ANSWERS & EXPLANATION

APTITUDE TEST–Test (4287) – 2024

1 (a)

Option (a) is correct. The given option is correct as it captures the essence of the passage as given in line - *"When we don't* ***learn from our mistakes****, we inflict unnecessary stress on ourselves* ***and others,*** *and* ***we risk losing people's confidence and trust in us****."*
Option (b) is incorrect. The given option seems to be correct but it is incomplete as compared to option (a) which captures the essence of the passage in more detail. The context of "others" is missing in this option. Hence, this option is not what the passage best implies.
Option (c) is incorrect. The context that human beings are a pillar of mistakes, and whether this demeans the importance of introspection is not discussed in the passage. Hence, this option is beyond the scope of the passage.
Option (d) is incorrect. The context of apologizing is seen in the line - "*But if we* ***simply apologize*** *and carry on as before, we're in danger of repeating the same errors."* This means that a mere apology is not enough; learning lessons and not repeating the same errors is more important. Hence, this option is not what the passage best implies.

2 (c)

Option (a) is incorrect. Refer to the lines "***Changing values in Western society*** *indicate that the context of human experience is changing into a more spiritual quest for wholeness, … and ultimately an integration of - science and spirituality into a greater whole."* It means that with changing values, spirituality is getting more attention now. However, to conclude that values in Western society treat science and spirituality as part of the same coin is not correct. Also, this answer option does not talk about business side of things.
Option (b) is incorrect. Refer to the line "*Future organisations must be both morally and socially responsible and* ***profitable*** *(materialism)."* It shows that materialism and compassion or spirituality need to go hand in hand in future. It would be incorrect to say that materialism is a thing of the past. So, this option is not the best crux of the passage.
Option (c) is correct. Refer to the lines "This new era is characterised by a calling to find a balance between - … ***science and spirituality into a greater whole***. *As a result, there is a need to redefine the purpose of businesses:* ***Profit can no longer be the only purpose. Future organisations must be both morally and socially responsible and profitable*** *… found in several contemporary* ***spiritual leadership theories***." In the future compassionate capitalism will include science, spirituality, profits and moral leadership. Hence, this option best reflects the crux of the passage.
Option (d) is incorrect. The context of consumerism is not a part of the passage. Also, the line "*As a result, there is a need to redefine the purpose of businesses: Profit can no longer be the only purpose. Future organisations must be both morally and socially responsible and profitable"* validates that spirituality and profits (consumerism) could go together. Hence, the given option is not correct as per the passage.

3 (c)

Assumption 1 is invalid. The context of unemployment is not discussed in the passage. The passage focuses mostly on the importance, challenges and timelines of vocation as a discipline. Hence, this assumption is beyond the scope of the passage and is not correct.
Assumption 2 is also invalid. The given assumption is not correct because the passage merely mentions the reason for the stigma attached to it, that too in the past tense – "*Up until the end of the twentieth century, vocational education focused on specific trades such as automobile mechanics or welding and was therefore*

associated with the activities of lower social classes." We do not know whether it still holds true or not. Also, the relevance of vocational education in higher education is suggested to be limited (*"...however, it is rarely considered in its form to fall under the traditional definition of higher education*"). The passage nowhere hints that the inclusion of vocational education in higher education can solve the stigma attached to it. So, as per the passage, this assumption is not correct.

4 (c)

In a kilometer race, candidate A defeated candidate B by 100 metres and candidate B defeated candidate C by 100 metres.
It means, while candidate A covered 1000 metres, candidate B covered 900 metres.
While candidate B covered 1000 metres, candidate C covered 900 metres.
It means when candidate B covered 900 metres, distance covered by candidate C = 900 × (900/1000) = 810 metres
Therefore, the Distance By Which Candidate A must have defeated candidate C = 1000 – 810 = 190 metres.
Hence, option (c) is the correct answer.

5 (d)

Let, p = (1/q)k, where k is a constant.
Or pq = k
As p = 4 and q = 6.
So, k = 4 × 6 = 24
Product of p and q is a constant, i.e. 24. The only other pair with a product equal to 24 is p = 12 and q = 2.
Hence, option (d) is correct.

6 (a)

A set of n numbers has an average of 3k and a sum of 12m, where k and m are both positive numbers.
Average = Sum of terms/Number of terms
Or 3k = 12m/n
Or n = 12m/3k = 4m/k
Hence, option (a) is correct.

7 (b)

A hare runs at a constant rate of 'a' miles per hour, and a tortoise runs at a constant rate of 'b' miles per hour.
Distance = d
The tortoise would take d/b hours to complete the race, and the hare would take d/a hours to complete the race.
Here, 0 < b < a.
Thus, d/a < d/b
So, the tortoise would take (d/b) – (d/a) = (ad – bd)/ab more hours to finish the race.
Hence, option (b) is correct.

8 (c)

Total capacity of the pool = 20,000 kilo litres
The pool is $1/4^{th}$ full. So, it further requires (3/4)(20000) = 15,000 kilo litres of water to get filled.
Rate of water supply = g kilo litres per m minutes = (g/m) kilo litres per minute
Required cost = [15000 / (g/m)] × r = 15000 × (m /g) × r = Rs. 15000 mr/g
Hence, option (c) is correct.

9 (b)

Population of town B is 50% more than the population of town A, and the population of town C is 20% more than the population of town A.
Let population of town A be X.
Population of town B = (150X/100) = 1.5X
Population of town C = (120X/100) = 1.2X
Required percent = [(1.5X - 1.2X)/1.2X] × 100 = 25%
Hence, option (b) is correct.

10 (a)

Let the numbers satisfying the given conditions be denoted by N.
$10 \leq N \leq 99$
Remainder (N/4) = 1 and Remainder (N/5) = 2
So, N = 20X – 3 (by LCM)
Or N + 3 = 20 X
∴ N + 3 = 20 or 40 or 60 or 80 or 100
∴ N = 17 or 37 or 57 or 77 or 97
So, N has five possibilities.
Hence, option (a) is the right answer.

11 (b)

Total number of items that each child gets = (24/n) + (72/n) + (60/n) = 156/n
This is minimum when n is maximum.
n = HCF (24, 72, 60) = 12
Therefore, the minimum possible number of items that each child can get = 156/12 = 13
Hence, option (b) is the right answer.

12 (c)

The sum of two positive numbers is 24.
Let the smaller number be x.
Then, the other number will be (24 – x).
According to the question,
$2x^2 – (24 - x)^2 = 4$
$\Rightarrow x^2 + 48x – 580 = 0$
$\Rightarrow x^2 + 58x – 10x – 580 = 0$
$\Rightarrow x(x + 58) –10(x + 58) = 0$
$\Rightarrow (x + 58) (x – 10) = 0$
$\Rightarrow x = 10, – 58$
∴ Larger of the two numbers is (24 – 10), i.e. 14
Hence, option (c) is the right answer.

13 (a)

Let the present ages of Alok, Vinay and Chandan be ‘a’ years, ‘b’ years and ‘c’ years, respectively.
Vinay will attain Alok’s present age (a – b) years from now.
The ages of Alok and Chandan at that time will be (2a –b) years and (c + a – b) years respectively.
According to the question,
(2a – b) / (c + a – b) = 18/13
$\Rightarrow$ 26a - 13b = 18c + 18a - 18b
$\Rightarrow$ 18c = 8a + 5b ……. (i)
Alok was as old as Chandan (a – c) years ago.
The ages of Vinay and Chandan then were b – (a – c) and c – (a – c) years respectively.
According to the question,
{b – (a - c)} / {c – (a – c)} = 7/5
$\Rightarrow$ (b + c – a) /(2c – a) = 7/5
$\Rightarrow$ 5b + 5c - 5a = 14c - 7a
$\Rightarrow$ 2a + 5b = 9c …….. (ii)
From eqn. (i) and (ii), we get:
18c = 8a + 5b = 2(2a + 5b)
$\Rightarrow$ a/b = 5/4
Hence, option (a) is the right answer.

14 (c)

Let ages of Sunny and Lucky be s and l, respectively.
Sunny told Lucky “I am thrice as old as you were when I was as old as you are”.
Sunny was as old as Lucky exactly (s – l) years ago.
(s – l) years ago Lucky would have been [l – (s – l)] = (2l – s) years old.

Given, s = 3(2l - s)
⇒ 4s = 6l
⇒ s = 3l/2 ……. (i)
Sum of the ages of Sunny and Lucky is 80 years.
s + l = 80 …….. (ii)
Solving eqn. (i) and (ii), we get:
s = 48, l = 32
Sunny is x years elder to Lucky.
So, x = s – l = 16
Hence, required value of x is 16 years.
So, option (c) is the right answer.

15 (c)

To make a certain purple dye, red dye and blue dye are mixed in a ratio of 3:4.
Purple dye is [3/(3 + 4)] red, i.e. (3/7) red
To make a certain orange dye, red dye and yellow dye are mixed in a ratio of 3:2.
Orange dye is [3/(3 + 2)] red, i.e. (3/5) red
If equal amounts of purple and orange dye are mixed, then
Required fraction of red dye = (1/2)(3/7) + (1/2)(3/5) = (3/14) + (3/10) = 18/35
Hence, option (c) is correct.

16 (d)

Let's assume a, b and c as 4, 2 and 1 and check each statement.
Statement I:
(a + 2b) (a - 4b + 5c) = (4 + 2×2) (4 - 4×2 + 5×1) = 8×1 = 8
Statement II:
(2a + b + 5c) (a - b) = (2×4 + 2 + 5×1) (4 - 2) = 15×2 = 30
So, neither I nor II is always odd.
Hence, option (d) is correct.

17 (d)

Inference 1 is incorrect. The passage does not cover the context of crop production, and there is no comparison of crop production made with prevention of soil erosion. The focus of the passage is on sustainable land management. Hence, this inference is not correct and is beyond the scope of the passage.
Inference 2 is incorrect. The given inference is not correct because the passage in line "*Governments and banks must help farmers get access to credit and support in implementing erosion prevention",* mentions that governments should support farmers to access credit for erosion prevention and not for restoration as given in the option statement. Also, the author categorically says that the cost of erosion prevention is far lower than the cost of land restoration and rehabilitation, So, the emphasis is on prevention.

18 (d)

Option (a) is incorrect. The context of more research to reduce cost is not a part of the passage. Therefore, this option is beyond the scope of the passage and is not correct.
Option (b) is incorrect. The context of crop production and its importance in dealing with the climate crisis and hunger is not mentioned in the passage. Hence, this option is not correct.
Option (c) is incorrect. The line "*Governments and banks must help farmers get access to credit and support in implementing erosion prevention"* mentions that governments and banks should support farmers. However, the option mentions insurance policy by the government, which is not correct as per the passage.
Option (d) is correct. It is based on the following line from the passage - "*The cost of erosion prevention* ***is far lower than the price of land restoration and rehabilitation****, which one source estimated to be around Rs.1,20,000–Rs.1,60,000 per hectare."* So, as per the passage, it would be correct to say that erosion prevention should be valued more than restoration/rehabilitation. Hence, this option is correct, as per the passage.

19 (a)

Option (a) is correct. The lines "*The **flexibility offered by gig platforms allows workers to better manage unpaid care and paid work,** by letting workers determine their work hours and reducing their dependence on a **static physical space**. As the gig economy gained more ground, it was assumed that more women would come into the ambit of the workforce in India, leading to an overall improvement in the workforce participation rate. Statistically**, however, little improvement has been seen**",* shows how gig work is suitable for women, and still it has had limited impact. So, this option best reflects the crux of the passage.
Option (b) is incorrect. In the lines - "*One of the main reasons for women's high attrition rate in the workforce … especially after starting families"* and "*Not only is the work mandated by socio-cultural norms, but the flexibility offered by gig work depends largely on whether it is a primary or supplementary source of income."*, the author talks about the socio-cultural norms prevailing in society, not necessarily patriarchal norms. Also, the passage has nowhere discussed anything regarding the phenomenon of glass ceiling. So, this option is not correct.
This makes option (d) incorrect too.
Option (c) is incorrect. The context of the patriarchal mindset is not discussed in the passage and hence this option is beyond the scope of the passage and is not correct.

20 (c)

Maximum score possible in the examination = a
Marks secured by the student = y
Since the student secured 'y' marks and failed by the same number of marks, therefore marks required to pass = y + y = 2y
Percentage of marks required to pass = (Marks required to pass/Maximum score) × 100
= (2y/a) × 100
= 200y/a %
Therefore, percentage of marks required to pass the examination is 200y/a %.
Hence, option (c) is the right answer.

21 (a)

Let x and y be the length of the sides of the rectangle.
If the multiplication of two variables is constant then their sum is the least when they are equal, i.e. if xy = 16, then the minimum possible value of x + y = 4 + 4 = 8.
So, the minimum possible perimeter = 2 (x + y) = 16 m
x + y will be maximum when the difference between x and y is the most, i.e. (x, y) = (1, 16) or (16, 1).
So, the maximum possible perimeter = 2 (1+16) = 34 m
Hence, option (a) is the right answer.

22 (a)

Let the time taken by pipes A, B and C to fill or empty the tank be 'a' minutes, 'b' minutes and 'c' minutes respectively.
If pipes A and B are used for filling and pipe C is used for emptying, the tank would get filled in 6 hours.
(1/a) + (1/b) – (1/c) = 1/6 ……. (i)
From Statement 1:
(1/a) + (1/b) + (1/c) = 1/2 …….. (ii)
Subtracting equation(i) from equation (ii), we get:
⇒ 1/c – (-1/c) = (1/2) – (1/6)
⇒ 2/c = 1/3
⇒ c = 6
Thus, time taken by pipe C to fill the tank is 6 minutes.
Hence, Statement 1 alone is sufficient.
From Statement 2:
(1/b) + (1/c) – (1/a) = 1/6 ……. (iii)
Subtracting equation(i) from equation (iii), we get:
(2/c) – (2/a) = 0
Or 1/a = 1/c
Or a = c

Adding equation(i) and equation(iii), we get:
2/b = 2/6
Or b = 6
Now, from equation (i), we get:
(1/a) + (1/b) – (1/c) = 1/6
Or (1/a) + (1/6) – (1/c) = 1/6
Or 1/6 = 1/6 (as a = c)
∴ We cannot find c.
Hence, Statement 2 alone is not sufficient.
Hence, option (a) is the right answer.

23 (d)

Let d be the distance between Tripura and Chennai.
Then, time taken by them to meet = d/{(d/42) + (d/56)}
= 14 [(3 × 4)/(3 + 4)]
= 24 hours
Since they started at 7:30 am, they would meet at 7:30 am the next day.
Hence, option (d) is the right answer.

24 (c)

Let loss be Rs. x.
Then, profit = {(100 – 15)/100} of x = 85x /100
According to the question,
1896 – (85x/100) = 1680 + x
Or x + (85/100) x = 1896 – 1680
Or 37x/20 = 216
Or x = (216 × 20) / 37
Or x = 116.76
So, Cost price of the article = 1680 + 116.76 = Rs. 1796.76
Hence, option (c) is the right answer.

25 (c)

Total number of students enrolled in all the given states in M. Phill = 1500 + 250 + 1000 + 2000 + 500 + 1500 = 6750
Average number of students enrolled in all the given states in M. Phill = 6750/6 = 1125
Hence, option (c) is the correct answer.

26 (a)

Total number of students enrolled in B. Ed in Andhra Pradesh, Maharastra and West Bengal = 3250 + 3000 + 2750 = 9000
Total number of students enrolled in M. Phill in Karnataka and M. Ed in Tamilnadu = 1000 + 2000 = 3000
Required percentage = [3000/9000] × 100 = 100/3% = 33.33%
Hence, option (a) is the correct answer.

27 (c)

Total expenses = 72000 + 24500 + 30000 + 32500 + 18600 = Rs. 177600
Expense made on transportation = Rs. 30000
So, 360^0 = Rs. 177600
177600 → 360^0
1 → 360^0 / 177600
30000 → (360^0 / 177600) × 30000 = 60.81^o
Hence, option (c) is the right answer.

28 (c)

It is given that, total number of students in a school is a prime number.
Let us assume that there are 47 students in that school.
If number of boys is 25, then number of girls will be 22.

If number of boys is 24, then number of girls will be 23.
If number of boys is 23, then number of girls will be 24.
There is no factor other than 1 between the number of boys and girls. Infact, any two positive integers are co-prime if their sum is a prime number. Hence, statement 1 is correct.
Difference between number of boys and girls will always be an odd number (or prime number in some cases or maybe 0 in one particular case). Hence, statement 2 is incorrect.
Hence, option (c) is the correct answer.

29 (c)

p = xyz and q = zyx are 3 digit numbers.
B = p – q = (100x + 10y + z) – (100z + 10y + x) = 99x - 99y
So, statement I is correct.
Assume the numbers p and q to be 524 and 425 respectively.
B = p – q = 524 - 425 = 99, and
A = p + q = 524 + 425 = 949
Hence II and III are false.
Hence, option (c) is correct.

30 (d)

a, b are natural numbers such that (a + b)/ab is also a natural number.
The pairs (a, b) satisfying the stated condition are:
(1, 1) and (2, 2)
Thus, there are more than one but a finite number of ways of choosing the pair (a, b).
Hence, option (d) is correct.

31 (b)

Three bells chime at intervals of 18 minutes, 24 minutes and 32 minutes respectively.
Required time = LCM (18, 24, 32) = 288 minutes = 4 hours and 48 minutes
The bells will chime together again after a time interval of 4 hours and 48 minutes.
Hence, option (b) is correct.

32 (b)

Option (a) is incorrect as it is beyond the scope of the passage. The author does highlight the harms and demerits of anger and intolerance. However, to claim that anger and intolerance are the "worst" enemies of human society would not be correct, as there is no such claim made in the passage.
Option (b) is correct. The lines "***Intolerance*** *can also cause one's thoughts to not be clear because they are* ***too concerned with the anger****, they feel towards something or someone. They are* ***unable to see the truth or correctness*** *in what they are doing and do not consider all the facts before deciding",* from the passage essentially correspond to the claim made in this option. Hence, the given option is the best crux of the passage.
Option (c) is incorrect. The context of love and caring, as a solution to anger and intolerance is not touched upon in the passage. Hence, this is not the best crux.

33 (b)

Statement 1 is not correct. To maximize the development effects of cross-border movements on the migrants and refugees the World Development Report (WDR) 2023 offers an integrated framework. The passage says, **"World Development Report (WDR) 2023 proposes an integrated framework to maximize the development impacts of cross-border movements on both destination and origin countries and on migrants and refugees themselves".** It can be clearly inferred that WDR seeks to enhance the impact of development on both migrants and refugees. However, we cannot infer the stand of the report on illegal immigrants. It's a grey area. **Hence, it is not a correct statement.**
Statement 2 is correct. It is mentioned in the passage, **"As the world struggles to cope with global economic imbalances, diverging demographic trends, and climate change, migration will become a necessity in the decades to come for countries at all levels of income".** So, irrespective of the income levels of the countries, migration will become a necessity. Hence, it is a correct statement.

34 (d)

Statement 1 is not correct. The passage nowhere mentions that Jagannath Puri Temple is a World Heritage Site or not. The passage mostly focuses on the ritual aspects of the temple with special emphasis on Rath Yatra. **Hence, it is not a correct statement.**
Statement 2 is not correct. The passage mentions three chariots **"Taladhwaja Rath for Lord Balabhadra, the Darpadalan Rath for Goddess Subhadra, and the Nandighosa Rath for Lord Jagannath ".** It is not mentioned in the passage that the colour and dimension of these chariots is changed every year. **Hence, it is not a correct statement.**

35 (b)

Option (a) is not correct. Lord Jagannath is regarded as a manifestation (avatar) of Lord Vishnu. He actually possesses all of Lord Vishnu's avatars' characteristics. But the passage does not mention that Rath Yatra celebrates the reincarnation of Vishnu as Lord Jagannath. **Hence, it is not a correct option.**
Option (b) is correct. The passage clearly mentions, *"The Rath Yatra takes place on the second day of the Odia month of Ashadha Shukla Tithi (bright fortnight) every year to commemorate the journey of Lord Jagannath and his two siblings from their abode —the 12th century Jagannath Temple, to the Gundicha Temple, believed to be their aunt's home".* It implies that the significance of Rath Yatra is in the celebration of Lord Jagannath's voyage with his two siblings. **Hence, it is a correct option.**
Option (c) is not correct. The passage does not mention any incident related to Lord Ram. **Hence, it is not a correct option.**
Option (d) is not correct. No incident of Mahabharata or Pandavas is mentioned in the passage. **Hence, it is not a correct option.**

36 (b)

Both Jim and Della are moving in the same direction.
So, relative speed = 20 - 15 = 5 kmph. = 5 x (5/18) m/sec = 25/18 m/sec
To meet Jim, Della has to gain 300 m over him.
Time taken by Della to cover this extra 300 m with relative speed of 5 kmph = {300 / (25/18)} = 216 seconds.
Hence, option (b) is the correct answer.

37 (c)

Total number of balls = 120
It is given that there are 10 blue and 8 pink balls.
Number of other balls = 120 – 18 = 102.
So, probability of choosing a ball that is neither blue nor pink = 102/120 = 85%
Hence, option (c) is the correct answer.

38 (d)

Area of coffee shop = 5 metre × 4 metre = 20 square metres
Area of one tile = 0.2 metres × 0.2 metre = 0.04 square metres
Number of tiles required = Area of rectangular region / Area of one square tile = 20 square metres / 0.04 square metres = 500
Therefore, total cost of fitting the tiles = number of tiles × cost of fitting 1 tile = 500 × 40 = Rs. 20,000
Hence, option (d) is the correct answer.

39 (d)

Four largest single digit numbers are 6, 7, 8, and 9.
Case 1:
$\sqrt{\{(w + z) \times (x + y)\}} = \sqrt{\{(6 + 9)(7 + 8)\}} = \sqrt{(15 \times 15)} = 15$
Case 2:
$\sqrt{\{(w + z) \times (x + y)\}} = \sqrt{\{(6 + 7)(8 + 9)\}} = \sqrt{(13 \times 17)} = \sqrt{221}$
Hence, option (d) is correct.

40 (c)

The number of distinct quadrilaterals that we can draw using six points = ${}^6C_4 = {}^6C_2 = (6 \times 5) / (2 \times 1) = 15$
Hence, option (c) is correct.

41 (b)

LCM of 10, 15 and 20 = 60 units. Let it be the total capacity of tyre.
Efficiency of first puncture = 60/10 = 6 units/minute
Efficiency of second puncture = 60/15 = 4 units/minute
Efficiency of third puncture = 60/20 = 3 units/minute
Now, time taken to flat the tyre if all the punctures start to leak together = 60/(6 + 4 + 3) = 4.61 minutes.
Hence, option (b) is correct.

42 (a)

Let the digit at tens place be 'a' and the digit at unit's place be 'b'.
Then, the two digit number formed will be (10a + b), and reverse of that number will be (10b + a)
The question states that, the ratio of a two-digit natural number to the number formed by reversing its digits is 4 : 7.
So, (10a + b) /(10b + a) = 4/7
or 70a + 7b = 40b + 4a
or 66a = 33b
Therefore, a/b = 1/2
So, let us list down all possible values for a and b such that their ratio is 1 : 2.

a	b	Original Number	Reversed Number
1	2	12	21
2	4	24	42
3	6	36	63
4	8	48	84

On observing the table carefully, we observe that the largest possible number is 48 and reverse of that number is 84.
So, required difference = 84 - 48 = 36
Hence, option (a) is the correct answer.

43 (a)

4-digit numbers less than 2980 formed by the digits 1, 2, 3 and 4, wherein none of the digits is repeated are:
1234, 1243, 1324, 1342, 1423, 1432, 2134, 2143, 2314, 2341, 2413, 2431
Required sum = 21774
Hence, option (a) is correct.

44 (b)

Profit share of Aum = (1/3) Shubhra = 4 Konika ……(i)
Aum + Vivek = Lavanya + Konika ……(ii)
Lavanya - Vivek = Jyoti
Or Vivek = Lavanya - Jyoti ……(iii)
On solving equations (i), (ii) and (iii):
Lavanya + Konika = 4 Konika + Lavanya - Jyoti
Or 3 Konika = Jyoti
If Konika's profit share was 5000, then share of Jyoti = 3 × 5000 = Rs. 15000
Hence, option (b) is correct.

45 (a)

5 years ago, average age of the family = 30 years.
Present average age of the family = 30 + 5 = 35 years
Total age of the family at present = 35 × 10 = 350 years
If the ages of grandfather and his eldest daughter are removed on the present day, then the present average of the family will decrease by 3 years. It means average age of the rest of the 8 members of the family is (35 - 3), i.e. 32 years.
Total age of 8 members of the family (after removing the ages of grandfather and his eldest daughter) = 32 × 8 = 256 years

So, sum of the ages of grandfather and his eldest daughter = 350 – 256 = 94 years
Grandfather + Eldest daughter = 94 ……..(1)
It is also given that, difference between the ages of grandfather and his eldest daughter is 20 years.
Grandfather - Eldest daughter = 20 …….. (2)
Adding equations (1) and (2), we get:
Age of grandfather = (94 + 20)/2 = 57 years
Hence, option (a) is the correct answer.

46 (c)

In the time Abhijit covers 1000 m, Bijit covers 900 m and Chandrajit covers 800 m.
So, in the second race, when Abhijit covers 1000 m in this race, all of the three participants will be 200 m away from the finish line.
As per the given speed, in a 200 m race (the distance left), Abhijit would defeat Bijit by 20 m.
Hence, option (c) is correct.

47 (b)

Integers having 5 as a digit placed only at the unit place are: 105, 115, 125, 135, 145, 165, 175, 185 and 195
So, there are a total of 9 such integers.
Out of these, the integers which are divisible by 7 are 105 and 175.
Hence, option (b) is the correct answer.

48 (a)

Annual revenue = number of units sold × price per unit = n × 65 = 65n
Annual cost = Rs. (20,000 + 10n)
Annual profit from the sale of n items = Annual revenue - Annual cost = 65n - (20,000 + 10n) = 55n - 20,000.
Thus, 500,000 < 55n - 20,000 indicates that the total profit for this heart monitor in 2012 was greater than Rs. 500,000
Hence, option (a) is correct.

49 (d)

The average of a and b is greater than the average (arithmetic mean) of c and 2b.
So, $(a + b)/2 > (c + 2b)/2$
Or $a + b > c + 2b$
Or $a > c + b$
Thus, only statement III is correct.
Hence, option (d) is correct.

50 (b)

In 6 hours, the population = current population + 200% of current population = 3 times of current population
Thus, the population after 6 hours will be 20,000 × (3).
After 12 hours, the population will be $20,000 \times (3)^2$.
After 18 hours, the population will be $20,000 \times (3)^3$, and so on.
If h hours have passed, then h/6 of these "tripling periods" have passed. So, the population after h hours = $20000 \times (3)^{h/6}$
Hence, option (b) is correct.

51 (c)

Options (a) and (d) are not correct. The purpose of zero FIR is to get a complaint registered ASAP. Timely delivery of justice and proper medical help to victim can be related to FIR, but these are not the main purpose of zero FIR. This makes options (a) and (d) incorrect.
Option (b) is not correct. Forensic investigation is out of context of the passage.
Option (c) is correct. The passage clearly mentions, *"Zero FIR ensures that the victim doesn't have to run from pillar to post to get a police complaint registered".* Zero FIR ensures that the first step towards grievance redressal is met as early as possible. **Hence, it is a correct statement.**

52 (a)

Statement 1 is correct. The passage clearly says, *"When a police station receives a complaint regarding an alleged offence that has been committed in the jurisdiction of another police station, it registers an FIR and then transfers it to the relevant police station for further investigation. This is called a Zero FIR. No regular FIR number is given. After receiving the Zero FIR, the revenant police station registers a fresh FIR and starts the investigation."* It's obvious that one needs to file Zero FIR only when he/she is reporting the crime in non-jurisdictional police stations. **Hence, it is a correct statement.**

Statement 2 is not correct. The passage says, *"The provision of Zero FIR came up after the recommendation in the report of the Justice Verma Committee, which was constituted to suggest amendments to the Criminal Law in a bid to* ***provide for faster trial and enhanced punishment*** *for criminals accused of committing sexual assault against women".* It implies that the committee was constituted with the objective of not only severe punishments for the accused but also to provide a faster trial. **Hence, it is not a correct statement.**

53 (c)

Option 1 is correct. The passage clearly mentions, *"The primary objections were on grounds of privacy, utility and possibility of misuse".* This implies that breach of privacy along with possible misuse and utilization of the DNA Technology bill is among the primary objections against it. **Hence, it is a correct option.**

Option 2 is correct. Concerns have been raised regarding the potential for racial profiling in the application of this law. It is mentioned in the passage - *"In recent years, apprehensions were raised about the possibility of this law being used for racial profiling".* **Hence, it is a correct option.**

Option 3 is correct. Yet another objection was that the police couldn't be relied upon to request DNA samples for their investigation. The passage says, *"It was even argued that the police could not be trusted to seek DNA tests in their investigations".* **Hence, it is a correct option.**

Option 4 is not correct. The passage nowhere mentions anything about virus attack on the DNA database. **Hence, it is not a correct option.**

54 (a)

Statement 1 is correct. The passage clearly says, *"The Bill had three primary objectives. First, it sought to set up a DNA profiling board as the regulatory body, one of the functions of which would be to provide accreditation to laboratories authorized to carry out DNA sample tests".* This implies that the creation of regulatory authority is proposed. **Hence, it is a correct statement.**

Statement 2 is correct. The passage clearly says, *"The Bill also provided for the creation of databases — DNA Data Banks — for storing DNA information collected from convicts and accused".* **Hence, it is a correct statement.**

Statement 3 is not correct. It is not mentioned in the passage that DNA information will be connected to each person's Aadhaar card. **Hence, it is not a correct statement.**

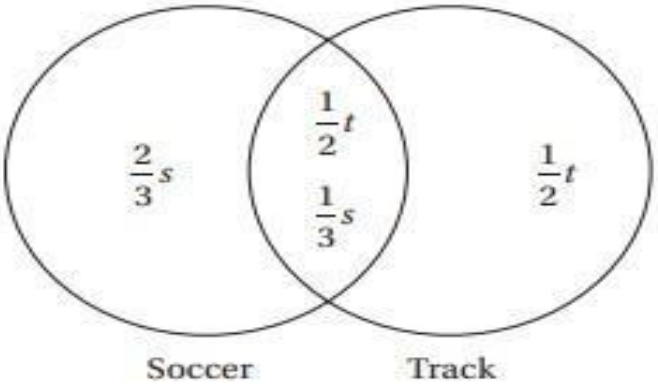
55 (a)

Statement 1 is correct. It is mentioned in the passage, *"As of now, there is a lag between trade and settlement — the settlement date is different from the trade date".* **Hence, it is a correct statement.**

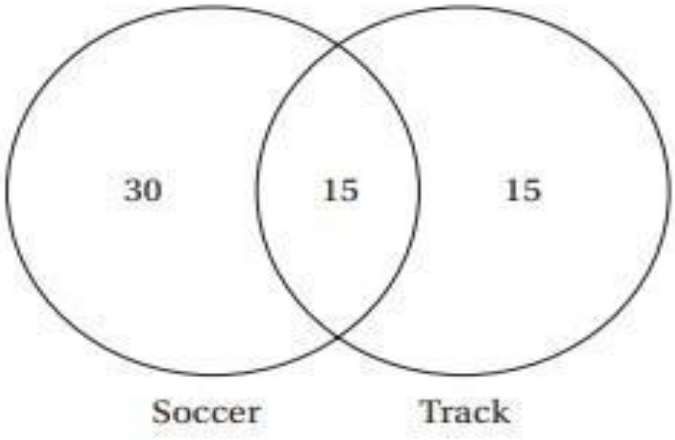
Statement 2 is not correct. The passage mentions, *"A trade settlement is said to be complete once purchased securities of a listed company are delivered to the buyer, and the seller gets the money".* This implies that only when the buyer gets the purchased securities and seller gets the money, a trade settlement is considered to have been completed. **Hence, it is not a correct statement.**

56 (d)

Let s = the total number of athletes in the group who play soccer, and t = the number of athletes in the group who run track.
We can set up a Venn diagram to show the relationship between these two overlapping sets.



Since one-third of the soccer players also run track, we must put s/3 in the overlapping region between soccer and track, and therefore the number of players who play only soccer is 2s/3.
Likewise, since one-half of the athletes who run track also play soccer, we must put t/2 in the overlapping region, and therefore the number of athletes who only run track is t/2.
Since there are 60 athletes in total.
So, (2/3) s + (½)t + (½)t = 60
Or (2s/3) + t = 60
Or 2s + 3t = 180
The number of soccer players who run track must be equal to the number of track athletes who play soccer.
So, (1/3)s = (1/2)t
Or 2s = 3t
Substituting 2s = 3t into the previous equation, we get:
3t + 3t = 180
Or 6t = 180
Or t = 30
So, 2s = 3×30 = 90
Or s = 45
Now we can use these values to complete the Venn diagram:



From this diagram, we can see that the number of soccer players in this group is 15 greater than the number of track team members.
Hence, option (d) is correct.

57 (c)

Vessel A contains x litres of milk and vessel B has y litres of water.
After the transfer:
Quantity of milk in vessel A = x – z
Quantity of milk in vessel B = z

Percentage of milk in vessel A = $[(x – z)/x] \times 100$
Percentage of milk in vessel B = $(z/y) \times 100$
Percentage of milk becomes the same in these two vessels after such an operation.
So, $[(x – z)/x] \times 100 = (z/y) \times 100$
Or $(x - z)/x = z/y$
Or $xy = xz + yz$
Or $xy = (x + y)z$
Hence, option (c) is correct.

58 (a)

As per the question, $A + B > C + D$ ……..(i)
$A + C = B + D$ ……(ii)
$A = (B + D)/2$
Or $B + D = 2A$ …….(iii)
Putting value of (B + D) in (ii), we get:
$A + C = 2A$
Or $A = C$
Using (i):
$A + B > C + D$
So, $B > D$
Using (iii): $B > A$.
So, statement (a) is wrong.

59 (a)

Charge for Airtel for 15 days = 15×90 = Rs 1350
Charge for Idea for 15 days = 1350 – 10% of 1350 = 1350-135 = Rs 1215
Total monthly expense on data = 1350 + 1215 = Rs 2565
Required percentage = $(135/2565) \times 100 = 5.2$ % (approx)
Hence, option (a) is the correct answer.

60 (d)

Let the total number of students be x.
Number of students that passed = 38% of x
Number of students that failed = (100 - 38)% of x = 62% of x
As per the question,
(62% of x) – (38% of x) = 60
Or 24% of x = 60
Or x = 250
Thus, the total number of students who appeared in the examination is 250.
Hence, option (d) is the right answer.

61 (b)

Let the cost price of two sofas be Rs. 500 and Rs. 300 respectively.
$\therefore SP_1 = 500 (1 – x/100) = 500 – 5x$
$SP_2 = 300 (1 + 2x/100) = 300 + 6x$
$SP_1 + SP_2 = (500 – 5x) + (300 + 6x) = 800 + x$
Profit = Total SP – Total CP = (800 + x) – (500 + 300) = Rs. x
In the entire transaction he made a net profit of 2.5%.
So, Profit = 2.5% of (500 + 300) = 2.5% of 800 = Rs. 20
So, x = 20
Hence, option (b) is the right answer.

62 (d)

Either statement alone is not sufficient to find discount percentage offered on item x.
Combining S1 and S2:
S.P. = 20 + {(25/100) × 20)} = Rs. 25
M.P. ≤ Rs. 30

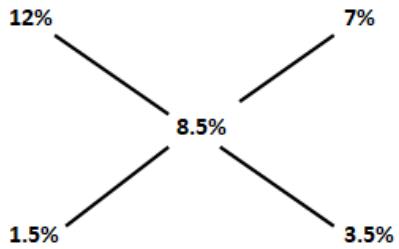
∴ Discount ≤ 5
If MP = Rs. 30, Discount = Rs. 5
Hence, the discount percentage = (5/30) × 100 = 16.67%
If MP = Rs. 26, Discount = Rs. 1
Hence, the discount percentage = (1/26) × 100 = 3.85%
So, Discount percentage may or may not be less than 16%.
Thus, both the statements together are not sufficient to answer the question.
Hence, option (d) is the right answer.

63 (d)

Let the number of days on which he completed the task be x and the number of day/days on which he did not complete the task be y. There are 30 days in June month.
If he completed the task on every day of the month, i.e. on all the 30 days, the amount earned by him would have been 30 × 50 = Rs. 1500
But at the end of the month he earned only Rs. 1430.
It means that he missed out on 1500 – 1420 = Rs. 80.
It means that he must have earned Rs. 50 on 26 days and Rs. 30 on 4 days.
Hence, option (d) is the right answer.

64 (a)

Kavi borrowed Rs. 72000 from Kanchan and Krishna. At the end of one year he paid Rs. 6120 as interest.
Average rate of interest that Kavi paid = (6120 × 100)/(72000 × 1) = 8.5%
Kanchan charges 12% per annum compound interest and Krishna charges 7% per annum compound interest.
By allegation method,



The ratio of sum borrowed = 1.5 : 3.5 = = 3:7
Sum borrowed from Krishna = [7/(7 + 3)] × 72000 = (7/10) × 72000 = Rs. 50400
Hence, option (a) is the right answer.

65 (d)

From S1:
We know the angle of elevation and the distance. So, we can find the height of the statue of Shivaji.
From S2:
We can find the height of telephone tower.
∴ Using both statements, we can find which is taller.
Thus, both the statements together are sufficient to answer the question.
Hence, option (d) is the right answer.

66 (c)

Let the age of the lady at the time of her death be X.
Age spent as child = X/12
Age spent as a teenager = X/7
Age spent between adulthood and marriage = X/6
Age of daughter = X – (X/12 + X/7 + X/6 + 3 + 6) = X - 33X/84 – 9 = 51X/84 – 9
Now, 2(51X/84 – 9) = X
Or 18X/84 = 18
Or X = 84.
Age of daughter = X/2 = 42 years
Hence, option (c) is the right answer.

67 (b)

Given, Radius (r) = 7 m and height (h) = 24 m
∴ Slant height (l)= $\sqrt{r^2 + h^2} = \sqrt{\{(7)^2 + (24)^2\}} = \sqrt{625} = 25$ m
Let the length of the canvas be x m.
Curved surface area of the cone = Area of the canvas
Or $(22/7) \times 7 \times 25 = 11x$
Or x = 50 m
Hence, option (b) is the right answer.

68 (a)

The distance that the ball falls in successive seconds is in A.P with a common difference of 10 m.
Let the distance that it falls through in the 20^{th} second (in meters) be T_n.
$T_n = a_1 + (n - 1)d$
Here, n = 20, $a_1 = 6$, d = 10
∴ $T_{20} = 6 + (20 - 1) \times 10 = 6 + 19 \times 10 = 196$ m
Hence, the distance through which the ball falls in the 20^{th} second 196 m.
Hence, option (a) is the right answer.

69 (a)

Statement 1 is correct. The passage says, *"This floating barrier **poses threats** to navigation and public safety and presents humanitarian concerns".* **Hence, it is a correct statement.**
Statement 2 is correct. The passage says, *"…the presence of the floating barrier has prompted diplomatic protests by Mexico and risks damaging US foreign policy."* **Hence, it is a correct statement.**
Statement 3 is not correct. The passage does not say that floating barriers will create any kind of refugee crisis. **Hence, it is not a correct statement.**

70 (d)

Statement (a) is not correct. The passage does not mention anything about variants of malaria. **Hence, it is not a correct statement.**
Statement (b) is not correct. The passage does not mention that local transmission of malaria may prove deadly to elders and children. **Hence, it is not a correct statement.**
Statement (c) is not correct. The passage does not mention anything regarding the immunization costs with regards to malaria. **Hence, it is not a correct statement.**
Statement (d) is correct. This is the first instance of local transmission of malaria in 20 years and it is alarming according to the authorities. The passage says**,** *"The five cases have raised alert because this is the first time in 20 years that there has been local transmission of malaria in the United States. The last time the infection was transmitted by a mosquito locally in the country was in 2003 when eight people in Florida were infected".* **Hence, it is a correct statement.**

71 (c)

Assumption 1 is correct. This is supported by the passage where it mentions, *"It tries to create social stability through financial inclusion and play an active role in the social empowerment of the people in rural areas."* The passage also indicates that SHGs create social stability through financial inclusion and active participation in decision-making. Hence, we can safely say that SHGs have helped in overcoming socio-economic marginalisation.
Assumption 2 is correct. The lines, "*The social impact of SHGs on women's empowerment is noticeable"* and "*Such continuous efforts lead to the societal transformation of women in rural areas"* indicate towards the assumption made in the option statement. So, this assumption is correct as per the passage.

72 (a)

Option (a) is correct. Refer to the lines "*It tries to create social stability through **financial inclusion** and play an active role in the **social empowerment of the people in rural areas**."* and "*Field evidence shows that SHG members can easily become involved in **households' decision-making** and bring positive changes in their life."* These lines show that SHGs improve social, economic and personal lives of rural people.

Option (b) is incorrect. The line "*Since the 1970s, SHGs have been playing an essential role in different states of India by contributing mostly to democratising many institutions that stand for the deprived sections of society",* only states that SHGs are present in different states. It nowhere means that SHGs are limited to a few states only. Hence, this option is not correct as per the passage.
Option (c) is incorrect. The context of the urban poor and its relationship with SHGs is not mentioned in the passage. Hence, this option is beyond the scope of the passage and is not correct.
Option (d) is incorrect. The context of financial independence of children with the help of SHGs is not a part of the passage. Therefore, this option is not correct.

73 (b)

Time when Ajay reached the bus stop = 8:40 am
He needs to walk for 10 minute to reach the bus stop
Time when he left home = 8:40 am – 10 minutes = 8:30 am
He left the home 15 minutes earlier than usual.
So, usual time when he leaves home = 8:30 + 15 minutes = 8:45 am
Hence, option (b) is the right answer.

74 (d)

The quantities of milk and water in containers A and B at different stages are tabulated below.

A		**B**	
Milk	**Water**	**Milk**	**Water**
10	0	0	10
9	0	1	10
9 + (1/11) = 100/11	10/11	10/11	100/11

The final amount of milk in container A is 100/11 litres.
Hence, option (d) is the right answer.

75 (a)

Given, $10 \leq x \leq 20$ and $2y - x = 2$
So, $y = (x + 2)/2$
Let $E = x/(x + y)$
$E = x / \{x + [(x + 2)/2]\}$ [Since, $y = (x + 2)/2$]
Or $E = 2x / (3x + 2)$
Or $E = 2/\{3 + (2/x)\}$
Here, E will be the maximum when $\{3 + (2/x)\}$ is the minimum.
$\{3 + (2/x)\}$ is minimum when x is maximum, i.e. x = 20.
$\therefore E_{max} = 2/(3 + 0.1) = 20/31$
Hence, option (a) is the right answer.

76 (c)

Given, $f(x) = ax^5 + bx^3 - cx + 3$ and $f(4) = 10$
Putting x = 4 in f(x), we get:
$(4)^5a + (4)^3b - 4c + 3 = 10$
Or $4^5a + 4^3b - 4c = 7$ …… (i)
Putting x = -4 in f(x), we get:
$f(-4) = (-4)^5a + (-4)^3b + 4c + 3$
Or $f(-4) = -(4^5a + 4^3b - 4c) + 3$
Or f(-4) = -7 + 3 [from equation (i)]
Or f(-4) = -4
Hence, option (c) is the right answer.

77 (b)

In one hour, the monkey climbs 30 feet and falls back 20 feet. So, effectively he climbs 10 feet every hour.
Starting at 9 am, he will climb 90 feet in 9 hours.
After the 9^{th} hour, when he starts climbing, he will reach 120 feet.
So, the monkey will reach the top first after 9 hours, i.e. between 6 pm and 7 pm.
Hence, option (b) is the right answer.

78 (b)

Given,
P(A) : P($\bar{A}$) = 4:3
P(A) = 4/7 and P($\bar{A}$) = 3/7
P(B) : P($\bar{B}$) = 2:1
P(B) = 2/3 and P($\bar{B}$) = 1/3
P(C) : P($\bar{C}$) = 1:4
P(C) = 1/5 and P($\bar{C}$) = 4/5
Now the majority of the selectors are favorable if any two are favorable and the third is unfavorable, or all the three are favorable.
Hence, required probability = (4/7) (2/3) (4/5) + (3/7) (2/3) (1/5) + (4/7) (1/5) (1/3) + (4/7) (2/3) (1/5)
= (32/105) + (6/105) + (4/105) + (8/105)
= (32 + 6 + 4 + 8)/105
= 50/105
= 10/21
Hence, option (b) is the right answer.

79 (b)

Rohan, Sohan and Mohan can do a piece of work separately in 5 days, 10 days and 12 days.
Ratio of their wages = 1/5 : 1/10: 1/12 = {(1/5) ×60}:{(1/10)×60}:{(1/12)×60} = 12:6:5
∴ Mohan's share = [5/(12 + 6 + 5)] × 1380 = {(5/23) × 1380} = Rs. 300
Hence, option (b) is the right answer.

80 (c)

Time taken by the boat to cover the distance from A to B = 12/(4 + 2) = 12/6 = 2 hours
Time taken by the boat to cover the distance from B to C = 18/(7 + 2) = 18/9 = 2 hours
∴ Total time taken by the boat in downstream = 2 + 2 = 4 hours
Hence, option (c) is the right answer.