, the lengths of the sides AB and AC equal 17.5 cm and 9 cm respectively. Let D be a point on the line segment BC such that AD is perpendicular to BC. If AD = 3 cm, then what is the radius (in cm) of the circle circumscribing the triangle ABC?

- A 17.05
- B 27.85
- C 22.45
- D 32.25
- E 26.25

**Answer:** E

**Explanation:**



Let  $x$  be the value of third side of the triangle. Now we know that  $\text{Area} = 17.5 \cdot 9 \cdot x / (4 \cdot R)$ , where  $R$  is circumradius.

Also  $\text{Area} = 0.5 \cdot x \cdot 3$ .

Equating both, we have  $3 = 17.5 \cdot 9 / (2 \cdot R)$

$\Rightarrow R = 26.25$ .

16. Consider obtuse-angled triangles with sides 8 cm, 15 cm and  $x$  cm. If  $x$  is an integer then how many such triangles exist?

- A 5
- B 21
- C 10
- D 15
- E 14

**Answer:** C

**Explanation:**

For obtuse-angled triangle,  $c^2 > a^2 + b^2$  and  $c < a + b$

If 15 is the greatest side,  $8 + x > 15 \Rightarrow x > 7$  and  $225 > 64 + x^2 \Rightarrow x^2 < 161 \Rightarrow x \leq 12$

So,  $x = 8, 9, 10, 11, 12$

If  $x$  is the greatest side, then  $8 + 15 > x \Rightarrow x < 23$



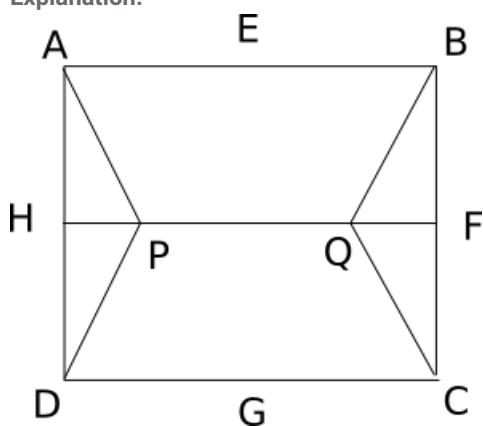
$x^2 > 225 + 64 = 289 \Rightarrow x > 17$   
 So,  $x = 18, 19, 20, 21, 22$   
 So, the number of possibilities is 10

17. Consider a square ABCD with midpoints E, F, G, H of AB, BC, CD and DA respectively. Let L denote the line passing through F and H. Consider points P and Q, on L and inside ABCD such that the angles APD and BQC both equal  $120^\circ$ . What is the ratio of the area of ABQCDP to the remaining area inside ABCD?

- A**  $\frac{4\sqrt{2}}{3}$   
**B**  $2 + \sqrt{3}$   
**C**  $\frac{10 - 3\sqrt{3}}{9}$   
**D**  $1 + \frac{1}{\sqrt{3}}$   
**E**  $2\sqrt{3} - 1$

**Answer:** E

**Explanation:**



Consider side of square as 10 units. So  $HD=5$  and  $HP=\frac{5}{\sqrt{3}}$ . So now area of triangle HPD =  $\frac{12.5}{\sqrt{3}}$ . Also Area APD = Area BQC =  $2 \times \text{Area HPD} = \frac{25}{\sqrt{3}}$ . So numerator of required answer is  $100 - \frac{50}{\sqrt{3}}$  and denominator as  $\frac{50}{\sqrt{3}}$ . Solving we get answer as  $2\sqrt{3} - 1$ .

18. What is the number of distinct terms in the expansion of  $(a + b + c)^{20}$ ?

- A** 231  
**B** 253  
**C** 242  
**D** 210  
**E** 228

**Answer:** A

**Explanation:**

The power is 20.

20 has to be divided among a, b and c. This can be done in  ${}^{20+3-1}C_{3-1} = {}^{22}C_2 = 231$

Option a) is the correct answer.

19. Five horses, Red, White, Grey, Black and Spotted participated in a race. As per the rules of the race, the persons betting on the winning horse get four times the bet amount and those betting on the horse that came in second get thrice the bet amount. Moreover, the bet amount is returned to those betting on the horse that came in third, and the rest lose the bet amount. Raju bets Rs. 3000, Rs. 2000 and Rs. 1000 on Red, White and Black horses respectively and ends up with no profit and no loss.

Which of the following cannot be true?

- A At least two horses finished before Spotted
- B Red finished last
- C There were three horses between Black and Spotted
- D There were three horses between White and Red
- E Grey came in second

**Answer:** D

**Explanation:**

In total Raju bets 6000Rs and ends up with no profit - no loss. So there are 3 possibilities.

- 1) White comes 2nd, Black comes 4th and Red comes 5th.
- 2) Black comes 1st, White comes 3rd and Red comes 4th or 5th.
- 3) Black comes 2nd, Red comes 3rd and White comes 4th or 5th.

So there can never be 3 horses between white and red according to above to possibilities. Hence option D cannot be true.

20. Five horses, Red, White, Grey, Black and Spotted participated in a race. As per the rules of the race, the persons betting on the winning horse get four times the bet amount and those betting on the horse that came in second get thrice the bet amount. Moreover, the bet amount is returned to those betting on the horse that came in third, and the rest lose the bet amount. Raju bets Rs. 3000, Rs. 2000 and Rs. 1000 on Red, White and Black horses respectively and ends up with no profit and no loss.

Suppose, in addition, it is known that Grey came in fourth. Then which of the following cannot be true?

- A Spotted came in first
- B Red finished last
- C White came in second
- D Black came in second
- E There was one horse between Black and White

**Answer:** C

**Explanation:**

There are total 3 cases which satisfies the condition "no profit and no loss."

Case 1: White comes 2nd.(remaining two horses(red/black) come 4th/5th)

Profit from white horse = Final Amount - Initial Amount =  $2000 \times 3 - 2000 = 4000$

Loss from Red and Black horse =  $3000+1000 = 4000$

Net profit =  $4000-4000 = 0$

Case 2: Black, Red come second, third respectively.(remaining one horse(white) comes 4th/5th)

Profit from Black =  $1000*3-1000 = 2000$

Profit from Red =  $3000 - 3000 = 0$

Loss from white =  $2000$

Net profit =  $2000-2000 = 0$

Case 3: black, white come first, third respectively.(remaining one horse(red) comes 4th/5th)

Profit from Black =  $1000*4-1000 = 3000$

Profit from White =  $2000 - 2000 = 0$

Loss from Red =  $3000$

Net Profit =  $3000-3000=0$

And it is mentioned that grey case 4th. ==> case 1 is wrong.(because, in that case red, black should come 4th,5th)

So option C cannot be true.

21. Two circles, both of radii 1 cm, intersect such that the circumference of each one passes through the centre of the other. What is the area (in sq. cm.) of the intersecting region?

A  $\frac{\pi}{3} - \frac{\sqrt{3}}{4}$

B  $\frac{2\pi}{3} + \frac{\sqrt{3}}{2}$

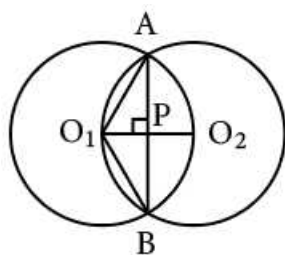
C  $\frac{4\pi}{3} - \frac{\sqrt{3}}{2}$

D  $\frac{4\pi}{3} + \frac{\sqrt{3}}{2}$

E  $\frac{2\pi}{3} - \frac{\sqrt{3}}{2}$

**Answer: E**

**Explanation:**



The circumferences of the two circle pass through each other's centers. Hence,  $O_1A = O_1B = O_1O_2 = 1\text{ cm}$

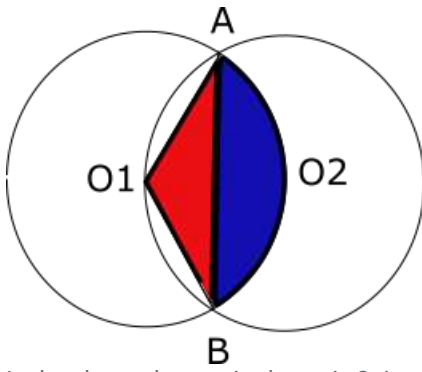
By symmetry, the line joining the two centres would be bisect AB and would be bisected by AB. As the line joining the center to the midpoint of a chord is perpendicular to the chord,  $O_1O_2$  and AB are perpendicular bisectors of each other. Suppose they intersect at point P.

$O_1P = \text{Half of } O_1O_2 = 1/2\text{ cm}$

So, the angle  $AO_1P = 60\text{ degrees}$  as  $\cos 60 = 1/2$

By symmetry,  $BO_1P = 60\text{ degrees}$ .

So, angle  $AO_1B = 120\text{ degrees}$



In the above, the required area is 2 times A(segment ABO2)(blue region). And A(segment ABO2)(blue region) = A(sector O2AO1B)(blue + red) - A(triangle O1AB)(red)

$$\text{Area of sector} = 120^\circ/360^\circ * \pi * 1^2 = \pi/3$$

$$\text{Area of triangle} = 1/2 * b * h = 1/2 * (2 * 1 \cos 30^\circ) * (1/2) = \sqrt{3}/4$$

$$\text{Hence, required area} = \frac{\pi}{3} - \frac{\sqrt{3}}{4}. \text{ Hence so the required area is 2 times the above value which is } \frac{2\pi}{3} - \frac{\sqrt{3}}{2}$$

22. Rahim plans to drive from city A to station C, at the speed of 70 km per hour, to catch a train arriving there from B. He must reach C at least 15 minutes before the arrival of the train. The train leaves B, located 500 km south of A, at 8:00 am and travels at a speed of 50 km per hour. It is known that C is located between west and northwest of B, with BC at  $60^\circ$  to AB. Also, C is located between south and southwest of A with AC at  $30^\circ$  to AB. The latest time by which Rahim must leave A and still catch the train is closest to

- A 6 : 15 am
- B 6 : 30 am
- C 6 :45 am
- D 7 : 00 am
- E 7 : 15 am

**Answer: B**

#### Explanation:

According to given conditions angle between AC and AB is 30 degrees and between AB and BC is 60 degrees. So the triangle formed is a 30-60-90 triangle.

So, total time taken by train is 5 hrs, hence the train reaches at 1 pm. Accordingly, Rahim has to reach C fifteen minutes before i.e. at 12:45 PM.

Time taken by Rahim to travel by car is around 6.2 hrs. So, the latest time by which Rahim must leave A and still be able to catch the train is 6:30 am.

23. Three consecutive positive integers are raised to the first, second and third powers respectively and then added. The sum so obtained is perfect square whose square root equals the total of the three original integers. Which of the following best describes the minimum, say m, of these three integers?

- A  $1 \leq m \leq 3$
- B  $4 \leq m \leq 6$
- C  $7 \leq m \leq 9$

**D**  $10 \leq m \leq 12$

**E**  $13 \leq m \leq 15$

**Answer: A**

**Explanation:**

Let us assume that three positive consecutive integers are  $x, x+1, x+2$ . They are raised to first, second and third powers respectively.

$$x^1 + (x+1)^2 + (x+2)^3 = (x + (x+1) + (x+2))^2$$

$$x^1 + (x+1)^2 + (x+2)^3 = (3x+3)^2$$

$$x^3 + 7x^2 + 15x + 9 = 9x^2 + 9 + 18x$$

After simplifying you get,

$$x^3 - 2x^2 - 3x = 0$$

$$\Rightarrow x=0, 3, -1$$

Since  $x$  is a positive integer, it can only be 3.

So, the minimum of the three integers is 3. Option a) is the correct answer.

24. Find the sum  $\sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} + \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}} + \dots + \sqrt{1 + \frac{1}{2007^2} + \frac{1}{2008^2}}$

**A**  $2008 - \frac{1}{2008}$

**B**  $2007 - \frac{1}{2007}$

**C**  $2007 - \frac{1}{2008}$

**D**  $2008 - \frac{1}{2007}$

**E**  $2008 - \frac{1}{2009}$

**Answer: A**

**Explanation:**

Consider the first term:

$$\sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} = \sqrt{\frac{9}{4}} = \frac{3}{2}$$

$$\text{Second term: } \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}} = \sqrt{\frac{49}{36}} = \frac{7}{6}$$

$$\text{First term} + \text{Second term} = \frac{3}{2} + \frac{7}{6} = \frac{(9+7)}{6} = \frac{16}{6} = \frac{8}{3} = 3 - \frac{1}{3}$$

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$$\text{Required sum} = 2008 - \frac{1}{2008}$$

25. Consider a right circular cone of base radius 4 cm and height 10 cm. A cylinder is to be placed inside the cone with one of the flat surfaces resting on the base of the cone. Find the largest possible total surface area (in sq. cm) of the cylinder.

**A**  $\frac{100\pi}{3}$

**B**  $\frac{80\pi}{3}$

**C**  $\frac{120\pi}{7}$

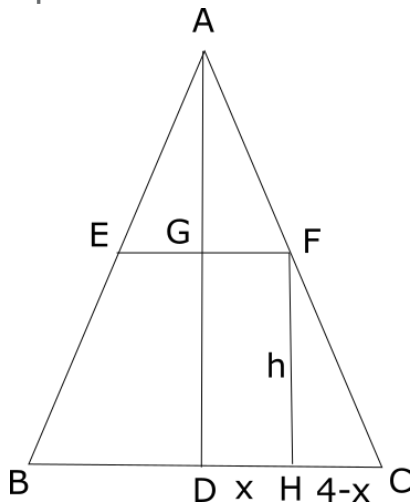
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**D**  $\frac{130\pi}{9}$

**E**  $\frac{110\pi}{7}$

**Answer: A**

**Explanation:**



Triangle AGF and triangle FHC are similar.

$$\begin{aligned} \text{So, } \frac{10-h}{x} &= \frac{h}{4-x} \\ \Rightarrow \frac{10-h}{h} &= \frac{x}{4-x} \\ \Rightarrow \frac{10}{h} - 1 &= \frac{x}{4-x} \\ \Rightarrow \frac{10}{h} &= \frac{4}{4-x} \\ \Rightarrow h &= \frac{10}{4} (4-x) \end{aligned}$$

$$\text{Total surface area} = 2\pi x^2 + 2\pi xh = 2\pi(x^2 + x \cdot \frac{10}{4} (4-x)) = 2\pi(10x - \frac{3}{2}x^2)$$

$$= 2\pi \left[ x^2 - \frac{20}{3}x \right]. \text{ We can add and subtract } \frac{100}{9} \text{ to get a perfect square.}$$

$$= 2\pi \left[ x^2 - \frac{20}{3}x + \frac{100}{9} - \frac{100}{9} \right]$$

$$= 2\pi \left( -\frac{3}{2} \left( x - \frac{10}{3} \right)^2 + \frac{50}{3} \right)$$

This value will be maximum when the negative factor is minimum i.e. 0 because it is multiplied by a square. Thus, when  $x = \frac{10}{3}$  the surface area is max.

$$\text{So, the surface area is } \frac{100}{3} \pi$$

## Data Interpretation

### Instructions [26 - 28 ]

Directions for the following three questions: Answer the following questions based on the statements given below:

- (i) There are three houses on each side of the road.
- (ii) These six houses are labeled as P, Q, R, S, T and U.
- (iii) The houses are of different colours, namely, Red, Blue, Green, Orange, Yellow and White.
- (iv) The houses are of different heights.
- (v) T, the tallest house, is exactly opposite to the Red coloured house.
- (vi) The shortest house is exactly opposite to the Green coloured house.

- (vii) U, the Orange coloured house, is located between P and S.
- (viii) R, the Yellow coloured house, is exactly opposite to P.
- (ix) Q, the Green coloured house, is exactly opposite to U.
- (x) P, the White coloured house, is taller than R, but shorter than S and Q.

26. What is the colour of the house diagonally opposite to the Yellow coloured house?

- A** White
- B** Blue
- C** Green
- D** Red
- E** none of these

**Answer:** D

**Explanation:** know that P is opposite to R and Q is opposite to U => S is opposite to T

It is given that T is opposite to red house => S is the red house and hence T is the blue house.

So, we know the colours of all houses and heights of P, R, T and U.

In this question, we are asked to find the house that is opposite to yellow house. R is the yellow house, P is opposite to R and S is on the other corner in P's row. Hence S is the house that is diagonally opposite to yellow house and the colour of S is Red.

Name	Colour	Height-Rank
P	White	4
Q	Green	2 or 3
R	Yellow	5
S	Red	3 or 2
T	Blue	1
U	Orange	6

27. Which is the second tallest house?

- A** P
- B** S
- C** Q
- D** R
- E** cannot be determined

**Answer:** E

**Explanation:** only know that the second tallest house is either Q or S. Hence the answer is cannot be determined.

Name	Colour	Height-Rank
P	White	4
Q	Green	2 or 3
R	Yellow	5
S	Red	3 or 2
T	Blue	1
U	Orange	6

28. What is the colour of the tallest house?

- A Red
- B Blue
- C Green
- D Yellow
- E none of these

**Answer:** B

**Explanation:** T is the tallest house and hence the colour of the tallest house is blue.

Name	Colour	Height-Rank
P	White	4
Q	Green	2 or 3
R	Yellow	5
S	Red	3 or 2
T	Blue	1
U	Orange	6

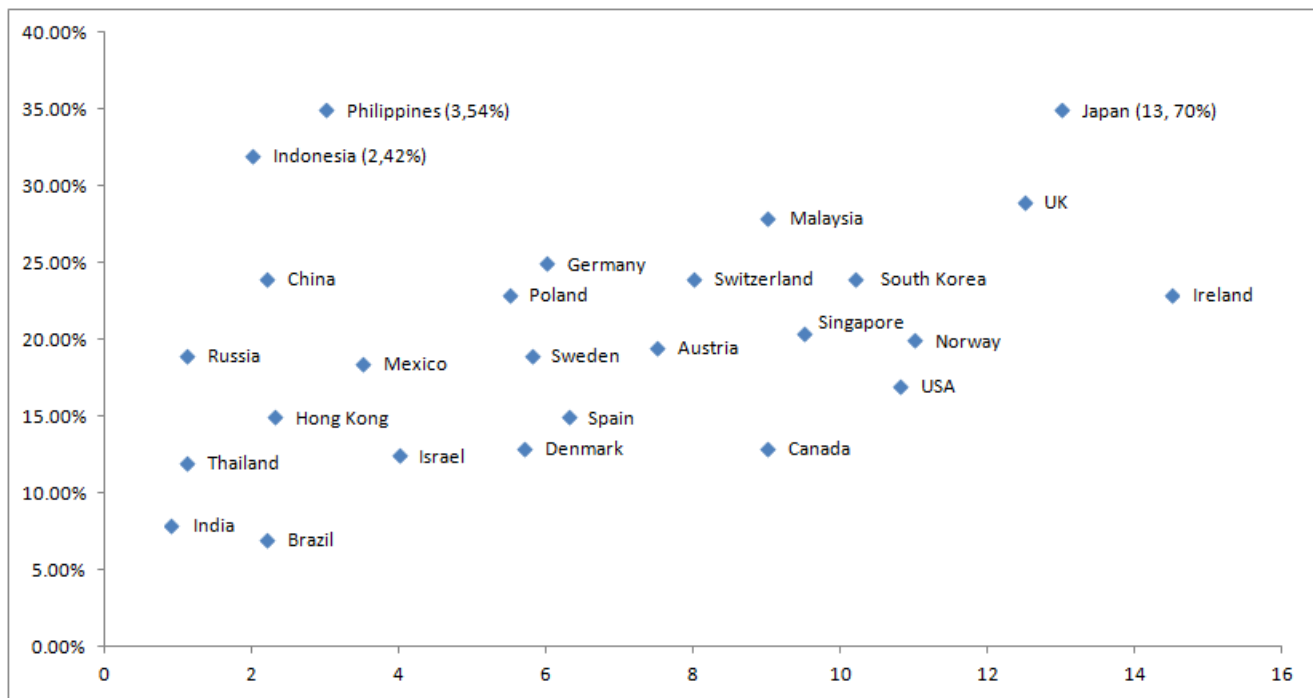
**Instructions [29 - 31 ]**

Directions for the next three questions:

Answer the following questions based on the information given below: Telecom operators get revenue from transfer of data and voice. Average revenue received from transfer of each unit of data is known as ARDT. In the diagram below, the revenue received form data transfer as percentage of total revenue received and the ARDT in US Dollars (USD) are given for various countries.

The X axis represents the ARDT values and the Y axis represents the % of revenue from data transfer as a percentage of the total revenue.





29. It was found that the volume of data transfer in India is the same as that of Singapore. Then which of the following statements is true?

- A Total revenue is the same in both countries.
- B Total revenue in India is about 2 times that of Singapore.
- C Total revenue in India is about 4 times that of Singapore.
- D Total revenue in Singapore is about 2 times that of India.
- E Total revenue in Singapore is about 4 time that of India.

**Answer: E**

**Explanation:**

If the volume of data transfer in India is the same as that of Singapore then we have (  $R_i * 7.5 / 0.9$  ) = (  $20 * R_s / 9.5$  ) ; we get  $R_s$  nearly equal to  $4 * R_i$ .

Hence Total revenue in Singapore is about 4 time that of India.

30. It is expected that by 2010, revenue from data transfer as a percentage of total revenue will triple for India and double for Sweden. Assume that in 2010, the total revenue in India is twice that of Sweden and that the volume of data transfer is the same in both the countries. What is the percentage increase of ARDT in India if there is no change in ARDT in Sweden?

- A 400%
- B 550%
- C 800%
- D 950%
- E cannot be determined

**Answer: C**

**Explanation:**

Revenue from data transfer as a percentage of total revenue will triple for India and double for Sweden.

Also the total revenue in India is twice that of Sweden.

Taking volume constant we have for India  $3 * 0.9 * R_i = ARDT * vol$

For Sweden  $0.18 * 2 * R_s = 6 * Vol$

Since vol is constant and  $R_i = 2 * R_s$  we have  $ARDT = 9$ .

Thus % increase in ARDT = 800%.

31. If the total revenue received is the same for the pairs of countries listed in the choices below, choose the pair that has approximately the same volume of data transfer.

- A Philippines and Austria
- B Canada and Poland
- C Germany and USA
- D UK and Spain
- E Denmark and Mexico

**Answer:** D

**Explanation:**

We know the following relation that, revenue = volume \* ARDT. To have equal value the ratio of revenue by ARDT should be constant. Considering UK we have volume = 12.5/30 and of Spain we have 6.5/15 which is fairly constant as compared to others.

Hence option D.

**Instructions [32 - 34]**

Answer the following questions based on the information given below:

For admission to various affiliated colleges, a university conducts a written test with four different sections, each with a maximum of 50 marks. The following table gives the aggregate as well as the sectional cut-off marks fixed by six different colleges affiliated to the university. A student will get admission only if he/she gets marks greater than or equal to the cut-off marks in each of the sections and his/her aggregate marks are at least equal to the aggregate cut-off marks as specified by the college.

	Sectional Cut-Off Marks				Aggregate Cut - off Marks
	Section A	Section B	Section C	Section D	
College 1	42	42	42		176
College 2		45	45		175
College 3			46		171
College 4	43			45	178
College 5	45		43		180
College 6		41		44	176

32. Bhamu got calls from all colleges. What could be the minimum aggregate marks obtained by her?

- A 180
- B 181
- C 196
- D 176
- E 184

**Answer: B**

**Explanation:**

We can see that Bhama got calls from all the college hence it is essential for her to clear all 4 sectionals along with overall cutoff. That essentially means that she has to score marks which are greater or equal to the greatest cut-off for that section across the six colleges. from the table we can see that to clear section A the cut offs for colleges 1, 4 and 5 are 42, 43 and 45 respectively. Hence, in order to clear the sectional cut-off of section A for all the colleges, she should have scored at least 45 marks.

Similarly, the minimum marks required sectional cut-off for section B for all colleges =  $\text{Max}\{42, 42, 41\} = 42$ .

Similarly, the minimum marks required sectional cut-off for section C for all colleges =  $\text{Max}\{42, 45, 46, 43\} = 46$ .

Similarly, the minimum marks required sectional cut-off for section D for all colleges =  $\text{Max}\{45, 44\} = 45$ .

So total minimum aggregate marks required is  $45+42+46+45 = 181$ .

Note we have to check for aggregate cut-off as well for all 6 colleges. We can see that 181 is also more than aggregate cut-off marks of all six colleges. Therefore option B is the correct answer.

33. Charlie got calls from two colleges. What could be the minimum marks obtained by him in a section?

- A 0
- B 21
- C 25
- D 35
- E 41

**Answer: C**

**Explanation:**

We have to minimum marks obtained by him in a section which is possible only when Charlie must have scored full marks in remaining 3 sections. Along with that we have to ensure that Charlie gets enough marks to clear aggregate cut off as well.

For college 1, the minimum marks that Charlie needs to get a call = 176. To get the minimum marks in any section he has to score full marks in remaining 3 sections. Since he has to clear the cut off in sections A, B and C we can say that he can score a minimum marks in section D.

Minimum marks in section D despite which he will get call from college 1 =  $176 - 3 \times 50 = 26$ .

Similarly, minimum marks in one section out of A and D despite which he will get call from college 2 =  $175 - 3 \times 50 = 25$ .

Similarly, minimum marks in one section out of A, B and D despite which he will get call from college 3 =  $171 - 3 \times 50 = 21$ .

Similarly, minimum marks in one section out of B and C despite which he will get call from college 4 =  $178 - 3 \times 50 = 28$ .

Similarly, minimum marks in one section out of B and D despite which he will get call from college 5 =  $180 - 3 \times 50 = 30$ .

Similarly, minimum marks in one section out of A and C despite which he will get call from college 6 =  $176 - 3 \times 50 = 26$ .

We can see that Charlie need to score at least 25 marks in one section out of A and D to get call from exactly 2 colleges. Therefore, option C is correct answer.

34. Aditya did not get a call from even a single college. What could be the maximum aggregate marks obtained by him?

- A 181
- B 176
- C 184
- D 196

**Answer: C****Explanation:**

Since Aditya didn't get a call from any of the colleges, so for each college, he either didn't clear one of the sectional cut-offs or he didn't clear the aggregate cutoff or both. If he didn't clear one of the sectional cut-offs, then for that section he scored less marks than the least cut-off among the given cut-offs of all the colleges.

For example, for section A, it is given that the cut-offs for colleges 1, 4 and 5 are 42, 43 and 45 respectively. The least cut-off among them is 42. So, in order to not clear the sectional cut-off of section A for colleges 1, 4 and 5, he should have scored less than 42.

Similarly for section B, in order to not clear the sectional cut-off for colleges 1, 2 and 6, he should have scored less than 41.

Similarly for section C, in order to not clear the sectional cut-off for colleges 1, 2, 3 and 5, he should have scored less than 42.

Similarly for section D, in order to not clear the sectional cut-off for colleges 4 and 6, he should have scored less than 44.

We can see that if we consider section C and D then we will cover all six colleges. So the maximum score that one can score in section C and D despite that he misses the sectional cut off are 41 and 43 respectively. Also in order to maximize the total we can assume that the person scored full marks in the both section A and B.

Maximum marks obtained by Aditya such that he doesn't get any calls =  $41 + 43 + 50 + 50 = 184$

Hence, option C is the correct answer.

**Instructions [35 - 38]**

Answer the following questions based on the information given below:

In a sports event, six teams (A, B, C, D, E and F) are competing against each other. Matches are scheduled in two stages. Each team plays three matches in Stage – I and two matches in Stage – II. No team plays against the same team more than once in the event. No ties are permitted in any of the matches. The observations after the completion of Stage – I and Stage – II are as given below.

**Stage-I:**

- One team won all the three matches.
- Two teams lost all the matches.
- D lost to A but won against C and F.
- E lost to B but won against C and F.
- B lost at least one match.
- F did not play against the top team of Stage-I.

**Stage-II:**

- The leader of Stage-I lost the next two matches
- Of the two teams at the bottom after Stage-I, one team won both matches, while the other lost both matches.
- One more team lost both matches in Stage-II.

35. The two teams that defeated the leader of Stage-I are:

**A** B & F

**B** E & F

**C** B & D

**D** E & D

**E** F & D

**Answer: B**

**Explanation:** wo teams that won against stage 1 leader A are E and F.

36. The only team(s) that won both matches in Stage-II is (are):

- A** B
- B** E & F
- C** A, E & F
- D** B, E & F
- E** B & F

**Answer:** D

**Explanation:** eams that won both of their stage 2 matches are B, E and F.

37. The teams that won exactly two matches in the event are:

- A** A, D & F
- B** D & E
- C** E & F
- D** D, E & F
- E** D & F

**Answer:** E

**Explanation:** wins by each team are A (3), B(4), C(0), D(2), E(4), F(2). Hence, D and F won exactly 2 matches.

38. The team(s) with the most wins in the event is (are):

- A** A
- B** A & C
- C** F
- D** E
- E** B & E

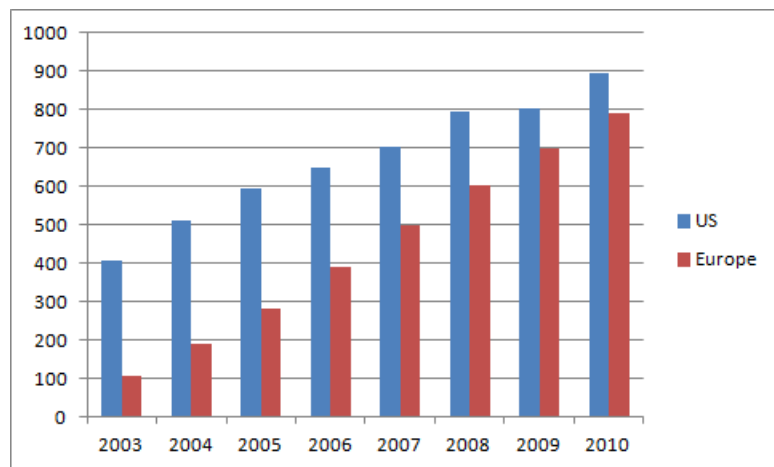
**Answer:** E

**Explanation:** wins by each team are A(3), B(4), C(0), D(2), E(4), F(2). Hence, most wins are by B and E.

### Instructions [39 - 42]

Directions for the following four questions: Answer the following questions based on the information given below: The bar chart below shows the revenue received in million US Dollars (USD), from subscribers to a particular Internet service. The data covers the period 2003 to 2007 for the United States (US) and Europe. The bar chart also shows the estimated revenues from subscription to this service for the period 2008 to 2010.

The Y axis represents the subscription revenue in Million (USD) and the X axis represents the years.



39. The difference between the estimated subscription in Europe in 2008 and what it would have been if it were computed using the percentage growth rate of 2007 (over 2006), is closest to:

- A 50
- B 80
- C 20
- D 10
- E 0

**Answer: A**

#### Explanation:

Percentage increase from 2006 to 2007 is  $120/3.8 = 31.5\%$ . approximately

Now if the same % increase is considered over period 2007-2008, we get .  $31.5 * 500 = x-500$ .

X is 657 approximately.

So ,the difference between the estimated subscription in Europe in 2008 and what it would have been if it were computed using the percentage growth rate of 2007 (over 2006), is closest to:  $657-600 = 57$ . Hence option A.

40. In 2003, sixty percent of subscribers in Europe were men. Given that women subscribers increase at the rate of 10 percent annum and men at the rate of 5 percent per annum, what is the approximate percentage growth of subscribers between 2003 and 2010 in Europe? The subscription prices are volatile and may change each year.

- A 62
- B 15
- C 78
- D 84
- E 50

**Answer: A**

**Explanation:**

Suppose there are 100 subscribers from Europe in the year 2003.

Out of which 60 are men and 40 are women.

According to given condition in the year 2010 no. of male subscribers would be  $60 \times 1.05^7 = 84$  and no. of female subscribers would be  $40 \times 1.1^7 = 78$ .

So total equal to 162.

Hence % increase is  $100 \times (162 - 100) / 100 = 62$ .

Hence option A.

41. Consider the annual percent change in the gap between subscription revenues in the US and Europe. What is the year in which the absolute value of this change is the highest?

- A 03 - 04
- B 05 - 06
- C 06 - 07
- D 08 - 09
- E 09 - 10

**Answer: D**

**Explanation:**

Every year, there was a comparative increase in both US and Europe subscriptions.

But in 2009, the increase in US subscriptions is very marginal and in Europe subscriptions is similar to that of any other year.

Hence, the percentage change in 2009 over 2008 would be more than any other year.

42. While the subscription in Europe has been growing steadily towards that of the US, the growth rate in Europe seems to be declining. Which of the following is closest to the percent change in growth rate of 2007 (over 2006) relative to the growth rate of 2005 (over 2004)?

- A 17
- B 20
- C 35
- D 60
- E 100

**Answer: C**

\_\_\_\_\_

\_\_\_\_\_

**Explanation:**

500 000

Growth in 2007 =>  $\frac{500-380}{380} * 100 = 31.58$

Growth in 2005 =>  $\frac{280-190}{190} * 100 = 47.37\%$

Percentage change =  $\frac{47.37-31.58}{47.37} * 100 = 35\%$  approximately.

=> 35% is the answer

#### Instructions [43 - 47]

Directions for the following five questions: Answer the following questions based on the information given below:

Abdul, Bikram and Chetan are three professional traders who trade in shares of a company XYZ Ltd. Abdul follows the strategy of buying at the opening of the day at 10 am and selling the whole lot at the close of the day at 3 pm. Bikram follows the strategy of buying at hourly intervals: 10 am, 11am, 12 noon, 1 pm and 2 pm, and selling the whole lot at the close of the day. Further, he buys an equal number of shares in each purchase. Chetan follows a similar pattern as Bikram but his strategy is somewhat different. Chetan's total investment amount is divided equally among his purchases. The profit or loss made by each investor is the difference between the sale value at the close of the day less the investment in purchase. The "return" for each investor is defined as the ratio of the profit or loss to the investment amount expressed as a percentage.

43. On a day of fluctuating market prices, the share price of XYZ Ltd. ends with a gain, i.e, it is higher at the close of the day compared to the opening value. Which trader got the maximum return on that day?

- A Bikram
- B Chetan
- C Abdul
- D Bikram or Chetan
- E cannot be determined

**Answer:** E

#### Explanation:

Since we do not know the exact prices of the share, we cannot determine who gained the most,

44. Which one of the following statements is always true?

- A Abdul will not be one with the minimum return
- B Return for Chetan will be higher than that of Bikram
- C Return for Bikram will be higher than that of Chetan
- D Return for Chetan cannot be higher than that of Abdul
- E none of the above

**Answer:** E

#### Explanation:

Similar is the case with this question. Nothing can be inferred as we do not know about the fluctuation of share prices.

45. On a "boom" day the share price of XYZ Ltd. keeps rising throughout the day and peaks at the close of the day. Which trader got the minimum return on that day?



- A** Bikram
- B** Chetan
- C** Abdul
- D** Abdul or Chetan
- E** cannot be determined

**Answer:** A

**Explanation:**

Abdul gets the highest return since he buys all the shares at the start of the day.

Let Bikram and Chetan spend equal amounts of money. Since Chetan spends his money equally on all business, he would buy more of a shares at lower price and less shares at a higher price. On the other hand, Bikram buys an equal number of shares at each price. So, the return obtained by Chetan would be more than the return obtained by Bikram. Option a) is the correct answer.

46. **One day, two other traders. Dane and Emily joined Abdul, Bikram and Chetan for trading in the shares of XYZ Ltd. Dane followed a strategy of buying equal numbers of shares at 10 am. 11 am and 12 noon, and selling the same numbers at 1 pm, 2 pm and 3 pm Emily, on the other hand, followed the strategy of buying shares using all her money at 10 am and selling all of them at 12 noon and again buying the shares for all the money at 1 pm and again selling all of them at the close of the day at 3 pm. At the close of the day the following was observed.**

- i. Abdul lost money in the transactions.**
- ii. Both Dane and Emily made profits.**
- iii. There was an increase in share price during the closing hour compared to the price at 2 pm.**
- iv. Share price at 12 noon was lower than the opening price**

**Share price was at its highest at**

- A** 10 am
- B** 11 am
- C** 12 noon
- D** 1 pm
- E** cannot be determined

**Answer:** A

**Explanation:**

Let the share prices at 10,11,12,1,2,3 be  $p, q, r, s, t, u$

Since Abdul lost all money,  $p > u$

From Dane it can be observed,  $s + t + u > p + q + r$

$p > r$  and  $u > t$

From Emily it can be observed,  $r + u > p + s$

From these inequalities it can be inferred that the  $p$  is the highest.

47. One day, two other traders. Dane and Emily joined Abdul, Bikram and Chetan for trading in the shares of XYZ Ltd. Dane followed a strategy of buying equal numbers of shares at 10 am. 11 am and 12 noon, and selling the same numbers at 1 pm, 2 pm and 3 pm Emily, on the other hand, followed the strategy of buying shares using all her money at 10 am and selling all of them at 12 noon and again buying the shares for all the money at 1 pm and again selling all of them at the close of the day at 3 pm. At the close of the day the following was observed.

- i. Abdul lost money in the transactions.
- ii. Both Dane and Emily made profits.
- iii. There was an increase in share price during the closing hour compared to the price at 2 pm.
- iv. Share price at 12 noon was lower than the opening price

Which of the following is necessarily false?

- A Share price was at its lowest at 2 pm
- B Share price was at its lowest at 11 am
- C Share price at 1 pm was higher than the share price at 2 pm
- D Share price at 1 pm was higher than the share price at 12 noon
- E more than one of the above

Answer: E

Explanation:

Let the share prices at 10,11,12,1,2,3 be p,q,r,s,t,u  
 Since Abdul lost all money,  $p > u$   
 From Dane it can be observed,  $s + t + u > p + q + r$   
 $p > r$  and  $u > t$   
 From Emily it can be observed,  $r + u > p + s$   
 Thus we get sequence  $p > u > t > q$  and  $r > s$ .  
 From these inequalities it can be inferred that the p is the highest  
 Since  $t > q$ ; option A is definitely false.  
 Also  $r > s$  so option D is definitely false.

Instructions [48 - 50 ]

Directions for following three questions: Answer the following questions based on the information given below: There are 100 employees in an organization across five departments. The following table gives the department-wise distribution of average age, average basic pay and allowances. The gross pay of an employee is the sum of his/her basic pay and allowances.

There are limited numbers of employees considered for transfer/promotion across departments Whenever a person is transferred/promoted from a department of lower average age to a department of higher average age, he/she will get an additional allowance of 10% of basic pay over and above his/her current allowance. There will not be any change in pay structure if a person is transferred/promoted from a department with higher average age to a department with lower average age.

Department	Number of Employees	Average Age	Average Basic Pay	Allowances (% of Basic Pay)
HR	5	45	5000	70
Marketing	30	35	6000	80
Finance	20	30	6500	60
Business Development	35	42	7500	75
Maintenance	10	35	5500	50

Questions below are independent of each other.

48. What is the approximate percentage change in the average gross of the HR department due to transfer of a 40-year old person with basic pay of Rs. 8000 from the Marketing department?

- A 9%
- B 11%
- C 13%
- D 15%
- E 17%

**Answer: C**

**Explanation:**

Man's new gross income =  $8000 + (8000 \times 0.8) + (8000 \times 0.1) = 15200$

Average gross income of HR =  $5000 + (5000 \times 0.7) = 8500$

New average =  $\frac{8500 \times 5 + 15200}{6} = 9616$

% increase =  $\frac{1116}{8500} \times 100 = 13.12\% \Rightarrow 13\%$  approximately.

49. There was a mutual transfer of an employee between Marketing and Finance departments and transfer of one employee from Marketing to HR. As a result, the average age of finance department increased by one year and that of Marketing department remained the same. What is the new average age of HR department?

- A 30
- B 35
- C 40
- D 45
- E cannot be determined

**Answer: C**

**Explanation:**

Let the age of an employee which were mutual transfer between Marketing and Finance departments be x(M to F) and y also age of one employee transferred from Marketing to HR be z.

As a result, the average age of finance department increased by one year, so we have  $(30 \times 20 - x + y) / 20 = 31$  and that of Marketing department remained the same so we have  $(35 \times 30 + y - z - x) / 29 = 35$ .

Solving both we have  $z = 15$ .

So new average age of HR department is  $(45 \times 5 + 15) / 6 = 40$

Hence option C.

50. If two employees (each with a basic pay of Rs. 6000) are transferred from Maintenance department to HR department and one person (with a basic pay of Rs. 8000) was transferred from Marketing department to HR department, what will be the percentage change in average basic pay of HR department?

- A 10.5%
- B 12.5%

- C** 15%
- D** 30%
- E** 40%

**Answer: B**

**Explanation:**

The new average basic pay of HR dept. would be  $(5000 \times 5 + 6000 \times 2 + 8000) / 8 = 45000 / 8$ .

So % change in basic pay is  $[(45000 / 8) - 5000] / 5000 = 12.5\%$ .

## Verbal

**Instructions [51 - 54 ]**

Directions for the following four questions: In each of the following questions there are sentences that form a paragraph. Identify the sentence(s) or part(s) of sentence(s) that is/are correct in terms of grammar and usage (including spelling, punctuation and logical consistency). Then, choose the most appropriate option.

51. **A. In 1849, a poor Bavarian imigrant named Levi Strauss**  
**B. landed in San Francisco, California,**  
**C. at the invitation of his brother-in-law David Stern**  
**D. owner of dry goods business.**  
**E. This dry goods business would later became known as Levi Strauss & Company.**

**[CAT 2008]**

- A** B only
- B** B and C
- C** A and B
- D** A only
- E** A, B and D

**Answer: A**

**Explanation:**

Statement A is incorrect because of the wrong spelling 'imigrant'. The correct spelling is 'immigrant'.

Statement B is correct.

Statement C is incorrect because of the absence of commas after brother-in-law and David Stern.

Statement D is incorrect because of the absence of the article 'a' before 'dry goods business'.

The error in statement E is 'would later became'. It should be 'would later become'.

52. **A. In response to the allegations and condemnation pouring in,**  
**B. Nike implemented comprehensive changes in their labour policy.**  
**C. Perhaps sensing the rising tide of global labour concerns,**  
**D. from the public would become a prominent media issue,**  
**E. Nike sought to be a industry leader in employee relations.**

[CAT 2008]

- A** D and E  
**B** D only  
**C** A and E  
**D** A and D  
**E** B, C and E

**Answer: D**

**Explanation:**

Statement A is correct. Statement B is wrong because of the use of the word 'their'. It should've been ' **its**'. Statement C is wrong because of the presence of a comma after the word concerns. There is no need for a comma there. Also, Sentence C should be 'Perhaps sensing **that** the rising tide...' as without 'that' the sentence structure is incomplete. Statement D is correct. Statement E is wrong because of the wrong article before the word 'industry'. It should've been '**an** industry leader'.

53. **A. Charges and countercharges mean nothing**  
**B. to the few million who have lost their home.**  
**C. The nightmare is far from over, for the government**  
**D. is still unable to reach hundreds who are marooned.**  
**E. The death count have just begun.**

[CAT 2008]

- A** A only  
**B** C only  
**C** A and C  
**D** A, C and D  
**E** D only

**Answer: D**

**Explanation:**

Statements A,C and D are correct. Statement B should be 'who have lost their homes'. Statement E should be 'The death count has just begun'.

So, the answer is option d).

54. **A. I did not know what to make of you.**

**B. Because you had lived in India, I associate you more with my parents than with me.**

**C. And yet you were unlike my cousins in Calcutta, who seem so innocent and obedient when I visited them.**

**D. You were not curious about me in the least.**

**E. Although you did make effort to meet me.**

**[CAT 2008]**

**A** A only

**B** A and B

**C** A and E

**D** D only

**E** A and D

**Answer: E**

**Explanation:**

Statements A and D have no errors. Statement B is wrong because it is in present tense whereas the passage as a whole is in the past tense. Similarly, C is wrong because of the use of present tense in the word 'seem'. The correct usage in this context is 'seemed'. In statement E, the article 'an' should precede the word 'effort'.

**Instructions [55 - 58 ]**

Directions for the following four questions: In each question, there are five sentences. Each sentence has a pair of words that are italicized and highlighted. From the italicized and highlighted words, select the most appropriate words (A or B) to form correct sentences. The sentences are followed by options that indicate the words, which may be selected to correctly complete the set of sentences. From the options given, choose the most appropriate one.

55. Anita wore a beautiful *broach* (A)/*brooch* (B) on the lapel of her jacket.

If you want to complain about the amenities in your neighbourhood, please meet your *councillor* (A)/*counsellor* (B).

I would like your *advice* (A)/*advise* (B) on which job I should choose.

The last scene provided a *climactic* (A)/*climatic* (B) ending to the film.

Jeans that *flair* (A)/*flare* (B) at the bottom are in fashion these days.

**A** BABAA

**B** BABAB

**C** BAAAB

**D** ABABA

**E** BAABA

**Answer: C**

**Explanation:**

Brooch is a beautiful pin worn by women . Hence should be used in 1st sentence.

Councillor is a member of council.Hence councillor should be used instead of counsellor who is a person who gives advice about

problems.

Advice is a noun. It means a suggestion for a beneficial course of action. Advise is a verb. It means to give advice. So Advice should be used here.

Climactic is adjective form of climax. Hence is proper for usage in 4th sentence.

Flare is a shape that spreads outwards. Flair means natural talent . hence , flare is correct in given context.

56. The cake had lots of *currents(A)/currants(B)* and nuts in it.

If you engage in such *exceptional(A)/exceptionable(B)* behaviour, I will be forced to punish you.

He has the same capacity as an adult to *consent(A)/assent(B)* to surgical treatment.

The minister is *obliged (A)/compelled(B)* to report regularly to a parliamentary board.

His analysis of the situation is far too *sanguine(A)/genuine(B)*.

**A** BBABA

**B** BBAAA

**C** BBBBA

**D** ABBAB

**E** BABAB

**Answer: B**

**Explanation:**

Currants are any of several tart red or black berries. Hence should be used in in given context.

Correct usage of second sentence is 'If you engage in such exceptionable behaviour, I will be forced to punish you.'

Correct usage of third sentence is 'He has the same capacity as an adult to consent to surgical treatment.'

Being obliged means being duty bound. hence should be used in the sentence.

Sanguine means confidently optimistic and cheerful. Hence perfectly fits with the last sentence.

57. She managed to bite back the *ironic(A)/caustic(B)* retort on the tip of her tongue.

He gave an impassioned and *valid(A)/cogent(B)* plea for judicial reform.

I am not *adverse(A)/averse(B)* to helping out.

The *coupe(A)/coup(B)* broke away as the train climbed the hill.

They heard the bells *peeling(A)/pealing(B)* far and wide.

**A** BBABA

**B** BBBAB

**C** BAABB

**D** ABBA

**E** BBBBA

**Answer: B**

**Explanation:**

'Caustic' means 'sarcastic in a scathing and bitter way'. This is a more suitable word in the first sentence.

'Cogent' means 'clear, logical and convincing', which is the better option in the second sentence.

'Adverse' means 'unfavourable' whereas 'averse' means 'having a strong dislike'. So, 'averse' is more suitable in the blank.

'Coupe' means 'a closed-door body' whereas 'coup' means 'a violent seizure of power'. So, 'coupe' is the correct answer in the fourth sentence.

'Peeling' means 'ring loudly'. So, the correct answer is BBBAB - option b).

58. We were not successful in *defusing(A)/diffusing(B)* the Guru's ideas.  
The students *baited(A)/bated(B)* the instructor with irrelevant questions.  
The *hoard(A)/horde(B)* rushed into the campus.  
The prisoner's *interment(A)/internment(B)* came to an end with his early release.  
The hockey team could not deal with his *unsociable(A)/unsocial(B)* tendencies.

A BABBA

B BBABB

C BABAA

D ABBAB

E AABBA

**Answer:** A

**Explanation:**

'Diffuse' means 'spread over a wide area'. So, 'diffusing' is the correct word in sentence 1.

'To bait' is 'to deliberately annoy'. So, 'baited' is the correct word in sentence 2.

'Horde' means 'a large group of people'. So, 'horde' should be used in sentence 3.

The words to be used in sentences 4 and 5 are 'internment', which means 'act of confining' and 'unsociable'.

Option a) is the correct answer.

**Instructions [59 - 62]**

Directions for the following four questions: In each of the questions, a word has been used in sentences in five different ways. Choose the option corresponding to the sentence in which the usage of the word is incorrect or inappropriate.

59. Choose the option in which the usage of the word is incorrect or inappropriate.

**Run**

**[CAT 2008]**

- A I must run fast to catch up with him.  
B Our team scored a goal against the run of play.  
C You can't run over him like that.  
D The newly released book is enjoying a popular run.  
E This film is a run-of-the-mill production.

**Answer:** C

**Explanation:**

The phrase 'run over him' is wrongly used in sentence C. It means running over him physically. A person can't run over another person.

Hence, option C is the correct answer.



60. Choose the option in which the usage of the word is incorrect or inappropriate.

Round

[CAT 2008]

- A The police fired a round of tear gas shells.
- B The shop is located round the corner.
- C We took a ride on the merry-go-round.
- D The doctor is on a hospital round.
- E I shall proceed further only after you come round to admitting it.

**Answer:** E

**Explanation:**

The correct phrase in option E is "come around to admitting it".

The word round is used correctly in all the other options.

Hence, option E is the answer

61. Choose the option in which the usage of the word is incorrect or inappropriate.

Buckle

[CAT 2008]

- A After the long hike our knees were beginning to buckle.
- B The horse suddenly broke into a buckle.
- C The accused did not buckle under police interrogation.
- D Sometimes, an earthquake can make a bridge buckle.
- E People should learn to buckle up as soon as they get into a car.

**Answer:** B

**Explanation:**

In sentence B, 'broke into a buckle' is idiomatically incorrect. A better expression is 'broke into a gallop'.

62. Choose the option in which the usage of the word is incorrect or inappropriate.

File

[CAT 2008]

- A You will find the paper in the file under C.
- B I need to file an insurance claim.
- C The cadets were marching in a single file.

- D** File your nails before you apply nail polish.
- E** When the parade was on, a soldier broke the file.

**Answer: E**

**Explanation:**

In sentence E, 'broke the file' is incorrect. The correct idiom is 'break ranks', which means to fall out of line.

**Instructions [63 - 66 ]**

Directions for the following four questions: Each of the following questions has a sentence with two blanks. Given below each question are five pairs of words. Choose the pair that best completes the sentence.

63. The genocides in Bosnia and Rwanda, apart from being mis-described in the most sinister and \_\_\_\_\_ manner as 'ethnic cleansing', were also blamed, in further hand-washing rhetoric, on something dark and interior to \_\_\_\_\_ and perpetrators alike.

- A** innovative; communicator
- B** enchanting; leaders
- C** disingenuous; victims
- D** exigent; exploiters
- E** tragic; sufferers

**Answer: C**

**Explanation:**

The first blank should have a word with negative effect. 'disingenuous' is the most appropriate word which means - giving false appearance of frankness; not straightforward. Also 'victims' matches in 2nd blank with 'victims and perpetrators' sounding perfect. Perpetrators here means - a culprit; usually with negative connotation.

64. As navigators, calendar makers, and other \_\_\_\_\_ of the night sky accumulated evidence to the contrary, ancient astronomers were forced to \_\_\_\_\_ that certain bodies might move in circles about points, which in turn moved in circles about the earth.

- A** scrutinizers; believe
- B** observers; agree
- C** scrutinizers; suggest
- D** observers; concede
- E** students; conclude

**Answer: D**

**Explanation:**

Calendar makers and someone watching night sky are often referred to as 'observers' and not scrutinizers. Scrutinizer means

someone observing with very great care, which is not needed here. Out of 'concede' and 'agree', concede matches perfectly with the context of statement as concede means - admit (to a wrongdoing). Hence, option D.

65. Every human being, after the first few days of his life, is a product of two factors: on the one hand, there is his \_\_\_\_\_ endowment; and on the other hand, there is the effect of environment, including \_\_\_\_\_

- A constitutional; weather
- B congenital; education
- C personal; climate
- D economic; learning
- E genetic; pedagogy

**Answer: B**

**Explanation:**

In the first blank word used should be between 'congenital' and 'genetic'. Here congenital means - from birth; genetic means - something that comes from parents or ancestors (hereditary). But for the second blank 'education' sounds proper instead of 'pedagogy'. As 'pedagogy' means function of teacher or science of teaching. Hence, option B.

66. Exhaustion of natural resources, destruction of individual initiative by governments, control over men's minds by central \_\_\_\_\_ of education and propaganda are some of the major evils which appear to be on the increase as a result of the impact of science upon minds suited by \_\_\_\_\_ to an earlier kind of world.

- A tenets; fixation
- B aspects; inhibitions
- C institutions; inhibitions
- D organs; tradition
- E departments; repulsion

**Answer: A**

**Explanation:**

The first blank should have a word signifying something that denotes power or hold over people. The author is trying to say that education and propaganda are being used to control people's minds. Tenets, institutions, organs and departments can influence or control something and thus fit in the first blank. Aspects, which means features, does not convey something that exercises power or influence over people. Thus, we can eliminate option B.

The second blank should contain a word that indicates adherence. "Suited by" should be followed by a word that indicates something that people want to continue doing. Thus, we can eliminate repulsion and inhibitions. The word "tradition" does not fit grammatically. If the author has to say that people want to adhere to tradition, then the missing blank should have "a traditional mindset". The word tradition by itself does not fit the blank.

Hence, option A.

**Instructions [67 - 70]**

Directions for the following four questions: Each of the following questions has a paragraph from which the last sentence has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

67. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

Most people at their first consultation take a furtive look at the surgeon's hands in the hope of reassurance. Prospective patients look for delicacy, sensitivity, steadiness, perhaps unblemished pallor. On this basis, Henry Perowne loses a number of cases each year. Generally, he knows it's about to happen before the patient does: the downward glance repeated, the prepared questions beginning to falter, the overemphatic thanks during the retreat to the door.

[CAT 2008]

- A Other people do not communicate due to their poor observation.
- B Other patients don't like what they see but are ignorant of their right to go elsewhere.
- C But Perowne himself is not concerned.'
- D But others will take their place, he thought.
- E These hands are steady enough, but they are large

**Answer: B**

**Explanation:**

The paragraph talks about Henry Perowne losing some patients because of his hands. From the paragraph, we can understand that there definitely is a problem with his hands. Logically, the next statement should be about the patients whom Henry Perowne doesn't lose. Sentence B talks about this aspect, that though the other patients also realise that there is a problem with his hands, they are ignorant or stuck up about their options and hence go nowhere else. Hence, b) is the apt concluding statement.

68. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

Trade protectionism, disguised as concern for the climate, is raising its head. Citing competitiveness concerns, powerful industrialized countries are holding out threats of a levy on imports of energy-intensive products from developing countries that refuse to accept their demands. The actual source of protectionist sentiment in the OECD countries is, of course, their current lacklustre economic performance, combined with the challenges posed by the rapid economic rise of China and India - in that order.

[CAT 2008]

- A Climate change is evoked to bring trade protectionism through the back door.
- B OECD countries are taking refuge in climate change issues to erect trade barriers against these two countries.
- C Climate change concerns have come as a convenient stick to beat the rising trade power of China and India.
- D Defenders of the global economic status quo are posing as climate change champions.
- E Today's climate change champions are the perpetrators of global economic inequity.

**Answer: D**

**Explanation:**

The paragraph talks about trade protectionists posing as environmentalists to cover up their lacklustre economic performance. Statement A just restates the first sentence of the paragraph and hence does not move the paragraph forward. Statements B and C talk specifically about India and China, and not about the overall theme of the para. Hence, they cannot be proper concluding statements. Statement E is too sweeping in its conclusion. The apt concluding statement is D.

69. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

Mattancherry is Indian Jewry's most famous settlement. Its pretty streets of pastel coloured houses, connected by first-floor passages and home to the last twelve saree-and-sarong-wearing, whiteskinned Indian Jews are visited by thousands of tourists each year. Its synagogue, built in 1568, with a floor of blue-and-white Chinese tiles, a carpet given by Haile Selassie and the frosty Yaheh selling tickets at the door, stands as an image of religious tolerance.

[CAT 2008]

- A Mattancherry represents, therefore, the perfect picture of peaceful co-existence.
- B India's Jews have almost never suffered discrimination, except for European colonizers and each other.
- C Jews in India were always tolerant.
- D Religious tolerance has always been only a facade and nothing more.
- E The pretty pastel streets are, thus, very popular with the tourists.

**Answer: B**

**Explanation:**

Statement A speaks of peaceful co-existence. However, there is no mention in the passage of who the Jews co-existed with. Also, peaceful co-existence implies that the Jews were tolerant as well, whereas the main focus of the passage is on how India has been tolerant of the Jews.

Statement B is accurate since it speaks of how Jews in India have never faced discrimination. From the term 'religious tolerance' we can see that people belonging to a particular religion and not facing discrimination would further the point of the passage.

Statement D is out of context.

Statement C is incorrect because it shifts the focus of the paragraph from the India being tolerant of Jews to Jews being tolerant of India.

Statement E is not in line with the overall theme and direction in which the para has been shaping up. It disregards the point on religious tolerance.

70. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

Given the cultural and intellectual interconnections, the question of what is 'Western' and what is 'Eastern' (or 'Indian') is often hard to decide, and the issue can be discussed only in more dialectical terms. The diagnosis of a thought as 'purely Western' or 'purely Indian' can be very illusory.

[CAT 2008]

- A Thoughts are not the kind of things that can be easily categorized.
- B Though 'occidentalism' and 'orientalism' as dichotomous concepts have found many adherents.
- C 'East is East and West is West' has been a discredited notion for a long time now.
- D Compartmentalizing thoughts is often desirable.
- E The origin of a thought is not the kind of thing to which 'purity' happens easily.

**Answer: E**

**Explanation:**

B is not a proper concluding statement.

D is contrary to the theme of the para.

Among A, C and E, E is the best concluding statement since it is very specific and talks about the 'origin of thought' and 'purity', which is keeping in line with the flow of the paragraph.

Hence, option E is the correct answer.

### Instructions [71 - 75]

When I was little, children were bought two kinds of ice cream, sold from those white wagons with canopies made of silvery metal: either the two-cent cone or the four-cent ice-cream pie. The two-cent cone was very small, in fact, it could fit comfortably into a child's hand, and it was made by taking the ice cream from its container with a special scoop and piling it on the cone. Granny always suggested I eat only a part of the cone, then throw away the pointed end, because it had been touched by the vendor's hand (though that was the best part, nice and crunchy, and it was regularly eaten in secret, after a pretence of discarding it).

The four-cent pie was made by a special little machine, also silvery, which pressed two disks of sweet biscuit against a cylindrical section of ice cream. First, you had to thrust your tongue into the gap between the biscuits until it touched the central nucleus of ice cream; then, gradually, you ate the whole thing, the biscuit surfaces softening as they became soaked in creamy nectar. Granny had no advice to give here: in theory, the pies had been touched only by the machine; in practice, the vendor had held them in his hand while giving them to us, but it was impossible to isolate the contaminated area.

I was fascinated, however, by some of my peers, whose parents bought them not a four-cent pie but two two-cent cones. These privileged children advanced proudly with one cone in their right hand and one in their left; and expertly moving their head from side to side, they licked first one, then the other. This liturgy seemed to me so sumptuously enviable, that many times I asked to be allowed to celebrate it. In vain. My elders were inflexible: a four-cent ice, yes; but two two-cent ones, absolutely no.

As anyone can see, neither mathematics nor economy nor dietetics justified this refusal. Nor did hygiene, assuming that in due course the tips of both cones were discarded. The pathetic, and obviously mendacious, justification was that a boy concerned with turning his eyes from one cone to the other was more inclined to stumble over stones, steps, or cracks in the pavement. I dimly sensed that there was another secret justification, cruelly pedagogical, but I was unable to grasp it.

Today, citizen and victim of a consumer society, a civilization of excess and waste (which the society of the thirties was not), I realize that those dear and now departed elders were right. Two two-cent cones instead of one at four cents did not signify squandering, economically speaking, but symbolically they surely did. It was for this precise reason, that I yearned for them: because two ice creams suggested excess. And this was precisely why they were denied to me: because they looked indecent, an insult to poverty, a display of fictitious privilege, a boast of wealth. Only spoiled children ate two cones at once, those children who in fairy tales were rightly punished, as Pinocchio was when he rejected the skin and the stalk. And parents who encouraged this weakness, appropriate to little parvenus, were bringing up their children in the foolish theatre of "I'd like to but I can't." They were preparing them to turn up at tourist-class check-in with a fake Gucci bag bought from a street peddler on the beach at Rimini.

Nowadays the moralist risks seeming at odds with morality, in a world where the consumer civilization now wants even adults to be spoiled, and promises them always something more, from the wristwatch in the box of detergent to the bonus bangle sheathed, with the magazine it accompanies, in a plastic envelope. Like the parents of those ambidextrous gluttons I so envied, the consumer civilization pretends to give more, but actually gives, for four cents, what is worth four cents. You will throw away the old transistor radio to purchase the new one, that boasts an alarm clock as well, but some inexplicable defect in the mechanism will guarantee that the radio lasts only a year. The new cheap car will have leather seats, double side mirrors adjustable from inside, and a panelled dashboard, but it will not last nearly so long as the glorious old Fiat 500, which, even when it broke down, could be started again with a kick. The morality of the old days made Spartans of us all, while today's morality wants all of us to be sybarites.

71. Which of the following cannot be inferred from the passage?

- A Today's society is more extravagant than the society of the 1930s.
- B The act of eating two ice cream cones is akin to a ceremonial process.
- C Elders rightly suggested that a boy turning eyes from one cone to the other was more likely to fall.
- D Despite seeming to promise more, the consumer civilization gives away exactly what the thing is worth.
- E The consumer civilization attempts to spoil children and adults alike.

**Answer: C**

**Explanation:**

The reason elders gave to the children to dissuade them from buying two ice-creams was that a boy turning eyes from one cone to the other, one in each hand was more likely to fall. But, as rightly guessed by the author, there is a 'deeper' reason for parents' refusal to let children buy two ice-creams. Therefore, the claim that elders 'rightly suggested that a boy turning eyes from one cone to the other was more likely to fall' is incorrect. Option c) is the correct answer.

72. In the passage, the phrase "little parvenus" refers to

- A** naughty midgets.
- B** old hags.
- C** arrogant people.
- D** young upstarts.
- E** foolish kids.

**Answer:** D

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**Explanation:**

The word 'parvenus' refers to 'a person of humble origin who has gained wealth'. In other words, the phrase 'little parvenus' means 'young upstarts'. Option d) is the correct answer.

73. The author pined for two two-cent cones instead of one four-cent pie because

- A** it made dietetic sense.
- B** it suggested intemperance.
- C** it was more fun.
- D** it had a visual appeal.
- E** he was a glutton.

**Answer:** B

**Explanation:**

Consider the following sentence from the passage: "This liturgy seemed to me so...to celebrate it". From this sentence, we can understand that the main reason why the author wanted two two-cent cones instead of one four-cent cone was because it suggested intemperance. Option b) is the correct answer.

74. What does the author mean by "nowadays the moralist risks seeming at odds with morality"?

- A** The moralists of yesterday have become immoral today.
- B** The concept of morality has changed over the years.
- C** Consumerism is amoral.

- D** The risks associated with immorality have gone up.
- E** The purist's view of morality is fast becoming popular

**Answer: B**

**Explanation:**

Refer to the lines of the para "Nowadays the moralist risks seeming at odds with morality, in a world where the consumer civilization now wants even adults to be spoiled, and promises them always something more, from the wristwatch in the box of detergent to the bonus bangle sheathed, with the magazine it accompanies, in a plastic envelope."

This explains option B.

75. According to the author, the justification for refusal to let him eat two cones was plausibly

- A** didactic.
- B** dietetic.
- C** dialectic.
- D** diatonic.
- E** diastolic

**Answer: A**

**Explanation:**

Refer to the para 4 "The pathetic, and obviously mendacious, justification was that a boy concerned with turning his eyes from one cone to the other was more inclined to stumble over stones, steps, or cracks in the pavement. I dimly sensed that there was another secret justification, cruelly pedagogical, but I was unable to grasp it."

According to the author the justification was pedagogical, didactic comes closest to the meaning.

**Instructions [76 - 80]**

Language is not a cultural artifact that we learn the way we learn to tell time or how the federal government works. Instead, it is a distinct piece of the biological makeup of our brains. Language is a complex, specialized skill, which develops in the child spontaneously, without conscious effort or formal instruction, is deployed without awareness of its underlying logic, is qualitatively the same in every individual, and is distinct from more general abilities to process information or behave intelligently. For these reasons some cognitive scientists have described language as a psychological faculty, a mental organ, a neural system, and a computational module. But I prefer the admittedly quaint term "instinct". It conveys the idea that people know how to talk in more or less the sense that spiders know how to spin webs. Web-spinning was not invented by some unsung spider genius and does not depend on having had the right education or on having an aptitude for architecture or the construction trades. Rather, spiders spin spider webs because they have spider brains, which give them the urge to spin and the competence to succeed. Although there are differences between webs and words, I will encourage you to see language in this way, for it helps to make sense of the phenomena we will explore.

Thinking of language as an instinct inverts the popular wisdom, especially as it has been passed down in the canon of the humanities and social sciences. Language is no more a cultural invention than is upright posture. It is not a manifestation of a general capacity to use symbols: a three-year-old, we shall see, is a grammatical genius, but is quite incompetent at the visual arts, religious iconography, traffic signs, and the other staples of the semiotics curriculum. Though language is a magnificent ability unique to Homo sapiens among living species, it does not call for sequestering the study of humans from the domain of biology, for a magnificent ability unique to a particular living species is far from unique in the animal kingdom. Some kinds of bats home in on flying insects using Doppler sonar. Some kinds of migratory birds navigate thousands of miles by calibrating the positions of the constellations against the time of day and year. In nature's talent show, we are simply a species of primate with our own act, a knack for communicating information about who did what to whom by modulating the sounds we make when we exhale.



Once you begin to look at language not as the ineffable essence of human uniqueness but as a biological adaptation to communicate information, it is no longer as tempting to see language as an insidious shaper of thought, and, we shall see, it is not. Moreover, seeing language as one of nature's engineering marvels — an organ with "that perfection of structure and co-adaptation which justly excites our admiration," in Darwin's words - gives us a new respect for your ordinary Joe and the much-maligned English language (or any language). The complexity of language, from the scientist's point of view, is part of our biological birthright; it is not something that parents teach their children or something that must be elaborated in school — as Oscar Wilde said, "Education is an admirable thing, but it is well to remember from time to time that nothing that is worth knowing can be taught." A preschooler's tacit knowledge of grammar is more sophisticated than the thickest style manual or the most state-of-the-art computer language system, and the same applies to all healthy human beings, even the notorious syntaxfracturing professional athlete and the, you know, like, inarticulate teenage skateboarder. Finally, since language is the product of a wellengineered biological instinct, we shall see that it is not the nutty barrel of monkeys that entertainercolumnists make it out to be.

76. According to the passage, which of the following does not stem from popular wisdom on language?

- A Language is a cultural artifact.
- B Language is a cultural invention.
- C Language is learnt as we grow.
- D Language is unique to Homo sapiens.
- E Language is a psychological faculty.

**Answer: E**

**Explanation:**

Refer to the lines "Language is a complex, specialized skill, which develops in the child spontaneously, without conscious effort or formal instruction, is deployed without awareness of its underlying logic, is qualitatively the same in every individual, and is distinct from more general abilities to process information or behave intelligently. For these reasons some cognitive scientists have described language as a psychological faculty, a mental organ, a neural system, and a computational module"

The author says that popular wisdom considers Language to be a cultural artifact or invention or something that is learnt in school or from your parents. However, this is not the case. Throughout the passage, the author makes the case for it being a "psychological faculty" or instinct. Hence, option E does not stem from popular wisdom like the other options. It instead is suggested by cognitive scientists (and the author) as a view contrary to popular wisdom.

Hence option E is correct

77. Which of the following can be used to replace the "spiders know how to spin webs" analogy as used by the author?

- A A kitten learning to jump over a wall
- B Bees collecting nectar
- C A donkey carrying a load
- D A horse running a Derby
- E A pet clog protecting its owner's property

**Answer: B**

**Explanation:**

This analogy of spider suggests the inherent activities.

Only option B comes close. Rest of the qualities mentioned in other options are developed over a period of time.

78. According to the passage, which of the following is unique to human beings?

- A** Ability to use symbols while communicating with one another.
- B** Ability to communicate with each other through voice modulation.
- C** Ability to communicate information to other members of the species.
- D** Ability to use sound as means of communication.
- E** All of the above.

**Answer: B**

**Explanation:**

Refer to the last line of the para 2 "Innate's talent show, we are simply a species of primate with our own act, a knack for communicating information about who did what to whom by modulating the sounds we make when we exhale."

79. **According to the passage, complexity of language cannot be taught by parents or at school to children because**

- A** children instinctively know language.
- B** children learn the language on their own.
- C** language is not amenable to teaching.
- D** children know language better than their teachers or parents.
- E** children are born with the knowledge of semiotics.

**Answer: A**

**Explanation:**

Refer to the lines of the last para "The complexity of language, from the scientist's point of view, is part of our biological birthright; it is not something that parents teach their children or something that must be elaborated in school — as Oscar Wilde said, "Education is an admirable thing, but it is well to remember from time to time that nothing that is worth knowing can be taught."

80. **Which of the following best summarizes the passage?**

- A** Language is unique to Homo sapiens.
- B** Language is neither learnt nor taught.
- C** Language is not a cultural invention or artifact as it is made out.
- D** Language is instinctive ability of human beings.
- E** Language is use of symbols unique to human beings.

**Answer: D**

**Explanation:**

Throughout the para, the author talks about the language being the instinctive ability. Moreover refer to the line of 1st para "But I prefer the admittedly quaint term "instinct". This shows the correct option to be D

## Instructions [81 - 85]

To summarize the Classic Maya collapse, we can tentatively identify five strands. I acknowledge, however, that Maya archaeologists still disagree vigorously among themselves in part, because the different strands evidently varied in importance among different parts of the Maya realm; because detailed archaeological studies are available for only some Maya sites; and because it remains puzzling why most of the Maya heartland remained nearly empty of population and failed to recover after the collapse and after re-growth of forests.

With those caveats, it appears to me that one strand consisted of population growth outstripping available resources: a dilemma similar to the one foreseen by Thomas Malthus in 1798 and being played out today in Rwanda, Haiti and elsewhere. As the archaeologist David Webster succinctly puts it, "Too many farmers grew too many crops on too much of landscape." Compounding that mismatch between population and resources was the second strand: the effects of deforestation and hillside erosion, which caused a decrease in the amount of useable farmland at a time when more rather than less farmland was needed, and possibly exacerbated by an anthropogenic drought resulting from deforestation, by soil nutrient depletion and other soil problems, and by the struggle to prevent bracken ferns from overrunning the fields.

The third strand consisted of increased fighting, as more and more people fought over fewer resources. Maya warfare, already endemic, peaked just before the collapse. That is not surprising when one reflects that at least five million people, perhaps many more, were crammed into an area smaller than the US state of Colorado (104,000 square miles). That warfare would have decreased further the amount of land available for agriculture, by creating no-man's lands between principalities where it was now unsafe to farm. Bringing matters to a head was the strand of climate change. The drought at the time of the Classic collapse was not the first drought that the Maya had lived through, but it was the most severe. At the time of previous droughts, there were still uninhabited parts of the Maya landscape, and people at a site affected by drought could save themselves by moving to another site. However, by the time of the Classic collapse the landscape was now full, there was no useful unoccupied land in the vicinity on which to begin anew, and the whole population could not be accommodated in the few areas that continued to have reliable water supplies.

As our fifth strand, we have to wonder why the kings and nobles failed to recognize and solve these seemingly obvious problems undermining their society. Their attention was evidently focused on their short-term concerns of enriching themselves, waging wars, erecting monuments, competing with each other, and extracting enough food from the peasants to support all those activities. Like most leaders throughout human history, the Maya kings and nobles did not heed long-term problems, insofar as they perceived them.

Finally, while we still have some other past societies to consider before we switch our attention to the modern world, we must already be struck by some parallels between the Maya and the past societies. As on Mangareva, the Maya environmental and population problems led to increasing warfare and civil strife. Similarly, on Easter Island and at Chaco Canyon, the Maya peak population numbers were followed swiftly by political and social collapse. Paralleling the eventual extension of agriculture from Easter Island's coastal lowlands to its uplands, and from the Mimbres floodplain to the hills, Copan's inhabitants also expanded from the floodplain to the more fragile hill slopes, leaving them with a larger population to feed when the agricultural boom in the hills went bust. Like Easter Island chiefs erecting ever larger statues, eventually crowned by pukao, and like Anasazi elite treating themselves to necklaces of 2,000 turquoise beads, Maya kings sought to outdo each other with more and more impressive temples, covered with thicker and thicker plaster — reminiscent in turn of the extravagant conspicuous consumption by modern American CEOs. The passivity of Easter chiefs and Maya kings in the face of the real big threats to their societies completes our list of disquieting parallels.

81. According to the passage, which of the following best represents the factor that has been cited by the author in the context of Rwanda and Haiti?

- A Various ethnic groups competing for land and other resources
- B Various ethnic groups competing for limited land resources
- C Various ethnic groups fighting with each other
- D Various ethnic groups competing for political power
- E Various ethnic groups fighting for their identity

**Answer: A**

### Explanation:

Refer to the 2nd para "With those caveats, it appears to me that one strand consisted of population growth outstripping available resources: a dilemma similar to the one foreseen by Thomas Malthus in 1798 and being played out today in Rwanda, Haiti and

elsewhere. As the archaeologist David Webster succinctly puts it, "Too many farmers grew too many crops on too much of landscape." Hence option 1.

82. **By an anthropogenic drought, the author means**

- A** a drought caused by lack of rains.
- B** a drought caused due to deforestation.
- C** a drought caused by failure to prevent bracken ferns from overrunning the fields.
- D** a drought caused by actions of human beings.
- E** a drought caused by climate changes.

**Answer: D**

**Explanation:**

Anthropogenic means "caused by human factor"

So anthropogenic drought means drought caused by human beings.

83. **According to the passage, the drought at the time of Maya collapse had a different impact compared to the droughts earlier because**

- A** the Maya kings continued to be extravagant when common people were suffering.
- B** it happened at the time of collapse of leadership among Mayas.
- C** it happened when the Maya population had occupied all available land suited for agriculture.
- D** it was followed by internecine warfare among Mayans.
- E** irreversible environmental degradation led to this drought.

**Answer: C**

**Explanation:**

Refer to these lines from the para "At the time of previous droughts, there were still uninhabited parts of the Maya landscape, and people at a site affected by drought could save themselves by moving to another site. However, by the time of the Classic collapse the landscape was now full, there was no useful unoccupied land in the vicinity on which to begin anew, and the whole population could not be accommodated in the few areas that continued to have reliable water supplies."

It is clearly written in these line that the landscape was now full, hence option C

84. **According to the author, why is it difficult to explain the reasons for Maya collapse?**

- A** Copan inhabitants destroyed all records of that period.
- B** The constant deforestation and hillside erosion have wiped out all traces of the Maya kingdom.
- C** Archaeological sites of Mayas do not provide any consistent evidence.
- D** It has not been possible to ascertain which of the factors best explains why the Maya civilization collapsed.
- E** At least five million people were crammed into a small area.

**Answer: D**

**Explanation:**

Refer the 1st para "To summarize the Classic Maya collapse, we can tentatively identify five strands. I acknowledge, however, that Maya archaeologists still disagree vigorously among themselves in part, because the different strands evidently varied in importance among different parts of the Maya realm; because detailed archaeological studies are available for only some Maya sites; and because it remains puzzling why most of the Maya heartland remained nearly empty of population and failed to recover after the collapse and after re-growth of forests."

This makes option D correct.

**85. Which factor has not been cited as one of the factors causing the collapse of Maya society?**

- A** Environmental degradation due to excess population
- B** Social collapse due to excess population
- C** Increased warfare among Maya people
- D** Climate change
- E** Obsession of Maya population with their own short-term concerns

**Answer: E**

**Explanation:**

Refer to the given lines "As our fifth strand, we have to wonder why the kings and nobles failed to recognize and solve these seemingly obvious problems undermining their society. Their attention was evidently focused on their short-term concerns of enriching themselves, waging wars, erecting monuments, competing with each other, and extracting enough food from the peasants to support all those activities."

The Maya population was not obsessed with the short term concerns. But its rulers were obsessed with the short term concerns.

**Instructions [86 - 90]**

A remarkable aspect of art of the present century is the range of concepts and ideologies which it embodies. It is almost tempting to see a pattern emerging within the art field - or alternatively imposed upon it a posteriori - similar to that which exists under the umbrella of science where the general term covers a whole range of separate, though interconnecting, activities. Any parallelism is however - in this instance at least - misleading. A scientific discipline develops systematically once its bare tenets have been established, named and categorized as conventions. Many of the concepts of modern art, by contrast, have resulted from the almost accidental meetings of groups of talented individuals at certain times and certain places. The ideas generated by these chance meetings had twofold consequences. Firstly, a corpus of work would be produced which, in great part, remains as a concrete record of the events. Secondly, the ideas would themselves be disseminated through many different channels of communication - seeds that often bore fruit in contexts far removed from their generation. Not all movements were exclusively concerned with innovation. Surrealism, for instance, claimed to embody a kind of insight which can be present in the art of any period. This claim has been generally accepted so that a sixteenth century painting by Spranger or a mysterious photograph by Atget can legitimately be discussed in surrealist terms. Briefly, then, the concepts of modern art are of many different (often fundamentally different) kinds and resulted from the exposures of painters, sculptors and thinkers to the more complex phenomena of the twentieth century, including our ever increasing knowledge of the thought and products of earlier centuries. Different groups of artists would collaborate in trying to make sense of a rapidly changing world of visual and spiritual experience. We should hardly be surprised if no one group succeeded completely, but achievements, though relative, have been considerable. Landmarks have been established - concrete statements of position which give a pattern to a situation which could easily have degenerated into total chaos. Beyond this, new language tools have been created for those who follow - semantic systems which can provide a springboard for further explorations.

The codifying of art is often criticized. Certainly one can understand that artists are wary of being pigeonholed since they are apt to think of themselves as individuals - sometimes with good reason. The notion of self-expression, however, no longer carries quite the weight it once did; objectivity has its defenders. There is good reason to accept the ideas codified by artists and critics, over the past

sixty years or so, as having attained the status of independent existence - an independence which is not without its own value. The time factor is important here. As an art movement slips into temporal perspective, it ceases to be a living organism - becoming, rather, a fossil. This is not to say that it becomes useless or uninteresting. Just as a scientist can reconstruct the life of a prehistoric environment from the messages codified into the structure of a fossil, so can an artist decipher whole webs of intellectual and creative possibility from the recorded structure of a 'dead' art movement. The artist can match the creative patterns crystallized into this structure against the potentials and possibilities of his own time. As T.S. Eliot observed, no one starts anything from scratch; however consciously you may try to live in the present, you are still involved with a nexus of behaviour patterns bequeathed from the past. The original and creative person is not someone who ignores these patterns, but someone who is able to translate and develop them so that they conform more exactly to his - and our - present needs.

86. **Many of the concepts of modern art have been the product of**

- A** ideas generated from planned deliberations between artists, painters and thinkers.
- B** the dissemination of ideas through the state and its organizations.
- C** accidental interactions among people blessed with creative muse.
- D** patronage by the rich and powerful that supported art.
- E** systematic investigation, codification and conventions.

**Answer: C**

**Explanation:**

Refer to the lines of the 1st para "Many of the concepts of modern art, by contrast, have resulted from the almost accidental meetings of groups of talented individuals at certain times and certain places. The ideas generated by these chance meetings had twofold consequences."

This clearly illustrates the point 3.

87. **In the passage, the word 'fossil' can be interpreted as**

- A** an art movement that has ceased to remain interesting or useful.
- B** an analogy from the physical world to indicate a historic art movement.
- C** an analogy from the physical world to indicate the barrenness of artistic creations in the past.
- D** an embedded codification of pre-historic life.
- E** an analogy from the physical world to indicate the passing of an era associated with an art movement.

**Answer: E**

**Explanation:**

Refer to these lines "As an art movement slips into temporal perspective, it ceases to be a living organism - becoming, rather, a fossil. This is not to say that it becomes useless or uninteresting. Just as a scientist can reconstruct the life of a prehistoric environment from the messages codified into the structure of a fossil, so can an artist decipher whole webs of intellectual and creative possibility from the recorded structure of a 'dead' art movement."

Through these lines, the author is explaining how codifying past art movements would not amount to demeaning their importance. It would just be a way of studying and better understanding the movement. Thus, by using the example of how scientists study fossils the author wants to make the larger point of how codification would help in better studying past art movements. Hence, the term "fossil" is used to indicate an art movement that is in the past.

Options A and C are opposite to what the author has said in the passage. Hence, we can eliminate them.

The term is not used only for "historic" art movements but any art movement that is in the past. Hence, we can eliminate option B.

Option D misses the comparison that is being made to art. Moreover, a fossil need not only be of pre-historic life. A fossil is any

remnant of something that has died.

Option E correctly captures what the author is trying to denote through the use of the term.

88. In the passage, which of the following similarities between science and art may lead to erroneous conclusions?

- A Both, in general, include a gamut of distinct but interconnecting activities.
- B Both have movements not necessarily concerned with innovation.
- C Both depend on collaborations between talented individuals.
- D Both involve abstract thought and dissemination of ideas.
- E Both reflect complex priorities of the modern world.

**Answer: A**

**Explanation:**

Refer to the line of the 1st para "It is almost tempting to see a pattern emerging within the art field - or alternatively imposed upon it a posteriori - similar to that which exists under the umbrella of science where the general term covers a whole range of separate, though interconnecting, activities."

This implies option A

89. The range of concepts and ideologies embodied in the art of the twentieth century is explained by

- A the existence of movements such as surrealism.
- B landmarks which give a pattern to the art history of the twentieth century.
- C new language tools which can be used for further explorations into new areas.
- D the fast changing world of perceptual and transcendental understanding.
- E the quick exchange of ideas and concepts enabled by efficient technology.

**Answer: D**

**Explanation:**

Refer these line in the 1st para "Briefly, then, the concepts of modern art are of many different (often fundamentally different) kinds and resulted from the exposures of painters, sculptors and thinkers to the more complex phenomena of the twentieth century, including our ever increasing knowledge of the thought and products of earlier centuries. Different groups of artists would collaborate in trying to make sense of a rapidly changing world of visual and spiritual experience. We should hardly be surprised if no one group succeeded completely, but achievements, though relative, have been considerable"

Option D has a mention o the fast changing world.

90. The passage uses an observation by T.S. Eliot to imply that

- A creative processes are not 'original' because they always borrow from the past.
- B we always carry forward the legacy of the past.
- C past behaviours and thought processes recreate themselves in the present and get labeled as 'original' or 'creative'.

**D** 'originality' can only thrive in a 'greenhouse' insulated from the past biases.

**E** 'innovations' and 'original thinking' interpret and develop on past thoughts to suit contemporary needs.

**Answer:** E

**Explanation:**

Refer to the lines, "As T.S. Eliot observed, no one starts anything from scratch; however consciously you may try to live in the present, you are still involved with a nexus of behaviour patterns bequeathed from the past. The original and creative person is not someone who ignores these patterns, but someone who is able to translate and develop them so that they conform more exactly to his - and our - present needs."

It clearly states that innovations are developed on the past thoughts to suit the contemporary needs.