SECTION I

This section contained 25 questions.

1. 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?

(1) $2 \le x \le 6$ (2) $5 \le x \le 8$ (3) $9 \le x \le 12$ (4) $11 \le x \le 14$ (5) $13 \le x \le 18$

Solution:

The initial quantity of rice is x kg.

The first customer buys half the total rice in the store, and another half kg.

$$\therefore \text{Rice purchased by the first customer} = \frac{x}{2} + \frac{1}{2} = \frac{x+1}{2}$$

$$\therefore \text{Remaining rice} = x - \left(\frac{x+1}{2}\right) = \frac{x-1}{2}$$

Now, the second customer buys half of this, and another half kg.

$$\therefore \text{Rice purchased by the second customer} = \frac{x-1}{4} + \frac{1}{2} = \frac{x+1}{4}$$

$$\therefore \text{Remaining rice} = \frac{x-1}{2} - \frac{x+1}{4} = \frac{x-3}{4}$$

Now, the third customer buys half the remaining rice, and another half kg.

$$\therefore \text{Rice purchased by the third customer} = \frac{x-3}{8} + \frac{1}{2} = \frac{x+1}{8}$$

Since after this purchase, there is no rice left in the store, we conclude that:

$$\frac{x-3}{4} - \frac{x+1}{8} = \frac{x-7}{8} = 0$$

$$\therefore x = 7$$

Hence, option 2.

Directions for Questions 2 and 3:

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 $f(x) = 0$.

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

(1) −7 (2) −4 (3) 2 (4) 6 (5) cannot be determined

Solution:

∵ 3 is a root of $f(x) = 0$,

$\therefore 9a + 3b + c = 0$ …(i)

Also,

$f(5) = -3f(2)$

$\therefore 25a + 5b + c = -3(4a + 2b + c)$

$\therefore 37a + 11b + 4c = 0$ …(ii)

On solving equations (i) and (ii), we get,

$a - b = 0$

$\therefore a = b$

We know that sum of the roots of a quadratic equation ($ax^2 + bx + c = 0$) is $-b/a$

∴ 3 + other root = −1

∴ Other root = −4

Hence, option 2.

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

(1) 9 (2) 14 (3) 13 (4) 37 (5) cannot be determined

Solution:

The roots at $f(x) = 0$ are 3 and −4

∴ The equation can be written as $(x - 3)(x + 4) = 0$

Or, $x^2 - x + 12 = 0$

The co-efficient of x^2 is 1 here, but all equations which are multiple of this equation will also have same roots.

For example,

$10(x^2 - x + 12) = 0$ will also have same roots

∴ $(a + b + c)$ cannot be determined uniquely.

Hence, option 5.

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

(1) 78 (2) 19 (3) 20 (4) 77 (5) 22

Solution:

The first sequence can be written as 17, 17 + 4, 17 + 8, … , 417 and second sequence can be written as 16, 16 + 5, 16 + 10, … , 466

The common difference for the first sequence is 4 and that for the second sequence is 5 and both the sequences have 21 as the first common term.

∴ Common terms are 21, 21 + L, 21 + 2L, ...

[Here, L = LCM of 4 and 5 = 20]

∴ Common terms are 21, 21 + 20, 21 + 40, ...

The common terms have a common difference of 20 and first term as 21.

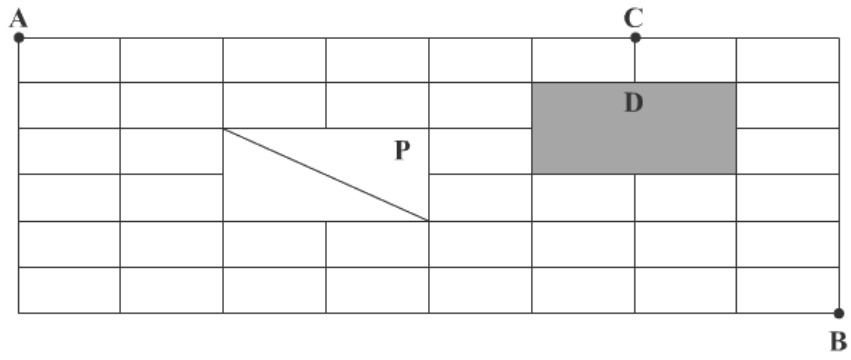
∵ 417 − 21 = 396 and 396/20 = 19.8, ∴ 19 terms are common, other than 21.

∴ The total number of terms which are common to both the sequences = 19 + 1 = 20

Hence, option 3.

Directions for Questions 5 and 6:

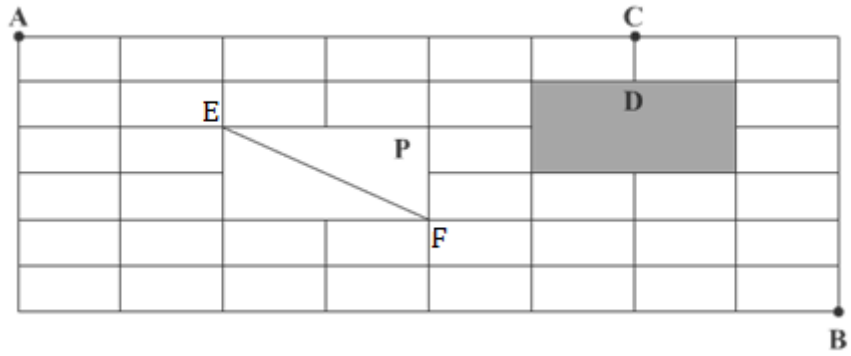
The figure below shows the plan of a town. The streets are at right angles to each other. A rectangular park (P) is situated inside the town with a diagonal road running through it. There is also a prohibited region (D) in the town.



5. 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

(1) 60 (2) 75 (3) 45 (4) 90 (5) 72

Solution:



From point A to E, there are 6 ways to reach with the minimum distance travelled.

Here E to F is the shortest distance because the third side of a triangle is always less than the sum of the other two sides.

From point F to B, there are 15 ways to reach with the minimum distance travelled.

∴ There are a total of 15 × 6 = 90 paths possible

Hence, option 4.

6. 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

(1) 1170 (2) 630 (3) 792 (4) 1200 (5) 936

Solution:

From point A to B, there are 90 paths possible with the minimum distance travelled.

Then from B to C, there are 13 paths possible with the minimum distance travelled.

∴ Overall there are 90 × 13 = 1170 paths possible

Hence, option 1.

7. Let $f(x)$ 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 $f\left(\frac{1}{2}\right)$?

(1) 0 (2) $\frac{1}{4}$ (3) $\frac{1}{2}$ (4) 1 (5) cannot be determined

Solution:

Let $x = 1$ and $y = 2$

$\therefore f(1)f(2) = f(2)$

$\therefore f(1) = 1$

Now, let $x = \frac{1}{2}$ and $y = 2$

$\therefore f\left(\frac{1}{2}\right)f(2) = f\left(\frac{1}{2} \times 2\right) = f(1)$

$\therefore 4f\left(\frac{1}{2}\right) = 1$

$\therefore f\left(\frac{1}{2}\right) = \frac{1}{4}$

Hence, option 2.

8. 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?

(1) 820 (2) 821 (3) 781 (4) 819 (5) 780

Solution:

Initial sum of the terms of the sequence 1, 2, 3, … , $40 = \frac{40 \times 41}{2} = 820$

After erasing two numbers a and b, and replacing with $(a + b - 1)$, the new sum of the terms of the sequence = 820 − 1

Similarly, after every operation, the sum of the terms of the sequence reduces by 1.

∴ The last number left (i.e. final sum) = 820 − 39 = 781

Hence, option 3.

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

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

= 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?

(1) 39 (2) 72 (3) 81 (4) 108 (5) 55

Solution:

Sum of the digits of multiples of 9 is always 9.

∴ Seed of any number will be 9 if and only if it is a multiple of 9.

There are 55 multiples of 9 which are less than 500 (as 500/9 = 55.555)

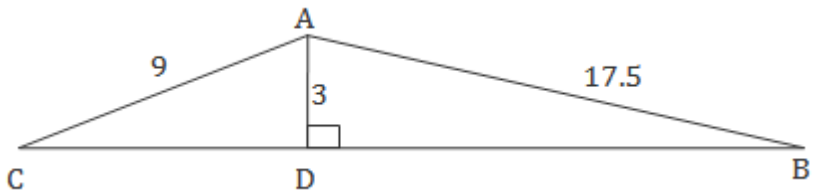
∴ There are 55 positive integers which will have seed = 9

Hence, option 5.

10. 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?

(1) 17.05 (2) 27.85 (3) 22.45 (4) 32.25 (5) 26.25

Solution:



We know that the area (A) of the triangle (ABC) is related to the circum radius (R) and sides of the triangle as follows:

$$R = \frac{\text{AB} \times \text{BC} \times \text{AC}}{4A}$$

Where,

$$\text{Area}, A = \frac{1}{2} \times \text{AD} \times \text{BC}$$

$$\therefore \text{R} = \frac{\text{AB} \times \text{BC} \times \text{AC}}{4 \times \frac{1}{2} \times \text{AD} \times \text{BC}} = \frac{\text{AB} \times \text{AC}}{2\text{AD}} = \frac{17.5 \times 9}{2 \times 3} = 26.25 \text{ cm}$$

Hence, option 5.

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

(1) 21 (2) 61 (3) 01 (4) 41 (5) 81

Solution:

$7^1 = 07$

$7^2 = 49$

$7^3 = 343$

$7^4 = 2{,}401$

$7^5 = 16{,}807$

$7^6 = 1{,}16{,}649$

$7^7 = 8{,}23{,}543$

$7^8 = 57{,}64{,}801$

As we can see, for every 4^{th} power of 7, the last two digits are 01. Since 2008 is divisible by 4, we can conclude that last two digits of 7^{2008} are 01.

Hence, option 3.

12. 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?

(1) $-\frac{1}{\sqrt{3}}$ (2) -1 (3) 0 (4) 1 (5) $\frac{1}{\sqrt{3}}$

Solution:

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

$\therefore (n-1)n + n(n+1) + (n-1)(n+1) = b$

$\therefore n^2 - n + n^2 + n + n^2 - 1 = b$

$\therefore 3n^2 - 1 = b$

$\because n^2 \geq 0$, minimum value of b occurs at $n = 0$

$\therefore$ Minimum value of $b = -1$

Hence, option 2.

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

(1) 5 (2) 21 (3) 10 (4) 15 (5) 14

Solution:

We know that for an obtuse triangle of sides a, b and c (where c is the largest side),

$a^2 + b^2 < c^2$

We also know that for a triangle, $a + b > c$

These present us with two limiting cases.

Let 8 cm and 15 cm be the length of shorter sides. The value of the largest side (x) must be greater than

$\sqrt{8^2 + 15^2} = 17$ cm

The possible integer values of x are 18, 19, 20, 21 and 22 cm.

We cannot consider values from 23 onwards because 8 + 15 = 23 and this violates the second condition.

Now, consider the case where 15 cm is the measure of the largest side.

The value of the remaining side (x) must be less than

$\sqrt{15^2 - 8^2} = 12.69$ cm

The possible integer values are 12, 11, 10, 9 and 8 cm.

We cannot consider values less than 8 because 7 + 8 = 15 and this violates the second condition.

Thus, we have in total 10 possible values for x.

Hence, option 3.

14. 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?

(1) 499 (2) 500 (3) 375 (4) 376 (5) 501

Solution:

The minimum number that can be formed is 1000 and the maximum number that can be formed is 4000.

As 4000 is the only number in which the first digit is 4, first let us calculate the numbers less than 4000 and then we will add 1 to it.

∴ First digit can be 1, 2 or 3.

Remaining 3 digits can be any of the 5 digits.

∴Total numbers that can be formed, which are less than 4000 = 3 × 5 × 5 × 5 = 375

∴ Total numbers that satisfy the given condition = 375 + 1 = 376

Hence, option 4.

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

(1) 231 (2) 253 (3) 242 (4) 210 (5) 228

Solution:

Consider $(a + b + c)^{20}$

∵ The degree of the expression is 20, the degree of each term of the expression after expansion will be 20.

∴ We have to divide 20 into three parts which can be done by using the distribution rule

${}^{n+r-1}C_{r-1}$

Where,

n is number of things to be distributed.

r is number of parts into which the things are to be distributed.

∴ To divide 20 into 3 parts we have,

$${}^{20+3-1}C_{3-1} = {}^{22}C_2 = \frac{22 \times 21}{2 \times 1} = 11 \times 21 = 231 \text{ ways}$$

Alternatively,

This can be solved without using much knowledge of permutations and combinations as follows,

$(a + b + c)^1 = a + b + c$ [i.e. 3 terms = (1 + 2) terms]

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ac$ [i.e. 6 terms = (1 + 2 + 3) terms]

$(a + b + c)^3 = a^3 + b^3 + c^3 + 6abc + 3ab^2 + 3ac^2 + 3a^2b + 3bc^2 + 3a^2c + 3b^2c$ [i.e. 10 terms = (1 + 2 + 3 + 4) terms]

Similarly,

$(a + b + c)^n$ will have $(1 + 2 + 3 + \ldots + (n + 1))$ terms

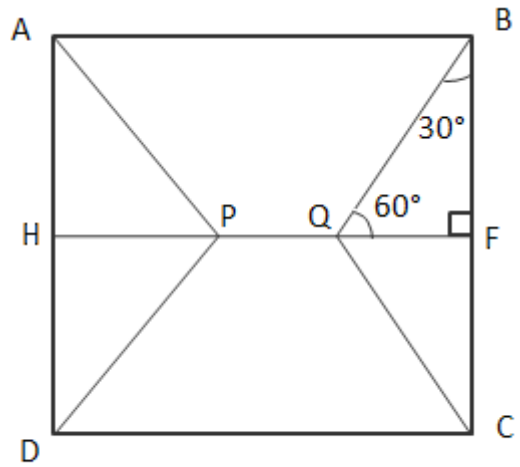
∴ $(a + b + c)^{20}$ will have $(1 + 2 + 3 + \ldots + 21) = 231$ terms

Hence, option 1.

16. 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°. What is the ratio of the area of ABQCDP to the remaining area inside ABCD?

(1) $\frac{4\sqrt{2}}{3}$ (2) $2+\sqrt{3}$ (3) $\frac{10-3\sqrt{3}}{9}$ (4) $1+\frac{1}{\sqrt{3}}$ (5) $2\sqrt{3}-1$

Solution:



Let the length of the sides of the square be 2*s*.

Consider ΔBQF,

BF = s

In 30°-60°-90° triangle,

$\text{QF} = \frac{s}{\sqrt{3}}$

$\therefore \text{Area of } \Delta\text{BQF} = \frac{1}{2} \times s \times \frac{s}{\sqrt{3}}$

$\text{Area of ABQCDP} = \text{Area of square ABCD} - 4 \times \text{Area of } \Delta\text{BQF} = 4s^2 - 4\left(\frac{1}{2} \times s \times \frac{s}{\sqrt{3}}\right)$

$\therefore \text{Required ratio} = \frac{4s^2 - 4\left(\frac{1}{2} \times s \times \frac{s}{\sqrt{3}}\right)}{4\left(\frac{1}{2} \times s \times \frac{s}{\sqrt{3}}\right)} = 2\sqrt{3} - 1$

Hence, option 5.

17. Three consecutive positive integers are raised to the first, second and third powers respectively and then added. The sum so obtained is a 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?

(1) $1 \le m \le 3$ (2) $4 \le m \le 6$ (3) $7 \le m \le 9$ (4) $10 \le m \le 12$ (5) $13 \le m \le 15$

Solution:

Let the three numbers be $(a-2)$, $(a-1)$ and a.

$\therefore (a-2)+(a-1)^2+a^3=p^2$

Where p is the sum of the three integers.

Now, $a-2+a^2-2a+1+a^3=p^2$

$\therefore a^3+a^2-a-1=p^2$

$\therefore a^2(a+1)-1(a+1)=p^2$

$\therefore (a^2-1)(a+1)=p^2$

$\therefore (a+1)^2(a-1)=p^2$

For the above condition to be satisfied, $(a-1)$ must be a perfect square.

The smallest possible value for this is 4, since $(a-2)$ cannot be zero, giving us $(a-2)=3$

The minimum of the three is therefore 3.

Hence, option 1.

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

(1) $2008-\frac{1}{2008}$ (2) $2007-\frac{1}{2007}$ (3) $2007-\frac{1}{2008}$

(4) $2008-\frac{1}{2007}$ (5) $2008-\frac{1}{2009}$

Solution:

Consider only first term,

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

Now consider first two terms,

$$\sqrt{1+\frac{1}{1^2}+\frac{1}{2^2}}+\sqrt{1+\frac{1}{2^2}+\frac{1}{3^2}}=\frac{3}{2}+\sqrt{1+\frac{1}{4}+\frac{1}{9}}=\frac{3}{2}+\sqrt{\frac{49}{36}}=\frac{3}{2}+\frac{7}{6}=\frac{8}{3}=3-\frac{1}{3}$$

Similarly,

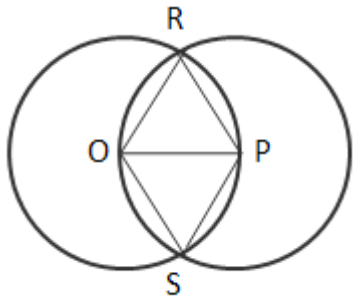
$$\sqrt{1+\frac{1}{1^2}+\frac{1}{2^2}}+\sqrt{1+\frac{1}{2^2}+\frac{1}{3^2}}+\cdots+\sqrt{1+\frac{1}{2007^2}+\frac{1}{2008^2}}=2008-\frac{1}{2008}$$

Hence, option 1.

19. 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?

(1) $\frac{\pi}{3}-\frac{\sqrt{3}}{4}$ (2) $\frac{2\pi}{3}+\frac{\sqrt{3}}{2}$ (3) $\frac{4\pi}{3}-\frac{\sqrt{3}}{2}$ (4) $\frac{4\pi}{3}+\frac{\sqrt{3}}{2}$ (5) $\frac{2\pi}{3}-\frac{\sqrt{3}}{2}$

Solution:



Let O and P be the centres of the circles.

OR = OP = PR = 1cm

∴ ΔPRO is an equilateral triangle.

∴ m ∠ROP = 60°

∴ m ∠ROS = 120°

Now, area of the intersecting region = 2(area of sector O-RPS) – 2(area of ΔPRO)

$$\text{Area of sector O– RPS} = \frac{120}{360}(\pi) = \frac{\pi}{3}$$

$$\text{Area of } \Delta\text{PRO} = \frac{\sqrt{3}}{4}(1^2)$$

$$\therefore \text{Area of the intersecting region} = 2\left(\frac{\pi}{3}\right) - 2\left(\frac{\sqrt{3}}{4}\right) = \frac{2\pi}{3}-\frac{\sqrt{3}}{2}$$

Hence, option 5.

20. 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° to AB. Also, C is located between south and southwest of A with AC at 30° to AB. The latest time by which Rahim must leave A and still catch the train is closest to

(1) 6:15 am (2) 6:30 am (3) 6:45 am (4) 7:00 am (5) 7:15 am

Solution:

The angles of the triangle formed by A, B and C tell us that ABC is a right-angle triangle, with right-angle at vertex C, 30° at vertex A and 60° at vertex B.

Since AB = 500 km, in 30°-60°-90° triangle ABC, we get,

$\text{AC} = 250\sqrt{3}$ km and $\text{BC} = 250$ km

The train, travels at 50 km/hr. It will travel from B to C (i.e. 250 km) in 5 hours. Since it leaves at 8:00 a.m., it will reach C at 1:00 p.m.

Now, Rahim must be at C latest by 12:45 p.m. (15 minutes before the train)

Travelling at 70 km/hr, he will take approximately 6.2 hours to travel from A to C. Therefore, he must leave at least by

12.75 – 6.2 = 6.55 hours after mid-night.

This is a little after 6:30 a.m. If he leaves by 6:45 a.m., he will not make it to point C 15 minutes before the train arrives.

Hence, option 2.

21. 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 surface resting on the base of the cone. Find the largest possible total surface area (in sq. cm) of the cylinder.

(1) $\frac{100\pi}{3}$ (2) $\frac{80\pi}{3}$ (3) $\frac{120\pi}{7}$ (4) $\frac{130\pi}{9}$ (5) $\frac{110\pi}{7}$

Solution:

As shown in the figure, ABC is the cross section of a cone of height 10 cm and radius of base 4 cm.

PQRS is the cross section of a cylinder which needs to be fitted inside the cone such that one of the flat faces of the cylinder (represented by RS) coincides with the base of the cone (represented by BC).

$\because$ ΔABD and ΔPBR are similar triangles.

$\therefore \frac{10}{4} = \frac{h}{4-r}$

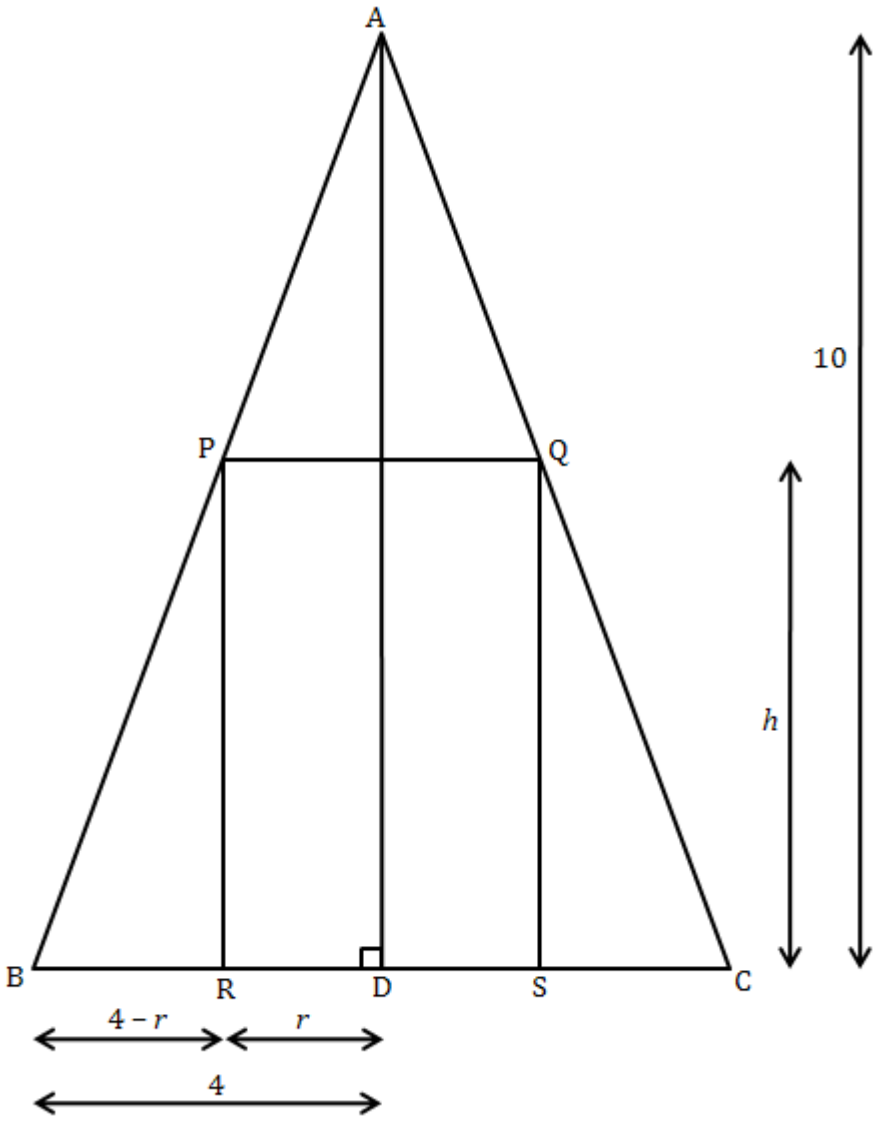
$\therefore h = 10 - 2.5 \times r$

Total surface area of the cylinder $= S = 2\pi r \times (h + r) = 2\pi r \times (10 - 2.5 \times r + r)\text{cm}^2$

$\therefore S = 2\pi \times (10r - 1.5 \times r^2)$ cm^2

Differentiating 'S' with respect to 'r', we get,

$\therefore \frac{dS}{dr} = 2\pi \times (10 - 3r)$



For maximum surface area, $\frac{dS}{dr}$ must be equated to zero which gives $r = \frac{10}{3}$ and $h = \frac{5}{3}$ cm

$\therefore$ Maximum total surface area of the cylinder $= 2\pi \times \frac{10}{3} \times \left(\frac{5}{3} + \frac{10}{3}\right) = \frac{100\pi}{3}$ cm^2

Hence, option 1.

Directions for Questions 22 and 23:

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 Rs. 1000 on Red, White and Black horses respectively and ends up with no profit and no loss.

22. Which of the following cannot be true?

(1) At least two horses finished before Spotted
(2) Red finished last
(3) There were three horses between Black and Spotted
(4) There were three horses between White and Red
(5) Grey came in second

Solution:

We solve this question by options.

If we consider option 4 to be true, then either the White or Red horse will finish first. It means that the amount Raju receives at the end of the race will be at least Rs. 8000 or Rs. 12000 (depending on which of the two horses finish first). However, his investment at the start of the race was only Rs. 6000. So, his profit could never be zero; in the worst scenario he will at least make Rs. 2000.

∴ Option (4) cannot be true.

Hence, option 4.

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

(1) Spotted came in first
(2) Red finished last
(3) White came in second
(4) Black came in second
(5) There was one horse between Black and White

Solution:

We solve this question by options.

If we consider option 3 to be true, then White finishes second and one of the Red or Black horses will come in the first or third positions. With White at the second position, the amount Raju receives at the end of the race will be at least Rs. 6000, and from Red or Black he will earn some money. Therefore, the total money Raju receives will be more than Rs. 6000. Since his investment at the start of the race was only Rs. 6000, his profit could never be zero.

∴ Option (3) cannot be true.

Hence, option 3.

Directions for Questions 24 and 25:

Marks (1) if Q can be answered from A alone but not from B alone.

Marks (2) if Q can be answered from B alone but not from A alone.

Marks (3) if Q can be answered from A alone as well as from B alone.

Marks (4) if Q can be answered from A and B together but not from any of them alone.

Marks (5) if Q cannot be answered even from A and B together.

In a single elimination tournament, any 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 in to $n/2$ 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.

24. Q: 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.

Solution:

From statement (A) alone:

The entry list for the tournament consists of 83 players.

In round 1, 1 of the 83 players gets a bye and directly moves on to the next round.

$\therefore$ 42 players move on to round 2.

Similarly, 21 players move on to round 3, 11 players move on to round 4, 6 players move on to round 5, 3 players move on to round 6, 2 players move on to round 7.

The winner of the tournament would have played one match in each of the rounds; i.e. a total of 7 matches, provided he doesn't get a bye.

However, we are not told whether or not the champion received a bye at some point in the tournament.

∴ We cannot answer the question on the basis of statement (A) alone.

From statement (B) alone:

The champion received one bye.

From this statement, we cannot find the number of matches played by the champion.

∴ We cannot answer the question on the basis of statement (B) alone.

From both the statements (A) and (B) together:

The champion must have played 7 matches if he did not receive any bye.

But it is given that champion has got one bye in the tournament. ∴ He must have played only 6 matches.

∴ We can answer the question using both the statements (A) and (B) together.

Hence, option 4.

25. Q: 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 third round

Solution:

From statement (A) alone:

Exactly 1 player received a bye in the entire tournament. We get many values of *n* between 65 and 128 that satisfy this condition.

For example, *n* can have the value 124 in round 1, to follow the pattern, [124-62-**31**-16-8-4-2-1].

Also, *n* can have the value 127 in round 1, to follow the pattern, [**127**-64-32-16-8-4-2-1].

∴ We cannot answer the question on the basis of statement (A) alone.

From statement (B) alone:

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

Here also, we get multiple values of *n*.

For example, *n* can have the value 124 in round 1, where 1 player received a bye while moving from round 3 to round 4 following the pattern, [124-62-**31**-16-8-4-2-1].

Also, *n* can have the value 122 in round 1, where 1 player received a bye while moving from round 3 to round 4 following the pattern, [122-**61**-**31**-16-8-4-2-1].

∴ We cannot answer the question on the basis of statement (B) alone.

From statements (A) and (B) together:

n can only have the value 124 in round 1, where exactly 1 player received a bye while moving from round 3 to round 4 following the pattern [124-62-**31**-16-8-4-2-1].

∴ We can answer the question using both the statements (A) and (B) together.

Hence, option 4.

Note: An analysis of how 124 was arrived at when using both conditions together:
Let the number of players in the first round be *n*. Since only one player gets a bye, and that too when moving from the third to the fourth round, hence we have the following conditions:
1. There will be *n* players in the first round, where *n* is even.
2. There will be *n*/2 players in the second round, where *n*/2 is even.
3. There will be *n*/4 players in the third round, where *n*/4 is odd.
4. There will be $\frac{\frac{n}{4}+1}{2} = \frac{n+4}{8}$ players in the fourth round, where $\frac{n+4}{8}$ should be even.

5. All numbers of players in the subsequent rounds should also be even.

From condition 3, we can conclude that:

$\frac{n+4}{8} = 2k$, where k is an integer

Hence, $n = 16k - 4$; so, within the given range, *n* could be 76 or 92 or 108 or 124.

Writing the pattern for each of the above possible values of *n*, we have:

76: [76-38-**19**-10-**5**-**3**-2-1]
92: [92-46-**23**-12-6-**3**-2-1]
108: [108-54-**27**-14-**7**-4-2-1]
124: [124-62-**31**-16-8-4-2-1]

We see that only 124 satisfies condition 5.

SECTION II

This section contained 25 questions.

Directions for Questions 26 to 28:

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

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

(1) 181 (2) 176 (3) 184 (4) 196 (5) 190

Solution:

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 cut-off 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 for 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 colleges 1, 2 and 6, Aditya's Section B marks < 41

For colleges 1, 2, 3 and 5, Aditya's Section C marks < 42

For colleges 4 and 6 Aditya's Section D marks < 44

If he scores less in Section C and D he would not get calls for any colleges. Also in order to maximize the score we would assume that he got just one less than the cut-off in section C and D and he scored maximum marks (50) in other sections.

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

Hence, option 3.

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

(1) 180 (2) 181 (3) 196 (4) 176 (5) 184

Solution:

Since Bhama got calls from all colleges, she must have cleared each of the 4 sections. This means that for a particular section she scored more marks than the greatest cut-off for that section across the six 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 greatest cut-off among them is 45.

So, in order to clear the sectional cut-off of section A for all the colleges, she should have scored at least 45.

Since we wish to minimise her marks, we should take her score in section A as 45.

Similarly, in sections B, C and D, she scored 45, 46 and 45 marks respectively.

∴ Bhama's minimum marks such that she gets calls from all the colleges = 45 + 45 + 46 + 45 = 181

Hence, option 2.

Note: This is already greater than the highest aggregate cut-off of all colleges (which is 180 for college 5). So, she will get calls from all 6 colleges.

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

(1) 0 (2) 21 (3) 25 (4) 35 (5) 41

Solution:

The aggregate cut-off for each college is given in the common data. In order for Charlie to get minimum marks in one of the sections, he should have got maximum marks (i.e. 50) in the other three sections.

For example, the aggregate cut-off in college 1 is 176. Since, we want minimum marks in a section he should have gotten an aggregate of exactly 176. To minimise one of the sections, assume that he got 50 marks in the 3 sections whose cut-off is given in the common data. Then, Charlie will get a call from college 1 if he gets at least $176 - (50 \times 3) = 26$ marks in section D, provided that the cut-off for this section is also 26.

Now, there is at least one unknown sectional cut-off for each of the colleges, so we can use the same logic as used above for each of the remaining colleges.

For college 2, the minimum marks that Charlie needs to get a call = $175 - 150 = 25$

For college 3, the minimum marks that Charlie needs to get a call = $171 - 150 = 21$

For college 4, the minimum marks that Charlie needs to get a call = $178 - 150 = 28$

For college 5, the minimum marks that Charlie needs to get a call = $180 - 150 = 30$

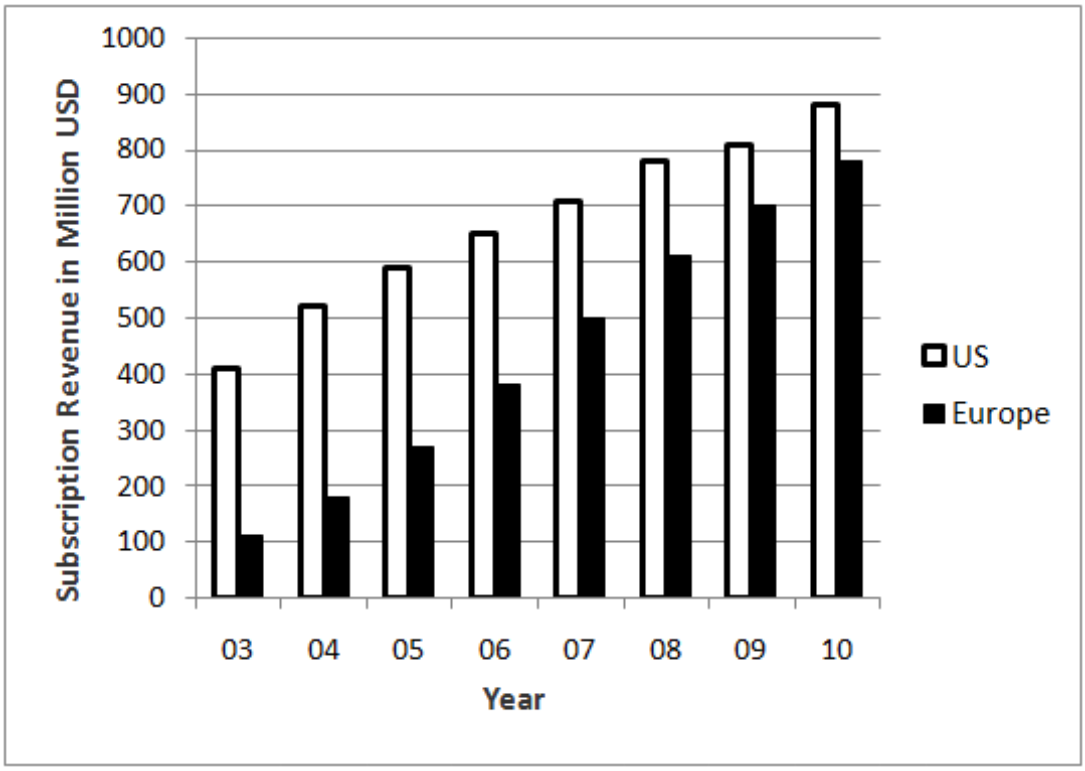
For college 6, the minimum marks that Charlie needs to get a call = $176 - 150 = 26$

The question states that Charlie only gets a call from 2 of the colleges. So, Charlie got 25 marks.

Hence, option 3.

Directions for Questions 29 to 32: 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.



29. 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)?

(1) 17 (2) 20 (3) 35 (4) 60 (5) 100

Solution:

$$\text{The change in growth rate of European subscribers in '07 over '06} = \frac{500-380}{380} = \frac{6}{19}$$

$$\text{The change in growth rate of European subscribers in '05 over '04} = \frac{270-180}{180} = \frac{1}{2}$$

∴ The percentage change in growth rate of 2007 (over '06) relative to 2005 (over '04) is,

$$\left[\frac{\left(\frac{1}{2}-\frac{6}{19}\right)}{\left(\frac{1}{2}\right)}\right] \times 100 = \left[\frac{\left(\frac{7}{38}\right)}{\left(\frac{1}{2}\right)}\right] \times 100 = \frac{7}{19} \times 100 = 36.84\ \%$$

Hence, option 3.

30. 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 :

(1) 50 (2) 80 (3) 20 (4) 10 (5) 0

Solution:

The estimated subscription revenue in Europe in 2008 = 605 million USD

$$\text{The \% growth rate in the revenue from 2006 to 2007} = \frac{500-380}{380} \times 100 = \frac{6}{19} \times 100$$

$$\therefore \text{The computed subscription revenue in Europe in 2008} = 500 \times \left(1 + \frac{6}{19}\right)$$

$$= 500 \times \left(\frac{25}{19}\right) = \frac{12500}{19}$$

≈ 658

$\therefore$ The difference between the estimated and the computed values $= 658 - 605 = 53$

The closest value among the given options is 50.

Hence, option 1.

31. In 2003, sixty percent of subscribers in Europe were men. Given that woman subscribers increase at the rate of 10 percent per 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.

(1) 62 (2) 15 (3) 78 (4) 84 (5) 50

Solution:

Let the number of men subscribers in 2003 be *m*, and the number of women subscribers in 2003 be *w*.

It is given that women subscribers increase at the rate of 10% per year and men increase at the rate of 5% per year.

$\therefore$ Number of men subscribers in 2007 = $m(1 + 0.05)^7$

$\approx m[1 + {}^7C_1 (0.05) + {}^7C_2 (0.05)^2 + {}^7C_3 (0.05)^3]$

$$\approx m\left[1 + 7(0.05) + \left(\frac{7 \times 6}{2}\right) \times (0.05)^2 + \left(\frac{7 \times 6 \times 5}{2 \times 3}\right) \times (0.05)^3\right]$$

$\approx m(1 + 0.35 + 0.0525 + 0.0043)$

$\approx 1.4\, m$

Number of women subscribers in 2007 = $w(1 + 0.1)^7$

$\approx w[1 + {}^7C_1(0.1) + {}^7C_2 (0.1)^2 + {}^7C_3 (0.1)^3]$

$$\approx w\left[1 + 7(0.1) + \frac{7 \times 6}{2}(0.1)^2 + \frac{7 \times 6 \times 5}{2 \times 3}(0.1)^3\right]$$

$\approx w(1 + 0.7 + 0.21 + 0.035)$

$\approx 1.95\ w$

Now, it is given that in 2003, men are 60% of the total European subscribers. So, women are 40% of the subscribers. Let the total European subscribers be P. Then,

$m = 0.6P$ and

$w = 0.4P$

$\therefore$ The total number of subscribers in 2003 = $m + w = 0.6P + 0.4P = P$

And the total number of subscribers in 2007 = $1.4m + 1.95w$

$= 1.4(0.6P) + 1.95(0.4P)$

$= 0.84P + 0.78P = 1.62P$

$$\therefore \text{Percentage growth of subscribers between ''03 and '07} = \frac{(1.62)P - P}{P} \times 100 = 62\%$$

Hence, option 1.

32. 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?

(1) 03-04 (2) 05-06 (3) 06-07 (4) 08-09 (5) 09-10

Solution:

The gap between subscription revenues in US and Europe in 2003 = 420 − 105 = 315

The gap between subscription revenues in the US and Europe in 2004 = 525 − 180 = 345

$\therefore$ The percentage change in the gap between subscription revenues in the US and Europe in the period **2003-04** is

$$\frac{345 - 315}{315} = \frac{30}{315} = \frac{2}{21}$$

Similarly, the percentage change in the gap between subscription revenues in the US and Europe in the period **2005-06** is

$$\frac{270 - 320}{320} = \frac{-50}{320}$$

$$\text{Hence, the absolute change is } \frac{5}{32}$$

The percentage change in the gap between subscription revenues in the US and Europe in the period **2006-07** is

$$\frac{220-270}{270}=\frac{-50}{270}$$

Hence, the absolute change is $\frac{5}{27}$

The percentage change in the gap between subscription revenues in the US and Europe in the period **2008-09** is

$$\frac{110-185}{185}=\frac{-75}{185}$$

Hence, the absolute change is $\frac{15}{37}$

The percentage change in the gap between subscription revenues in the US and Europe in the period **2009-10** is

$$\frac{100-110}{110}=\frac{-10}{110}$$

Hence, the absolute change is $\frac{1}{11}$

The highest value among $\frac{2}{21},\frac{6}{33},\frac{5}{27},\frac{15}{37}$ and $\frac{1}{11}$ is clearly $\frac{15}{37}$

∴ The absolute value of change was the highest in the period 2008-09.

Hence, option 4.

Directions for Questions 33 to 35:

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.

Department	Number of Employees	Average Age (Years)	Average Basic Pay (Rupees)	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

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.

Questions below are independent of each other.

33. 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?

(1) 30 (2) 35 (3) 40 (4) 45 (5) cannot be determined

Solution:

Let the age of the employee being transferred from the

1. Marketing department to the Finance department be x.

2. Finance department to the Marketing department be y.

3. Marketing department to the HR department be z.

The sum of the ages of all employees in Finance originally was $30 \times 20 = 600$

Later, an employee of x years of age joined the department and one of y years of age left it.

So, the new average age for the Finance department $= \frac{600 + x - y}{20} = 31$ (given)

$\therefore 600 + x - y = 620$

$\therefore x - y = 20$ … (i)

The sum of the ages of all employees in Marketing originally was $35 \times 30 = 1050$

Later, two employees of x years and z years of age left the department and one of y years of age joined it. Since 2 employees left and 1 joined, hence the number of employees currently in this department is 29.

So, the new average age for the Marketing department $= \frac{1050 - x + y - z}{29} = 35$ (given)

$\therefore 1050 - x + y - z = 1015$

$\therefore x - y + z = 35$ … (ii)

From equations (i) and (ii), we get,

$20 + z = 35$

$\therefore z = 15$

The sum of the ages of all employees in HR originally was $45 \times 5 = 225$

Later, one employee of z years of age joined the department. Also, the number of employees increases by one to 6.

So, the new average age for the HR department $= \frac{225 + z}{6} = \frac{225 + 15}{6} = \frac{240}{6} = 40$

Hence, option 3.

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

(1) 9% (2) 11% (3) 13% (4) 15% (5) 17%

Solution:

The average age of the Marketing department is 35 years and that of the HR department is 45 years. So, the employee is being transferred from a department with a lower average age to one with a higher average age, which means that he gets an additional allowance of 10% of basic pay over his current allowance.

His current allowance = 80% of 8000 = 6400

Therefore, his new allowance = 6400 + 10% of 6400 = 6400 + 640 = 7040

After the transfer, his gross pay = 8000 + 7040 = 15040

Initially, the average gross pay of the HR department = 5000 + 70% of 5000 = 8500

The new average gross pay of the HR department (i.e. after the transfer of the 40-yr old)

$$= \frac{(8500 \times 5) + 15040}{6} = 9590$$

∴ The percentage change in the average gross pay of the HR department

$$= \frac{9590 - 8500}{8500} \times 100 = 12.823\%$$

Hence, option 3.

35. 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?

(1) 10.5% (2) 12.5% (3) 15% (4) 30% (5) 40%

Solution:

Note that in this question, the percentage change in **basic** pay is asked. According to the common data, only the allowances (and hence the gross pay) is affected when a person is transferred. The basic pay of a person remains unaltered.

∴ The average basic pay after the transfers have taken

$$= \frac{(5000 \times 5) + (6000 \times 2) + (8000)}{8}$$

$$= \frac{45000}{8} = 5625$$

∴ The percentage change in the average basic pay of the HR department

$$= \frac{5625 - 5000}{5000} \times 100 = 12.5\%$$

Hence, option 2.

Directions for Questions 36 to 40:

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, 11 am, 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.

36. On a "boom" day the 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?

(1) Bikram (2) Chetan (3) Abdul (4) Abdul or Chetan (5) cannot be determined

Solution:

Firstly, let us try to understand the way the investments of the three traders behave.

Abdul buys shares at 10 am everyday and sells them at a particular price at 3 pm. So his return is determined by the difference in the share price at these two times.

Bikram and Chetan buy shares at equal intervals. But since Chetan buys them in equal amount he would end up buying more when the price is less and less when the price is more.

Whether the prices are continuously rising or continuously falling down or in a fluctuating market, Chetan always has a higher proportion of lower priced shares as compared to Bikram. This increases his profit in a rising market and reduces his loss in a falling market. Therefore Chetan never has return lower than that of Bikram.

We have explained this concept by taking examples. For more depth we have also provided the theoretical explanation. ***The theoretical explanation is only for better understanding and may not be suitable in a test environment.***

Consider the scenario when the share price keeps rising throughout the day.

Let the share price at 10 am be Rs. 100, 11 am be Rs. 115, 12 noon be Rs. 140, 1 pm be Rs. 150, 2 pm be Rs. 170, and finally at 3 pm be Rs. 200.

Time of the Day	Share Price (in Rs.)
10 am (open)	100
11 am	110
12 noon	140
1 pm	150
2 pm	180
3 pm (close)	200

Abdul buys shares at Rs. 100 at 10 am and sells them at Rs. 200 at 3 pm.

∴ Abdul's return is 100%.

Let Bikram buy one share at each interval. So, at 10 am, he buys a share for Rs. 100; at 11 am, he buys a share for Rs. 110; at 12 noon, he buys a share for Rs. 140; at 1 pm, he buys a share for Rs. 150; and at 2 pm, he buys a share for 180 × 10 = Rs. 180.

Thus, he buys a total of 5 shares for 100 + 110 + 140 + 150 + 180 = Rs. 680

At 3 pm, he sells all 5 shares for 200 × 5 = Rs. 1,000. Thus, his profit will be 1,000 − 680 = Rs. 320

$$\text{Hence, Bikram's return} = \frac{320}{680} \times 100 \approx 47\%$$

Let Chetan invest Rs. 415,800 at each interval. So, at 10 am, he buys 415800/100 = 4158 shares; at 11 am, he buys 415800/110 = 3780 shares; at 12 noon, he buys 415800/140 = 2970 shares; at 1 pm, he buys 415800/150 = 2772 shares; at 2 pm, he buys 415800/180 = 2310 shares.

Thus, he buys 4158 + 3780 + 2970 + 2772 + 2310 = 15990 shares for 415800 × 5 = Rs. 20,79,000. He sells these shares for 200 × 15990 = Rs. 31,98,000. His profit will be 3198000 − 2079000 = Rs. 11,19,000.

$$\text{Hence Chetan's returns} = \frac{1119000}{2079000} \times 100 = \frac{373}{693} \times 100 \approx 53\%$$

From the above example, we see that in case of continuously rising share prices,

Abdul's return > Chetan's return > Bikram's return

Thus Bikram gets the minimum return on a "boom" day.

Hence, option 1.

Note: **Theoretical Explanation**:

Let $x_1, x_2, \ldots, x_6$ be the share prices at 10 am, 11 am, 12 noon, 1 pm, 2 pm and 3 pm respectively.

For Abdul:

Abdul buys shares at Rs. x_1 and sells them at Rs. x_6.

$$\therefore \text{ Abdul's returns} = \frac{x_6 - x_1}{x_1}$$

For Bikram:

Let Bikram have bought n shares at each hourly interval.

His investment amount = $nx_1 + nx_2 + nx_3 + nx_4 + nx_5$

$= n(x_1 + x_2 + x_3 + x_4 + x_5)$

$= n\sum_{i=1}^{5} x_i$

At 3 pm, he sells his shares for $(5n \times x_6)$

$\therefore$ His profit/loss $= (n \times 5x_6) - n\sum_{i=1}^{5} x_i$

$= n\left(5x_6 - \sum_{i=1}^{5} x_i\right)$

$\therefore$ Bikram's returns $= \frac{n\left(5x_6 - \sum_{i=1}^{5} x_i\right)}{n\sum_{i=1}^{5} x_i} = \frac{5x_6}{\sum_{i=1}^{5} x_i} - 1 = \frac{x_6}{\left(\frac{\sum_{i=1}^{5} x_i}{5}\right)} - 1$

Hence, Bikram's returns $= \frac{x_6}{(\text{Arithmetic Mean of } x_1, x_2, \ldots, x_5)} - 1$

For Chetan:

Let Chetan invest Rs. P at each hourly interval.

His investment amount = $5P$

Since he invests Rs. P at each interval, he buys $\frac{P}{x_1}$ shares at 10 am; $\frac{P}{x_2}$ at 11 am; and so on until 2 pm.

At 3 pm, he sells each share at x_6. So, for all his shares, he receives,

Rs. $\left(\frac{P}{x_1} + \frac{P}{x_2} + \frac{P}{x_3} + \frac{P}{x_4} + \frac{P}{x_5}\right) x_6$

$= Px_6\left(\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3} + \frac{1}{x_4} + \frac{1}{x_5}\right)$

$\therefore$His profit/loss $= Px_6\left(\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3} + \frac{1}{x_4} + \frac{1}{x_5}\right) - 5P$

$= P\left[x_6\left(\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3} + \frac{1}{x_4} + \frac{1}{x_5}\right) - 5\right]$

$\therefore$ Chetan's returns $= \frac{P\left[x_6\left(\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3} + \frac{1}{x_4} + \frac{1}{x_5}\right) - 5\right]}{5P} = \frac{x_6\left(\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3} + \frac{1}{x_4} + \frac{1}{x_5}\right) - 5}{5}$

$$= \frac{x_6\left(\frac{1}{x_1}+\frac{1}{x_2}+\frac{1}{x_3}+\frac{1}{x_4}+\frac{1}{x_5}\right)}{5} - 1$$

$$= \frac{x_6}{\left[\frac{5}{\left(\frac{1}{x_1}+\frac{1}{x_2}+\frac{1}{x_3}+\frac{1}{x_4}+\frac{1}{x_5}\right)}\right]} - 1$$

$$\therefore \text{ Chetan's returns} = \frac{x_6}{(\text{Harmonic Mean of } x_1, x_2, \ldots, x_5)} - 1$$

Now, let's compare Bikram's and Chetan's returns. Since Arithmetic Mean is always greater than *or equal to* the Harmonic Mean, Chetan's returns will be greater than *or equal to* Bikram's.

37. 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?

(1) Bikram (2) Chetan (3) Abdul (4) Bikram or Chetan (5) cannot be determined

Solution:

Since Chetan's return is always higher than or equal to that of Bikram, the trader with the maximum return would be either Abdul or Chetan.

If it is a continuously rising market then Abdul would end up having the highest gain as seen in the example above.

But there might be a scenario when the share price of XYZ would go down after 10 am and rise in the end at 3 pm to a higher value.

In such a case, if Chetan gets the shares at lower prices than what the price was at 10 AM he would end up making more profit and hence higher return.

Time of the Day	Share Price (in Rs.)
10 am (open)	100
11 am	10
12 noon	10
1 pm	10
2 pm	10
3 pm (close)	200

Here, Abdul's returns remain unaltered as 100%.

Let Chetan always buy shares worth Rs. 100.

So he would end up buying 1 + 10 + 10 + 10 + 10 = 41 shares.

When he sells the same at Rs. 200 he gets Rs. 8,200 for the same.

∴ Chetan's profit = 8200 − 500 = 7700

$$\therefore \text{ Chetan's return} = \frac{7700}{500} > 100\%$$

∴ We cannot say for sure who would get higher returns

Hence, option 5.

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

(1) Abdul will not be the one with the minimum return
(2) Return for Chetan will be higher than that of Bikram
(3) Return for Bikram will be higher than that of Chetan
(4) Return for Chetan cannot be higher than that of Abdul
(5) none of the above

Solution:

From the explanation seen till now we can rule out options 1, 3 and 4.

Now option 2 is only partially correct. We have seen that Chetan's return would be higher than or equal to that of Bikram. It would be equal to Bikram's return in the scenario when the share price remains at a constant value throughout the day.

∴ Option 2 is not always true.

Hence, option 5.

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.

39. Which of the following is necessarily false?

(1) Share price was at its lowest at 2 pm

(2) Share price was at its lowest at 11 am
(3) Share price at 1 pm was higher than the share price at 2 pm
(4) Share price at 1 pm was higher than the share price at 12 noon
(5) none of the above

Solution:
Let $x_1, x_2, \ldots, x_6$ be the share prices at 10 am, 11 am, 12 noon, 1 pm, 2 pm and 3 pm respectively.

Now, since Abdul lost money in the transaction,

$x_1 > x_6$

Also, it is given that,

$x_1 > x_3$, and $x_6 > x_5$

Combining the above, we get,

$x_1 > x_6 > x_5$

and $x_1 > x_3$,

Also, let the money Emily invests at 10 am be Rs. P.

Then, her investment = Rs. P

And the number of shares she buys = P/x_1

So, after selling these shares at 12 noon, she will get Rs. $(P/x_1) \times x_3$

Now, she invests this money at 1 pm, and the number of shares she buys $= \frac{Px_3}{x_1x_4}$

So, after selling these shares at 3 pm, she gets Rs. $\left(\frac{Px_3}{x_1x_4}\right)x_6$

So, her returns $= \frac{\left(\frac{Px_3x_6}{x_1x_4} - \mathrm{P}\right)}{\mathrm{P}} = \frac{x_3x_6}{x_1x_4} - 1$

Since she made profit,her returns > 0

i. e. $\frac{x_3x_6}{x_1x_4} - 1 > 0$ or $\frac{x_3x_6}{x_1x_4} > 1$

Now, we know that $x_1 > x_6$; so $\frac{x_6}{x_1}$ cannot be greater than 1.

$\therefore \frac{x_3}{x_4}$ has to be greater than 1; $i.e. x_3 > x_4$

∴ The share price at 12 noon is greater than that at 1 pm.

Hence, option 4 is definitely false.

Also, since in the first half, Emily invests at 10 am and sells at 12 noon, and we know that the share price at 10 am was greater than at 12 noon; hence she must have suffered a loss during this transaction. However, she makes net profit in the end. So, she must have made profit during the second part of the transaction; i.e. the share price at 1 pm must have been less than that at 3 pm.

i.e. $x_4 < x_6$

Let Dane buy n shares at 10 am, 11 am and 12 noon.

∴Her investment = $n(x_1 + x_2 + x_3)$

And she sells these at 1 pm, 2 pm and 3 pm for $n(x_4 + x_5 + x_6)$

$$\therefore \text{ Her returns} = \frac{n(x_4 + x_5 + x_6) - n(x_1 + x_2 + x_3)}{n(x_1 + x_2 + x_3)} = \frac{(x_4 + x_5 + x_6)}{(x_1 + x_2 + x_3)} - 1$$

Since she made profit, her returns are greater than 0.

$$\text{i. e.} \frac{(x_4 + x_5 + x_6)}{(x_1 + x_2 + x_3)} - 1 > 0 \text{ or } \frac{(x_4 + x_5 + x_6)}{(x_1 + x_2 + x_3)} > 1$$

$$\therefore (x_4 + x_5 + x_6) > (x_1 + x_2 + x_3)$$

Since $x_1 > x_6$ and $x_3 > x_4$, $x_5 > x_2$

So far, we have,

$x_1 > x_6 > x_5 > x_2$, $x_4 < x_6$and $x_1 > x_3 > x_4$

Now from Dane's investment, we know that,

$$(x_4 + x_5 + x_6) - (x_1 + x_2 + x_3) > 0 \qquad \ldots \text{(i)}$$

Keeping in mind the relationships between the share prices, we get,

$x_6 = x_1 - b$

$x_4 = x_1 - b - c$

$x_3 = x_1 - b - c + a$

$x_5 = x_1 - d$, where a, b, c and d are all positive.

Substituting the above in equation (i), we get,

$(x_1 - b - c + x_1 - d + x_1 - b) - (x_1 + x_2 + x_1 - b - c + a) > 0$

∴ $x_1 - x_2 > b + d + a$ (which is greater than 0, since all the variables are positive)

i.e. $x_1 > x_2$

∴ $x_2 < x_1 - b - a - d$

∴ x_2 is definitely less than x_6 and x_5.

∴ Although we don't know when the share price is at its lowest, we do know that $x_5 > x_2$.

$\therefore x_5$, i.e. the share price at 2 pm is not the lowest.

Hence, option 1 is also definitely false.

Thus there are two options which are correct for this question. This is an ambiguity and therefore, we are not indicating any option as correct.

40. Share price was at its highest at

(1) 10 am (2) 11 am (3) 12 noon (4) 1 pm (5) cannot be determined

Solution:

From the solution of the first question of the set, we can see that,

$x_1 > x_6 > x_5 > x_2$, $x_4 < x_6$ and $x_1 > x_3 > x_4$

$\therefore x_1$, i.e. the share price at 10 am is the highest.

Hence, option 1.

Directions for Questions 41 to 43:

Answer the following questions based on the statements given below:

(i) These six houses are labeled as P, Q, R, S, T and U.
(ii) There are three houses on each side of the road.
(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.

41. What is the colour of the tallest house?

(1) Red (2) Blue (3) Green (4) Yellow (5) none of these

Solution:

We have to arrange six houses on opposite sides of a road.

From condition (vii), we can say that P, U and S lie on one side of the road as follows:

P		
U (Orange)		
S		

From condition (viii) and (ix) we can further complete the arrangement as follows. We have also used the colour of the house P from statement (x).

P (White)		R (Yellow)
U (Orange)		Q (Green)
S		

The only left house is definitely T. From conditions (v) and we can complete the arrangement as follows.

P (White)		R (Yellow)
U (Orange)		Q (Green)
S (Red)		T (Blue, First tallest)

From condition (vi) it can be deduced that U is the shortest house. Also from the last condition it can be deduced that P is the fourth tallest, R is the fifth tallest and S and Q are second and third tallest not in that order.

Filling all this data we can see the arrangement as follows:

P (White, Fourth Tallest)		R (Yellow, Fifth Tallest)
U (Orange, Shortest)		Q (Green, Second/Third Tallest)
S (Red, Second/Third Tallest)		T (Blue, First tallest)

The colour of the tallest house (T) is Blue.

Hence, option 2.

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

(1) White (2) Blue (3) Green (4) Red (5) none of these

Solution:

The house diagonally opposite to the Yellow coloured house is S which has red colour.

Hence, option 4.

43. Which is the second tallest house?

(1) P (2) S (3) Q (4) R (5) cannot be determined

Solution:

The second tallest house can be either S or Q. We cannot determine for sure which of them is the second tallest.

Hence, option 5.

Directions for Questions 44 to 47:

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.

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

(1) A (2) A & C (3) F (4) E (5) B & E

Solution:

Let the bold letters denote the teams that have lost.

From condition 3 of stage I:

D lost to A.

D won against C.

D won against F.

These can be represented as:

D -- A

D -- **C**

D -- **F**

Similarly, condition 4 of stage I can be represented as:

E -- B

E -- **C**

E -- **F**

Since D and E have participated in three matches in stage I, they would not be involved in any other match in stage I.

From the above representations it is clear that all other teams except A have lost at least one match.

∴ From condition 1, of stage I, only A has won all the three matches in stage I.

Also, A will participate in 2 more matches as every team participates in 3 matches in stage I.

∴ A will win in 2 of the remaining 3 matches.

Also A is the top team as it wins all matches in stage I.

From condition 6 of stage I,

F did not play against A.

∴ A won against B and C which can be represented as:

B -- A

A -- **C**

The only 2 teams which have not won even a single match so far is C and F.

From statement 6 of stage I, F loses in the remaining match against B, which can be

represented as:

F -- B

Stage I can be represented as:

D -- A **B** -- A

D -- **C** A -- **C**

D -- **F** **F** -- B

E -- B

E -- **C**

E -- **F**

From condition 1 of stage II,

A lost both matches in stage II.

Also, since no team plays against the same team more than once in the event, A plays matches against E and F.

A -- E

A -- F

Since one of the two teams at the bottom after stage I won both matches in stage II, F is the team which has won both the matches in stage II.

Also C lost both matches in stage II.

F -- **C**

B -- **C**

The last condition states that one more team lost both matches in stage II.

∴ D lost both matches in stage II.

D -- B

D -- E

Stage II can be represented as:

A -- E

A -- F

F -- **C**

B -- **C**

D -- B

D -- E

Now, we can calculate the number of times each team has won.

Team	Stage I	Stage II	Total
A	3	0	3
B	2	2	4
C	0	0	0
D	2	0	2
E	2	2	4
F	0	2	2

It can be observed from the above table that B and E have most wins in the event.

Hence, option 5.

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

(1) F & D (2) E & F (3) B & D (4) E & D (5) F & D

Solution:

E and F defeated A.

Hence, option 2.

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

(1) B (2) E & F (3) A, E & F (4) B, E & F (5) B & F

Solution:

B, E and F are the three teams that won both matches in stage II.

Hence, option 4.

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

(1) A, D & F (2) D & E (3) E & F (4) D, E & F (5) D & F

Solution:

From the table it is clear that the team that won exactly two matches in the event are D and F.

Hence, option 5.

Directions for Questions 48 to 50:

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 from data transfer as percentage of total revenue received and the ARDT in US Dollars (USD) are given for various countries.

48. 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.

(1) Philippines and Austria (2) Canada and Poland (3) Germany and USA
(4) UK and Spain (5) Denmark and Mexico

Solution:

From the given data we get that,

$$\frac{\text{Percentage of revenue from Data Transfer}}{100} \times \text{Total revenue} = \text{ARDT} \times \text{Volume}$$

It is given that the total revenue received is the same for the pairs of countries in the choices.

∴ We need to consider the ratio (% of revenue from Data Transfer/ARDT) for the countries in the given choices.

The countries for which this ratio is same would lie on a straight line drawn from the origin.

Consider the choices given. From observation one can see that the UK and Spain lie on a straight line drawn from the origin, whereas all other pairs are not on a straight line.

Hence, option 4.

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

(1) Total revenue is the same in both countries.
(2) Total revenue in India is about 2 times that of Singapore
(3) Total revenue in India is about 4 times that of Singapore
(4) Total revenue in Singapore is about 2 times that of India
(5) Total revenue in Singapore is about 4 times that of India

Solution:
Let the total revenue for India be USD *x* and for Singapore be USD *y*.

$$\frac{\text{Percentage of revenue from Data Transfer}}{100} \times \text{Total revenue} = \text{ARDT} \times \text{Volume}$$

From the diagram we can deduce the following values for the quantities.

Percentage of revenue from Data Transfer for India = 9

Percentage of revenue from Data Transfer for Singapore = 20.5

ARDT for India = USD 1

ARDT for Singapore = USD 9

It is given that the volume of data transfer in India is the same as that in Singapore.

$$\therefore \frac{0.09}{1} \times x = \frac{0.205}{9} \times y$$

∴ $y = 3.95x$

∴ y is about 4 times *x*.

Hence, option 5.

50. It is expected that by 2010, revenue from the 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?

(1) 400% (2) 550% (3) 800% (4) 950% (5) cannot be determined

Solution:

By 2010, Percentage of revenue from transfer of data will triple for India and double for Sweden.

∴ Percentage of revenue from data transfer for India and Sweden will be 27% and 36% respectively.

Let the total revenue in Sweden in 2010 be R.

∴ The total revenue in India in 2010 will be $2R$.

It is given that the total volume of data transfer is the same for both the countries.

∴ We can write the following solution for Sweden.

$0.36 \times R = 6 \times \text{Volume}$ ...(i)

Similarly, for India,

$0.27 \times 2R = \text{ARDT} \times \text{Volume}$ ...(ii)

Dividing (i) by (ii) we get,

ARDT (for India in 2010) = USD 9

ARDT for India now is USD 1.

∴ The increase of ARDT in India is 800%.

Hence, option 3.

SECTION III

This section contained 40 questions.

Directions for Questions 51 to 54: 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.

51.
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)/counselor(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.

(1) BABAA (2) BABAB (3) BAAAB (4)ABABA (5) BAABA

Solution:
Anita wore a "brooch", a pin or a clasp. "Broach" is used in several ways (e.g., 'broach a subject'; 'introduce a new topic') but none in context of jewellery or something to be worn.
The second word is "councillor" which means 'a person specially designated or selected to act in an advisory, administrative, or legislative capacity' as against a "counsellor" meaning 'a person who counsels or advises' which is more generic.
"Advice" is used as a noun whereas "advise" is used as a verb. In the third sentence, 'I would like your advice/advise...', we need a noun. Therefore, "Advice" is the right word.
The fourth word refers to the end of the "film", the 'climax'. "Climactic" is the adjective form of 'climax' and the word for the fourth sentence. "Climatic" pertains 'to climate'.
"Flair" is 'a natural talent, aptitude, ability or knack'. The word to be used here is "flare", which means, 'to spread gradually outward as the bottom of a pair of trousers or a wide skirt'.
Therefore the correct sequence is BAAAB.
Hence, the correct answer is option 3

52.
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).***

(1) BBABA (2) BBAAA (3) BBBBA (4) ABBAB (5) BABAB

Solution:

"Currant" is 'a type of raisin or an edible nut'.
"Current", a more common word, means 'a steady, smooth, onward movement'. Thus the first word is "currants". (The cake had lots of currants...)
"Exceptional" is a positive word, which means, 'outstanding, excellent'.
"Exceptionable" (the second word) means, 'objectionable and hence liable to be punished.'

For the third word, both "consent" and "assent" mean 'to agree'. However, "assent" is more in tune with 'yielding to something' or 'conceding' whereas "consent" is more about 'permitting or approving'.
Therefore the appropriate word here is "consent" as an adult would "consent" or 'give permission'.
In the fourth sentence, a minister is not "compelled" (forced) but "obliged" (necessitated or required) to report regularly. While oblige may have a connotation of force as well, compel clearly means 'forced to'.
Therefore, "obliged" is a more appropriate word here.
When we say something is "genuine", it is not more or less, it is 'simply and completely authentic'.
Therefore, *far too* will apply to the adjective "sanguine" which means 'far too optimistic' or 'confident'.
Therefore the correct sequence is BBAAA
Hence, the correct answer is option 2.

53.
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 ***coup*** é ***(A)/coup(B)*** broke away as the train climbed the hill.
They heard the bells ***peeling(A)/pealing(B)*** far and wide.

(1) BBABA (2) BBBAB (3) BAABB (4) ABBAA (5) BBBBA

Solution:

A "retort" can be "ironic", but only after it is uttered or said. Here, a more appropriate word would be "caustic" or 'sarcastic'.
"Cogent" is 'convincing' or 'well-argued' and has a better ring to it than just "valid". It is a more appropriate word than "valid" in this context.
The third word is "averse" meaning 'unwilling or unenthusiastic'. "Adverse" means 'unfavourable' and it is usually used with words like weather (adverse weather, conditions etc.).
"Coup é" is the 'end compartment in a railroad car'. Contextually, 'a "coup é" gets detached while a train is climbing up the hill' fits in.
"Coup" is a 'clever action or accomplishment' and is irrelevant in this context.
A peal is 'a ringing of a set of bells. (Alternate usage: 'she broke into peals of laughter'). Thus, the word required is 'pealing' as it deals with bells.
"peel" means to 'to strip or cut away the skin or bark from',eg. Peeling away the skin made it easier to cut the fruit.
Therefore, the correct sequence is BBBAB.
Hence, the correct answer is option 2.

54.
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.

(1) BABBA (2) BBABB (3) BABAA (4) ABBAB (5) AABBA

Solution:

"Defusing" or de-fusing is 'to resolve or cool (a situation)'.

"Diffusing" is 'spreading' (Guru's ideas) and the appropriate word for the first sentence.
To "bait" is 'to trap or to tease'. The students were asking irrelevant questions to tease or torment the instructor.
"Bate" is to 'lessen' or 'restrain'.
"Horde", the third word, refers to 'a mass or group'.
"Hoard" is 'to stockpile'.
"Internment" is 'imprisonment' and is the fourth word.
"Interment" is 'burial'.
"Unsocial" is 'having or showing a lack of desire for the company of others.'
"Unsociable" goes a step further. It means, 'not sociable; having, showing, or marked by a disinclination to friendly social relations; withdrawn.' A team "could not deal" with someone - is a bit extreme. So, here, "unsociable" is more appropriate. Another way to arrive at the appropriate word here is by elimination. If you were able to figure out most of the other words, "unsocial" would have been in one of the eliminated options.
Therefore the correct sequence is BABBA
Hence, the correct answer is option 1.

Directions for Questions 55 to 58: 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.

55.
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.

(1) B only (2) B and C (3) A and B (4) A only (5) A, B and D

Solution:

Statement A is incorrect because the word immigrant has been mis-spelt as "imigrant" (with an 'm' missing). Options 3, 4 and 5 can be eliminated.
We are left with only options 1(B only) and 2(B and C).
Statement C should have a comma at the end, after "David Stern".
Statement B is correct.
Statement D should be '**an** owner of a dry goods business'.
Statement E can be corrected in at least two different ways. "This dry goods business would later **be** known as ..." Or, "This dry goods business later became known as ..."(Omitted 'would').
Hence, the correct answer is option 1.

56.
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.

(1) D and E (2) D only (3) A and E (4) A and D (5) B, C and E

Solution:

The sentence takes off correctly in statement A.
Statement B is incorrect because there is a pronoun agreement error. It should be, "Nike implemented comprehensive changes" in **its** (not their) labour policy. The possessive pronoun 'its' should replace 'their' as it refers to the antecedent "Nike" which is singular.
Statement C does not require the comma given at the end of the line. The sentence (C and D) can be rephrased as, 'Perhaps sensing **that** the rising tide of global labour concerns from the public would become a prominent media issue.'
It can be seen from this sentence that part D can be left unaltered and can be taken as correct.
The word 'industry' begins with a vowel sound and hence the article '**an**' should be used and not 'a'.
Hence, the correct answer is option 4.

57.
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.

(1) A only (2) C only (3) A and C (4) A, C and D (5) D only

Solution:

Statements A and C are correct.
A million people (in B) would have lost their homes- not "home". Therefore, statement B is incorrect.
Statements D does not logically continue the idea started in C. Therefore it is incorrect.
Statement E is incorrect. There is a subject-verb agreement error here. In place of "The death count have just begun", it should be, 'The death count has just begun.' 'Death count', a singular subject, should take a singular verb (has).
Hence, the correct answer is option 3.

58.
A. I did not know what to make of you.
B. Because you'd 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.

(1) A only (2) A and B (3) A and E (4) D only (5) A and D

Solution:

Statement B has tense inconsistency. 'Lived' is in past tense, hence, 'associate' in the same sentence should be 'associated' (in simple past as well).

Statement C again has tense inconsistency. The word ‘seem’ should become ‘seemed’ to go with ‘were’ and ‘visited’ in the same sentence.
Statement E is incorrect and we need to rephrase it. We may either change ‘effort’ to ‘efforts’ or change it to ‘an effort’.
Statements A and D are correct.
Hence, the correct answer is option 5.

Directions for Questions 59 to 62: 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.

59.
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.

(1) innovative; communicator
(2) enchanting; leaders
(3) disingenuous; victims
(4) exigent; exploiters
(5) tragic; sufferers

Solution:

The statement condemns the way the genocides have been described and states the description to be sinister. The word for the first blank has to be synonymous to sinister.
Options 1 and 2 with ‘innovative’ and ‘enchanting’ can be eliminated as they do not give any negative connotations.
Option 4 too can be eliminated as ‘exigent’ has more to do with ‘demanding and urgent’ than something terrible.
In option 5, “tragic” does not fit in the context with ‘mis-described’ and ‘hand-washing rhetoric’.
‘disingenuous’ - ‘insincere’, ‘deceitful’, ‘hypocritical’ fits contextually with the word “manner” which follows the blank. In the second blank, a contrasting word to “perpetrators” is required. ‘Victims’ is a better fit compared to the words in all the other options.

Hence, the correct answer is option 3.

60.
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.

(1) scrutinizers; believe
(2) observers; agree
(3) scrutinizers; suggest
(4) observers; concede
(5) students; conclude

Solution:

The first blank can have any of the three words mentioned in the options - ‘scrutinizers’, ‘observers’, ‘students’.
‘Scrutinizer’ means ‘one who examines or observes with great care; inspects critically’.
‘Observer’ means ‘a person who watches, views or notes for a scientific, official, or other special purpose.’

'Student' means 'an individual formally engaged in learning, especially one enrolled in a school or college; pupil'
Out of these three, the part of the sentence prior to the first blank clearly suggests that the people involved in the exercise were experts in the subject under consideration. This eliminates the possibility of 'students' fitting into the first blank, and thus option 5.
The second blank has four possible alternatives.
'Believe' means 'to have confidence in the truth, the existence or the reliability of something'.
'Agree' means 'to have the same views'.
'Suggest' means 'to mention or introduce'.
'Concede' means 'to make concessions, yield'.
The verb prior to the second blank denotes that the action is not voluntary but performed under duress.
It is not possible to *be forced* to place confidence in something. Therefore it is difficult to be forced to 'believe' in something. This eliminates option 1.
The first part of the sentence makes it clear that contrary evidence was being gathered. If evidence opposite in nature or character is being gathered then it cannot be said that the ancient astronomers had the same view. This removes 'agree' from further consideration as fitting into the second blank. This eliminates option 2.
The very element of force or compulsion eliminates 'suggest' as an appropriate fit for the second blank. Therefore option 3 is eliminated.
Both 'observers' and 'concede' fit in correctly.
Hence, the correct answer is option 4.

61.
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 _____.

(1) constitutional; weather
(2) congenital; education
(3) personal; climate
(4) economic; learning
(5) genetic; pedagogy

Solution:

The first word needs to be related to something that is 'inborn', because it is an endowment or gift. Two words come close to mean that- 'congenital' and 'genetic'.
'Congenital', may be 'innate' or 'inherited' or caused by the "environment".
"Genetic," means 'pertaining to origins'
However, the "effect of the environment" is more related to general teaching or 'education' than to 'pedagogy'. 'Pedagogy' is 'the function or work of a teacher' or 'science of teaching; education; instructional methods'.
Hence, the correct answer is option 2.

62.
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.

(1) tenets; fixation
(2) aspects; inhibitions
(3) institutions; inhibitions
(4) organs; tradition
(5) departments; repulsion

Solution:

The first blank can have ‘institutions’, ‘departments’, ‘organs’ or ‘tenets’. ‘Aspects’, compared to other options can be eliminated.
The second blank has the key to the answer. The phrase ‘suited by’ can be best followed by ‘fixated’, to make the sense complete- minds which were suited by ‘fixation’ or a preoccupation with one subject, issue, an obsession “to an earlier kind of world”. Also, ‘fixation’ flows perfectly with the idea of ‘an earlier kind of world’.
Hence, the correct answer is option 1.

Directions for Questions 63 to 66: 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**.

63. Run

(1) I must run fast to catch up with him.
(2) Our team scored a goal against the run of play.
(3) You can’t run over him like that.
(4) The newly released book is enjoying a popular run.
(5) This film is a run-of-the-mill production.

Solution:

Option 1 uses the verb ‘run’ appropriately with “fast” as an adverb qualifying it.
The phrase, ‘against the run of play’ is used in sports to describe an event or action against the flow of the game. For example, if Soccer team A has all the possession, all the chances and dictates the game, and team B has one chance and scores from it, then that goal is against the run of play. The term is used correctly in option 2.
Option 3 is incorrect. A person cannot “run over” someone. It can be a vehicle that can run over someone. A person can ‘run after‘ (chase) someone, ‘run with‘, ‘run up to‘ or ‘run around‘ someone.
In option 4, a book can have a “popular run”, if a great number of copies of that book are getting sold.
In option 5, “run-of-the-mill production” is an ‘average’ or ‘mediocre’ or ‘banal’, ‘commonplace’ production that is not interesting. The usage here is correct.
Hence, the correct answer is option 3.

64. Round

(1) The police fired a round of tear gas shells.
(2) The shop is located round the corner.
(3) We took a ride on the merry-go-round.
(4) The doctor is on a hospital round.
(5) I shall proceed further only after you come round to admitting it.

Solution:

In option 1, “firing a round of tear gas shells” means ‘a single discharge by one firearm’ and the word ‘round’ is correctly used.
The phrase, ‘round the corner’ in option 2 means, ‘nearby, a short distance away’.
In option 3, the usage is correct. “Merry-go-around” is a ‘carrousel in amusement parks, carnivals, etc. A merry-go-round is a revolving, circular platform with wooden horses or other animals, benches, etc., on which people may sit or ride, usually to the accompaniment of mechanical or recorded music.’
In option 4, the usage “on a hospital round” is correct. This is used to signify that the doctor is surveying the wards checking on patients.

"Come round" in the fifth option means 'to change one's opinion, decision, especially to agree with another's.' A better option would have been to come around to admitting it meaning to change one's position or opinion.
Hence, the correct answer is option 5.

65. Buckle

(1) After the long hike our knees were beginning to buckle.
(2) The horse suddenly broke into a buckle.
(3) The accused did not buckle under police interrogation.
(4) Sometimes, an earthquake can make a bridge buckle.
(5) People should learn to buckle up as soon as they get into the car.

Solution:

"Beginning to buckle" in option 1 indicates that their knees were ready to collapse or that they were extremely tired.
"Buckle" is inappropriately used in option 2. The horse can break into a trot or a gallop. It may buck or it may even break into somebody's garden, but not "into a buckle".
Option 3 uses "buckle" in the sense of 'collapse' or 'surrender'.
In option 4, "buckle" again refers to 'bend' or 'collapse', even 'break'.
"To buckle up", in option 5, means 'to fasten one's belt, seat belt, or buckles'.
Hence, the correct answer is option 2.

66. File

(1) You will find the paper in the file under C.
(2) I need to file an insurance claim.
(3)The cadets were marching in a single file.
(4) File your nails before you apply nail polish.
(5) When the parade was on, a soldier broke the file.

Solution:

"File" can be defined as 'a folder, cabinet, or other container in which papers, letters, etc., are arranged in convenient order for storage or reference.' Another definition is 'a collection of papers, records, etc., arranged in convenient order'. Option 1 uses the word in this sense.
In option 2, "to file" means 'to apply'. The usage is correct.
In option 3, "file" refers to 'a line of persons or things arranged one behind another'. Marching in a single file is similar to marching in a single column.
A "file" can even be a tool with ridges to smoothen or even out rough surfaces. Option 4 uses this meaning.
There is no phrase or idiom "broke the file" as mentioned in option 5. A soldier can break 'rank' but not a "file".

Hence, the correct answer is option 5.

Directions for questions 67 to 70: 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.
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.

(1) Other people do not communicate due to their poor observation.
(2) Other patients don't like what they see but are ignorant of their right to go elsewhere.
(3) But Perowne himself is not concerned.
(4) But others will take their place, he thought.
(5) These hands are steady enough, but they are large.

Solution:

The main sentence of the paragraph that decides the ending is "On this basis, Henry Perowne loses a number of cases each year." Option 1 moves away from the core of the paragraph – losing patients.
Option 5 does not complete the paragraph and leaves one wanting for more data to explain the importance of hands being large.
Option 4 loses out on the sentence structure and style. There is no logical continuity to the paragraph.
Option 3 provides a logical finish to the paragraph by showing that inspite of the losing patients, Perowne is not concerned.
Option 2 brings in a disconnect to the idea from the paragraph. It states that other patients' observations are also negative and those who stay with Perowne do so out of ignorance of available alternatives. This is not in continuation of the main idea expressed in the paragraph.
Hence, the correct answer is option 3.

68.
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.

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

Solution:

Option 1 has already been mentioned in the first statement of the paragraph. This does not make it an effective paragraph ending.

Option 2 mentions only OECD countries while the paragraph mentions "powerful industrialized countries" of which the OECD countries are only a part. Furthermore, the option is again a repetition of ideas presented in the paragraph.
The focus of option 3 is on 'China' and 'India', while the focus of the paragraph is not.
Option 5 brings in '*global economic inequity*' which is an opinion not expressed or implied in the passage.
Option 4 addresses the gist of the paragraph. Powerful countries, including the OECD countries are posing as climate change champions due to their lacklustre economic performance as compared to China and India which are growing rapidly. 'Climate change champions' in this option completes the paragraph, and addresses the point raised in the first sentence.
Hence, the correct answer is option 4.

69.
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, white-skinned 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.

(1) Mattancherry represents, therefore, the perfect picture of peaceful co-existence.
(2) India's Jews have almost never suffered discrimination, except for European colonizers and each other.
(3) Jews in India were always tolerant.
(4) Religious tolerance has always been only a façade and nothing more.
(5) The pretty pastel streets are, thus, very popular with the tourists.

Solution:

The paragraph starts with a location (as a backdrop) and moves on to describe things associated with the location. While various things are described about the location, we are looking for a sentence that completes the ideas stated in the paragraph. The paragraph juxtaposes various disparate ideas and cultures together: note the saree and sarong, the Indian Jews, and the image of religious tolerance.
Option 2 is a disconnect from the main idea of the paragraph – it talks about religious discrimination which is not an idea found in the paragraph.
Option 1 is about Matancherry, which the whole paragraph is about. It brings together the ideas in the paragraph to a logical, cohesive whole.
Option 5, with 'thus' for pretty pastel streets is disconnected. No reason is provided in the paragraph for pastel streets being popular.
It is the majority community which has to show tolerance towards a minority group, not the other way round. The paragraph clearly states "home to the last twelve...." indicating the Indian Jews to be very few in numbers. Option 3 can be eliminated.
Option 4 is contrary to the data provided in the passage.
Hence, the correct answer is option 1.

70.
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.

(1) Thoughts are not the kind of things that can be easily categorized.
(2) Though 'occidentalism' and 'orientalism' as dichotomous concepts have found many adherents.
(3) 'East is East and West is West' has been a discredited notion for a long time now.
(4) Compartmentalizing thoughts is often desirable.

(5) The origin of a thought is not the kind of thing to which 'purity' happens easily.

Solution:

The essence of the paragraph is the difficulty in differentiating between "Western" and "Eastern" thoughts.
The paragraph starts with a difference between "Western" and "Eastern" and moves on to "thoughts". The logical completion of the paragraph needs to be in that vein.
Option 2 is logically inconsistent due to the word "dichotomous" between "occidentalism" and "orientalism" whereas the paragraph states that this dichotomy is "illusory".
Option 3 moves back again to the broad idea of "Western" and "Eastern".
Option 4 is contrary to the paragraph.
Option 5 completes the paragraph logically. The usage of the words, 'thought' and 'purity' (pure) in a slightly different manner makes it the ideal choice as it resonates with the paragraph in that "given the intellectual and intellectual *interconnections*" that exist today the origin of a thought can no longer be classified as purely "Western" or purely "Indian." Therefore the origin of a thought cannot be pure in terms of origin.
Both, options 1 and 5, state the idea of thoughts not being easily classified. However, option 5 continues the idea of *purity* mentioned in the final part of the paragraph whereas option 1 does not. In this context, 1 is generic and 5 is specific.
Hence, the correct answer is option 5.

Directions for Questions 71 to 75: The passage given below is followed by a set of five questions. Choose the **most appropriate** answer to each question.

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 adaption 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 syntax-fracturing professional athlete and the, you know, like, inarticulate teenage skateboarder. Finally, since language is the product of a well-engineered biological instinct, we shall see that it is not the nutty barrel of monkeys that entertainer-columnists make it out to be.

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

(1) Language is a cultural artifact.
(2) Language is a cultural invention.
(3) Language is learnt as we grow.
(4) Language is unique to *Homo sapiens.*
(5) Language is a psychological faculty.

Solution:

The passage states, "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"*". Combine this extract with "Thinking of language as an *instinct inverts the popular wisdom*" and we arrive at option 5 as the correct answer option.
Option 1: While the passage mentions 'cultural artifact', it does not relate it to popular wisdom. Hence, option 1 is incorrect.
Option 2 is mentioned in the passage but there is no data to suggest that it is not popular wisdom.
Option 3 is incorrect because the author has criticized the common view that children learn language as they grow, he instead says that children are born with it.
Option 4 is mentioned in the passage and does not invert popular wisdom in any way.
Hence, the correct answer is option 5.

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

(1) A kitten learning to jump over a wall
(2) Bees collecting nectar
(3) A donkey carrying a load
(4) A horse running a Derby
(5) A pet dog protecting its owner's property

Solution:

The analogy describes an action which is a critical activity to the species, such that it is instinctive and not something that develops over time. The analogy emphasises the fact that language is instinctive, and not something that is learnt.
Options 3, 4 and 5 about a donkey carrying the load, a horse running the derby and a pet dog protecting property, are not instinctive and basic actions attributed to those animals. They have to be trained to perform these functions.
Option 1 is about 'learning', whereas the original example is about instinctively 'knowing'.
Hence, the correct answer is option 2.

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

(1) Ability to use symbols while communicating with one another.
(2) Ability to communicate with each other through voice modulation.
(3) Ability to communicate information to other members of the species.
(4) Ability to use sound as means of communication.
(5) All of the above.

Solution:

At the end of the second paragraph, "a knack for communicating information about who did what to whom *by modulating the sounds we make when we exhale*". This ability is unique to humans as mentioned in the passage.
This resonates with option 2.
Option 1, 3 and 4 are negated as the author has not mentioned or implied in any way that non-humans cannot use symbols, cannot communicate information or do not use sound as a means of communication.

Therefore, option 5 - all of the above - is incorrect.
Hence, the correct answer is option 2.

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

(1) children instinctively know language.
(2) children learn the language on their own.
(3) language is not amenable to teaching.
(4) children know language better than their teachers or parents.
(5) children are born with the knowledge of semiotics.

Solution:

The passage states, "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". This implies that children are born with an instinctive skill for language and that it cannot be taught.
Option 2 is about learning as they grow and not about instinctively knowing language.
Option 3 is close, but the question is related to 'complexity' of language. The author is silent on whether language is amenable to teaching or not.
Option 4 is irrelevant as there is no comparison between the language skills of teachers/ parents and their children.
Option 5 contradicts the passage. "Semiotics" is the study of symbols and signs and the passage states that children are not good at semiotics.
Hence, the correct answer is option 1.

75. Which of the following best summarizes the passage?

(1) Language is unique to *Homo sapiens*.
(2) Language is neither learnt nor taught.
(3) Language is not a cultural invention or artifact as it is made out.
(4) Language is instinctive ability of human beings.
(5) Language is use of symbols unique to human beings.

Solution:

Option 4 succinctly summarizes the crux of the author's arguments. The author is trying to propound the 'instinctive' nature of language. He mentions it is unique to "*Homo sapiens*" but that is not the crux of the passage making option 1 unsuitable as a summary.
Option 2 focuses on a non critical aspect of language which deals with 'learning' or 'teaching', which is true yet not central to the discussion.
Option 3 is incorrect as it focuses on ancillary aspects.
Option 5 has no base in the paragraph, and is a radical statement. Hence, the correct answer is option 4.

Directions for Questions 76 to 80: The passage given below is followed by a set of five questions. Choose the **most appropriate** answer to each question.

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 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.

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

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

Solution:

Option 1: The passage mentions that society is slowly moving from a Spartan (rigorously self-disciplined or self-restrained) existence to that of a Sybarites' (a person devoted to pleasure and luxury) one. As a result today's society is more extravagant than the society of the 1930s.
Option 2: The passage depicts the procedure of eating two ice-cream cones with a ceremonial air. The passage states, "…*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*".
Option 4: The author has plainly said in the passage that in present times things given are what they are worth even if they appear to be more. The passage states, "the consumer civilization pretends to give more, but actually gives, for four cents, what is worth four cents".
Option 5: The last two paragraphs of the passage give various examples of how the consumer civilization attempts to spoil children and adults alike. Hence, option 5 is eliminated.
Option 3 cannot be inferred from the passage. Rather the italicised words in the passage suggest the opposite: "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".
Hence, the correct answer is option 3.

77. In the passage, the phrase "little parvenus" refers to
(1) naughty midgets.
(2) old hags.
(3) arrogant people.
(4) young upstarts.
(5) foolish kids.

Solution:

"Parvenus" means 'a person who has suddenly risen to a higher social and economic class and has not yet gained social acceptance by others in that class'. The appropriate reference is to 'young upstarts'.
The author points out the extravagance of today's society. The author mentions in the passage, "*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 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 cheek-in with a fake Gucci bag bought from a street peddler on the beach at Rimini".
The author refers to the parents as 'parvenus' or upstarts who muscle their way into a world where they are uninvited.
Hence, the correct answer is option 4.

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

(1) it made dietetic sense.
(2) it suggested intemperance.
(3) it was more fun.
(4) it had a visual appeal.
(5) he was a glutton.

Solution:

The passage states "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".
Intemperance means 'excessive indulgence of appetite'.
Hence, the correct answer is option 2.

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

(1) The moralists of yesterday have become immoral today.
(2) The concept of morality has changed over the years.
(3) Consumerism is amoral.
(4) The risks associated with immorality have gone up.
(5) The purist's view of morality is fast becoming popular.

Solution:

The passage does not hint at instances of immorality or amorality. This eliminates options 1 and 3.
Option 4 is incorrect because though moralistic risks have been mentioned they have been said to be at odds with morality. There are no indications of them having risen.
Option 5 is incorrect. There is no mention of purists in the passage. Therefore, the popularity of the purist's view of morality cannot be established.
Option 2: The passage states, "*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". The second half of the sentences points to the changes norms/mores in society, and this is our indicator that option 2 is correct.
Hence, the correct answer is option 2.

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

(1) didactic.
(2) dietetic.
(3) dialectic.

(4) diatonic.
(5) diastolic.

Solution:

The passage talks about how the issue of whether a single cone or two cones should be purchased was not economical but that of morality. The author infers from his elder's behaviour that that was the only justification.

The meanings of the options are:
Didactic means 'teaching or intending to teach a moral lesson'.
Dietetic means 'pertaining to diet or to regulation of the use of food'.
Dialectic means 'pertaining to, or of the nature of logical argumentation'.
Diatonic means 'pertaining to the tones, intervals, or harmonies of such scales'.
Diastolic means 'indicating the arterial pressure during the interval between heartbeats'.

Hence, the correct answer is option 1.

Directions for Questions 81 to 85: The passage given below is followed by a set of five questions. Choose the most appropriate answer to each question.

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 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 pigeon-holed 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 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.

81. Many of the concepts of modern art have been the product of

(1) ideas generated from planned deliberations between artists, painters and thinkers.
(2) the dissemination of ideas through the state and its organizations.
(3) accidental interactions among people blessed with creative muse.
(4) patronage by the rich and powerful that supported art.
(5) systematic investigation, codification and conventions.

Solution:

Option 1 is incorrect because of the word *planned.* The passage states, "…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…".
Neither option 2 nor 4 have been mentioned in the passage.
Option 5 contradicts the passage. The passage states, "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 meeting of groups of talented individuals at certain times and certain places." This implies that the concepts of modern art have not been the product of systematic conventions. Moreover the following extract , "Certainly one can understand that artists are wary of being pigeon-holed" as well as "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" indicates that the concepts of modern art have not been the product of codification.
Option 3 is explicitly mentioned in the passage, "…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…"
Hence, the correct answer is option 3.

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

(1) an art movement that has ceased to remain interesting or useful.
(2) an analogy from the physical world to indicate a historic art movement.
(3) an analogy from the physical world to indicate the barrenness of artistic creations in the past.
(4) an embedded codification of pre-historic life.
(5) an analogy from the physical world to indicate the passing of an era associated with an art movement.

Solution:

Option 1 is incorrect because the passage states, "This is not to say that it becomes useless or uninteresting"- the "it" being art.
Option 2 is incorrect because the word "fossil" in the passage is used to draw an analogy between the physical world and art. Just as scientists can reconstruct the life of a prehistoric environment from a "fossil" so also, an artist can decipher intellectual and creative possibility from a *"dead"* art movement. The scientists are not reconstructing life but the environment in which these prehistoric creatures lived. Similarly an artist is not bringing back to life past art forms but rather deriving possibilities for creative inspiration by studying them. "When an art form slips into temporal perspective, it ceases to be a living organism" meaning it dies. In option 2, *'historic'* makes it incorrect - it should have been *'dead'*.
Option 3 is incorrect because the passage does not indicate explicitly or implicitly that there was a "barrenness of artistic creations in the past".

Option 4 is literally correct. But the word "fossil" in this case has been used to draw an analogy between the physical world and "dead" art. Therefore the interpretation of the word "fossil" in this instance is incorrect.
Option 5 can be implied from, "As an art movement slips into temporal perspective, it ceases to be a living organism - becoming, rather, a fossil. This is not to say 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."
Hence, the correct answer is option 5.

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

(1) Both, in general, include a gamut of distinct but interconnecting activities.
(2) Both have movements not necessarily concerned with innovation.
(3) Both depend on collaborations between talented individuals.
(4) Both involve abstract thought and dissemination of ideas.
(5) Both reflect complex priorities of the modern world.

Solution:

Option 2 is incorrect. The passage states, "Not all movements were exclusively concerned with innovation" - implying that some artistic movements were concerned with innovation. However, there is no mention of the status of innovation with regard to science. Hence, there is no data for comparison.
Option 3 is incorrect. While it is mentioned that groups of artists, painters and thinkers collaborated together to develop concepts of modern art, the passage is silent on the case of the scientific world.
Option 4 is incorrect because 'the dissemination of ideas' is only referred to in the case of Art and not to science.
Option 5 applies only to Art and not to Science.
Option 1 can be obtained from "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.*" The last sentence shows that the author of the passage feels that the analogy is misleading - leading to erroneous conclusions.
Hence, the correct answer is option 1.

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

(1) the existence of movements such as surrealism.
(2) landmarks which give a pattern to the art history of the twentieth century.
(3) new language tools which can be used for further explorations into new areas.
(4) the fast changing world of perceptual and transcendental understanding.
(5) the quick exchange of ideas and concepts enabled by efficient technology.

Solution:

Options 1, 2 and 3 are tangential - while mentioned in the passage they do not address the question stem.
In option 5, the phrase, 'efficient technology' makes it incorrect because this has not been mentioned in the passage as a cause for the range of concepts and ideologies in the art of the twentieth century.

Option 4 can be inferred from , “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 rapidly changing world of *visual* and *spiritual* experience”.
Here “visual” and “spiritual” are synonymous with ‘perceptual’ and ‘transcendental’.
Hence, the correct answer is option 4.

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

(1) creative processes are not ‘original’ because they always borrow from the past.
(2) we always carry forward the legacy of the past.
(3) past behaviours and thought processes recreate themselves in the present and get labeled as ‘original’ or ‘creative’.
(4) ‘originality’ can only thrive in a ‘greenhouse’ insulated from the past biases.
(5) ‘innovations’ and ‘original thinking’ interpret and develop on past thoughts to suit contemporary needs.

Solution:

The questions refers to the end of the passage, “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 confirm more exactly to his - and our - present needs”.
Option 1 is incorrect. The second sentence means that original ‘creative processes’ exist although the artist may be “involved with a nexus of behaviour patterns bequeathed from the past”.
Options 2 and 3 do not maintain the tone of the passage, and hence are eliminated in favour of Option 5.
Option 4 contradicts the passage. The passage mentions that the ‘originality’ of ideas and concepts developed by artists owe genesis to behaviour patterns bequeathed from the past.
Option 5 can be inferred from the extract above, especially the italicised portions.
Hence, the correct answer is option 5.

Directions for Questions 86 to 90: The passage given below is followed by a set of five questions. Choose the **most appropriate** answer to each question.

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 in this book 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.

86. 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?

(1) Various ethnic groups competing for land and other resources
(2) Various ethnic groups competing for limited land resources
(3) Various ethnic groups fighting with each other
(4) Various ethnic groups competing for political power
(5) Various ethnic groups fighting for their identity

Solution:

The question asks for the factor best denoting the case of Rwanda and Haiti.
From the second paragraph, "…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 the 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 keywords are the words 'limited', 'land 'and 'resources'. The second strand continues in the same vein and says that land and resources were limited. Combining the two, option 1 is the right answer option.
Option 2 talks about "land resources" but does not mention other resources which were also scarce.
Options 3 states 'ethnic groups fighting with each other'. There is no mention of fighting in the second paragraph.
Option 4 mentions 'ethnic groups competing for political power'. There is no mention of this in the second paragraph.
Option 5 states 'ethnic groups were fighting for their identity' which is not related to the Rwanda and Haiti context.
Hence, the correct answer is option 1.

87. By an anthropogenic drought, the author means

(1) a drought caused by lack of rains.
(2) a drought caused due to deforestation
(3) a drought caused by failure to prevent bracken ferns from overrunning the fields.
(4) a drought caused by actions of human beings.
(5) a\ drought caused by climate changes.

Solution:

This was essentially a vocabulary question – you need to know or guess the meaning of Anthropogenic.
Anthropogenic means 'caused or produced by humans'.
From the second paragraph, "…*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."
Option 1 is incorrect because lack of rain cannot be attributed to human intervention.
Options 2 and 3 are incorrect because they are reasons to the causes of the drought and why the drought was anthropogenic.

Option 4 means the same as anthropogenic. Deforestation and soil nutrient depletion can only be caused by humans.
Option 5 is incorrect because a drought caused by climate changes cannot be said to be caused by humans.
Hence, the correct answer is option 4.

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

(1) the Maya kings continue to be extravagant when common people were suffering.
(2) it happened at the time of collapse of leadership among Mayas.
(3) it happened when the Maya population had occupied all available land suited for agriculture.
(4) it was followed by internecine warfare among Mayans.
(5) irreversible environmental degradation led to this drought.

Solution:

This is a direct question.
Option 1 is the fifth strand is the passage, but there is nothing to indicate that had a different impact compared to earlier droughts.
Option 2 has no supporting data in the passage.
Option 4 contradicts the third paragraph, "Maya warfare, already endemic, peaked *just before* the collapse".
Option 5 is incorrect because "the third strand consisted of increased fighting, as more and more people fought over fewer resources." This implies that environmental degradation had nothing to do with this particular drought.
The third paragraph mentions "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." From this, option 3 is correct.
Hence, the correct answer is option 3.

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

(1) Copan inhabitants destroyed all records of that period.
(2) The constant deforestation and hillside erosion have wiped out all traces of the Maya kingdom.
(3) Archaeological sites of Mayas do not provide any consistent evidence.
(4) It has not been possible to ascertain which of the factors best explains as to why the Maya civilization collapsed.
(5) At least five million people were crammed into a small area.

Solution:

Option 1: the passage does not talk about Copan inhabitants destroying the records.
The first paragraph mentions that "detailed archaeological studies are available for some Maya sites" which contradicts options 2. Further, since there is no other evidence in the passage, we have no ground for option 3.
Option 5 is mentioned in the third paragraph; however, it does not explain the reasons for Maya collapse.
The passage mentions five possible strands for the Maya collapse. The passage states, "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". The summary of this paragraph is option 4.
Hence, the correct answer is option 4.

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

(1) Environmental degradation due to excess population
(2) Social collapse due to excess population
(3) Increased warfare among Maya people
(4) Climate change
(5) Obsession of Maya population with their own short-term concerns.

Solution:

The second paragraph states, "…population growth outstripping available resources". This led to deforestation and soil erosion which ultimately led to environmental degradation. This eliminates option 1.
The last paragraph states "…the *Maya peak population numbers* were followed swiftly by political and *social collapse*". This eliminates option 2.
Option 3 is also mentioned in the passage. The third paragraph states "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.*"
Option 4 has been cited as one of the factors. In the third paragraph, "bringing matters to a head was the strand of climate change."
Option 5 is not mentioned in the passage. The fourth paragraph does state "short-term concerns of the *kings* and the *nobles*" but option 5 talks about the 'Maya population'.
Hence, the correct answer is option 5.