1. c) The Boeing 767 registered many problems but the basic problem began with the failure of the left side due to fuel pressure. This problem was misunderstood by the pilots as they assumed that the fuel pump had failed and turned it off.

2. c) The calculations were made by Quintal, the first officer and the controllers, and both concluded that they would not be able to make it to Winnipeg. The rest of the three options are incorrect as this is either not present in the passage or is contrary to the information offered.

3. c) Whenever an aircraft has to make a landing abruptly, the main concern is to reduce the speed of the airplane and to check the height of the plane. For Flight 143, these two factors were the main concern, thus making Option c) the right choice.

4. d) There are several things written about Captain Pearson, but the sentences in the passage, "Captain Pearson, however, was an experienced glider pilot, which gave him familiarity with some flying techniques almost never used by commercial pilots," indicates that Captain Pearson has an advantage over the others at this specific aspect.

5. a) Here option a) is the right answer compared to the rest because according to the sentences provided, sentence C should be the beginning of the paragraph because this statement informs us about a protein molecule that is responsible for food allergy. Statement C and statement A relate with each as the statements talk about food allergy while statement B and statement D relate with each other as stressing on food intolerance. Therefore, option a) is the correct answer compared to the rest which are incorrect.

6. b) In this passage, statement B should be the beginning of the passage as the passage mainly informs us about the various factors that affect eyesight and the effect is seen a lot more as we age. Also, statements D and C must appear in that order as statement D talks about 'With age…", while statement C draws a conclusion on older people. Therefore, option B makes sense as the right answer compared to the other options which are irrelevant and make no sense in the arrangement.

7. d) In this passage, statement C should be the beginning of the passage as it introduces sugar addiction. Statement A should logically follow as it goes on to elaborate that sugar addiction can be a major problem if not controlled. Thus, option d) makes sense as the right answer compared to the other options.

8. c) In this passage, statement D makes sense as the start of the passage because it introduces and explains what the definition of 'guilty' is. Statement B should logically follow as it then explains 'guilty' in a practical sense, even giving and example. Statement A should be after that as it elaborates on the example given in statement B. Thus, option c) makes sense as the right answer compared to the other options.

Only by reading the first few words of each sentence one might understand that only sentence D can begin a new paragraph/idea.

9. a) If Bannister broke a barrier he did something that others had not done; the hurdle that he overcame would inspire others to overcome barriers that seemed impossible. The word closest to 'impossible' is 'insurmountable', which literally means 'cannot be overcome.
(Inane – foolish; trivial – unimportant; not in options)

10. c) We are looking for the opposite of 'side-step' (avoid) and so 'confront' is the obvious choice. (amuse – entertain, juxtapose – place the objects or ideas next to each other, solve – find answers to a problem)

11. b) The key here is that the pieces are inert or 'passive'.
(Interactive – based on feedback, cybernetic – interdisciplinary, disruptive – troublesome, disturbing)

12. b) 'and' usually links things of similar nature. So, the reception was warm and then continued to get approval or support ('endorsement'). Also the word 'initially' suggests that something changed into its opposite. Therefore, the work was initially endorsed and then came under fire (was attacked).

13. a) The word 'troublesome' is the exact meaning of the word 'disruptive'.

14. b) The word 'strengthened' is the exact meaning of the word 'fortified'.

Explanations for questions 15 to 17:

15. b) **16. a)** **17. c)**

The phrase 'at least shorter' suggests that the chemists liked the shorter older names. Thus the word 'cumbersome' seems best for the first blank to explain why the new nomenclature was not liked. Revert to means going back. By going back to the old names, it seems that tradition was more powerful than 'system'.

18. d) The passage states that myths typically have the setting of the ancient world, much before the world looked like it does in its present form, and thus it is wrong to say that myths are located in the current world setting.

19. c) While the passage is talking about many forms of story telling, the passage stays focused on the definitions, connections, variations and applications of 'Myths', thus the appropriate central theme would be "The Myth about Mythology".

20. d) All the mentioned names are given in the passage as types of traditional stories and thus the answer is 'none of the above'.

21. b) The rest of the choices are inappropriate as per the content of the passage. Mythology is a part of culture and humanities as it is based on the various thoughts a society generally portrays and various ideas on which a particular culture is based.

22. b) Option b) is spotted with an error and the rectified statement should be 'a conductor of the mind of the writer' which sounds grammatically correct and fits suitably in the framework of the statement.

23. a) Option a) is spotted with an error and the rectified statement should be 'The greater your skills in speaking and writing' because of the general consistency in the statement it is rather apt to use the word "greater" instead of "higher" which is not appropriate.

24. b) Option b) is spotted with an error and the rectified statement should be 'affect their readers precisely as they wish' because remotely means 'vaguely' and 'a little', whereas, every writer would wish to affect her readers as closely and accurately as possible. Therefore 'precisely' is apt in the above context.

25. c) Option c) is spotted with an error and the rectified statement should be 'but gradually thins until'.

26. b) Option b) is spotted with an error and the rectified statement should be 'Japan launched an unprovoked attack'. The word 'launch' is used to start or for the commencement of any event, whereas, 'did' is a more holistic word which does not go well with the subject being discussed. Therefore 'launched' is a more suitable word in above context.

27. b) The word 'few' is the exact opposite of the word 'various'.

28. d) Among the given options, the word 'obedience' is opposite to the word 'transgression' in implication.

29. b) Since the main conclusion drawn says that only those who keep a check on their diet can have a healthy body, the inference that can be drawn is that to maintain a healthy body, one must keep a routine check on their diet. Option a) and d) are not relevant. Option c) cannot be correct because there could be individuals who do not really follow a diet but have healthy bodies.

30. a) The main statement states that Sun Salutation is one of the ways to keep a body fit and active and on the basis of that concludes that all those who wish to be fit and active must do the Sun Salutation. This can be true is there is no other way to achieve the same goal. Options b) &c) cannot be correct because they directly interpret the main statement. Option d) is inappropriate.

31. d) The main statement states that all ballet dancers except Paulina have dainty feet, thus, the inference that can logically be drawn from it is that aside from dancer Paulina, if someone is a ballet dancer, they must have dainty feet. Option a) is irrelevant, while option c) makes a correct observation, except that it talks about 'dancers' not 'ballet dancers'. Option b) cannot be the right answer as it reverses the logic portrayed in the main statement by saying that all those with dainty feet must be ballet dancers.

32. d) The statement states that Suman and her husband tripled their investments in a short span of time and on the basis of that concludes that everyone must do it. The assumption that can logically support the conclusion drawn is if what happened to Suman and her husband would happen to others for sure. Options a) and b) both talk about investments in the stock market being important for increasing the value of one's funds, while the main statement does not indicate the same. Option c) simply re-states what is already mentioned in the statement, which is not what is being asked for.

33. d) Number of zeroes will be equal to the number of 5's.

5's will be present only in the numbers: $5^{5!}$ and $10^{10!}$

Therefore, there are 5! + 10! 5's and hence that many zero's.

34. d) Let the dimensions of the block = 3x, 2x and x respectively.

Hence, its volume = $3x \times 2x \times x = 6x^3$.

Thus, $6x^3 = 10368$ or $x^3 = 1728$ or $x = 12$ dm.

The surface area of this block will then be $2(3x \times 2x) + 2(3x \times x) + 2(2x \times x)$

$= 22x^2 = 22 \times 12 \times 12 = 3168$

At 2 paise per dm^2, the cost of polishing this block = $3168 \times 2 = 6336$ paise or Rs.63.36

35. a) First let us find the total time taken by sparkle.

Time = (8 a.m to 2 p.m) – 30 mins = 6 hours – 30 mins = $\frac{11}{2}$ hours.

Let Sparkle cover × km by car.

$$\frac{x}{50} + \frac{x}{2} = \frac{11}{2}$$

$x = \frac{275}{26}$ kms.

36. d) In 'IMPLICATION' we have 'AIIIO' vowels and remaining are 'MPLCTN' we consider 'AIIIO' as one letter so we have MPLCTN(AIIIO), 7 letters. We can arrange 7 letters in 7! = 5040 ways.

5 vowels in which I is repeated 3 times can be arrange in $\frac{5!}{3!} = 20$ ways.

Thus, total number of ways = $5040 \times 20 = 100800$.

37. c) Let Arvin have Rs. X initially.

25% of the money was spent on books = $0.25 \times X = 0.25X$

Remaining money = $X – 0.25X = 0.75X$

15% of the remaining money was spent on food = $0.15 \times 0.75X = 0.1125X$

Remaining money = $0.75X – 0.1125X$

$750 = 0.6375X$

$X = 1176.47$

Amount spent on food = $0.1125X = 132.35$

So, the ratio will be = $\frac{132.35}{1176.47} = \frac{13235}{117647}$

38. b) Total sales in the first quarter of 1986 = 95 + 90 + 115 = 300.

Total sales in the first quarter of 1987 = 110 + 120 + 145 = 375

Difference in the quarterly sales in the two time periods = 75

Difference in the average monthly sales in the two time periods = 75 ÷ 3 = 25.

39. d) Sales in March 1986 = 115

Sales in March 1987 = 145

Percentage increase in sales during these two time periods = $\frac{145 - 115}{115}$ = 26%

CPLC shortcut:

$\frac{30}{115}$ is greater than $\frac{1}{4}$ or 25%. Only one option present.

40. b) Closing balance at the end of March 1987 = 115 units

This will also be the opening balance for April 1987.

Production during April 1987 = 75 units

Closing balance at the end of April 1987 = 40 units

Hence, total sales in April 1987 = 115 + 75 – 40 = 150 units.

41. d) Statement I gives 2 possibilities for the number: 28, 82. Hence, this statement is not sufficient to answer the question.

Statement II gives two possibilities for the number: 28, 82.

If we combine the two statements, still we are left with two possibilities i.e. 28 and 82.

Hence, even both statements together are not sufficient to answer the question.

42. a) To find out the time that it takes for a sum to become 4 times in SI, we need to know the rate of interest.

Statement I: Gives us the rate of interest i.e. 10% p.a. Hence, sufficient to answer the question.

Statement II: Not sufficient to answer the question, as the principal is not known. Because of which, we will not be able to find the rate of interest.

43. d) Total ages of all members = 9 × 40 = 360 years

Six years ago, total age of all members of the family = 360 – (9 × 6) = 306

Six years ago, in a family there were total 8 members.

So, average ages of all the members = $\frac{306}{8} = 38.25$ years

44. c)

$P(R) = \frac{35}{100} = \frac{7}{20}$

$P(T) = \frac{40}{100} = \frac{2}{5}$

and $P(R \cap T) = \frac{5}{100} = \frac{1}{20}$

P(R or T) $= P(R \cup T)$

$= P(R) + P(T) - P(R \cap T)$

$= \frac{7}{20} + \frac{2}{5} - \frac{1}{20}$

45. d) $\frac{w}{x} = \frac{y}{z} = c \Rightarrow w = xc$ and $y = zc$ also $\frac{p}{q} = \frac{r}{s} = k \Rightarrow p = kq$ and $r = ks$, also $\frac{wr}{y} = \frac{x}{z}$

Substituting above in LHS and RHS

$LHS = w + \frac{wr}{y} + \frac{y}{p} = xc + \frac{xr}{z} + \frac{zc}{p} = c\left(x + \frac{z}{p}\right) + \frac{xr}{z}$

$RHS = x + \frac{xr}{z} + \frac{z}{p}$,

LHS - RHS = $(c - 1)\left(x + \frac{z}{p}\right)$, thus is c =1 then LHS–RHS=0 thus depends on the value of c, i.e the relative value of y and z.

46. b) Total number of hours at work = 24 × 8 × 10

Let n be the number of men required. If each man works for 10 hours and for 6 days, hours at work will be 10 × n × 6

As per problem 24 × 8 ×10 = 10 × n × 6

$\Rightarrow$ n = 32

47. a) $320 \times N = 2^6 \times 5 \times N$.

Therefore, the number of factors has to be a multiple of a number greater or equal to 6.

$14 = 2 \times 7$ or $14 = 1 \times 14$. But there are more than 1 prime factor. Therefore, only possibility is $14 = 2 \times 7$. The power of other factor is 1 and hence, N = 1.

48. d) One must understand that since this is only a comparison based question, any value of expenditure should give the same answer (and not necessarily 9600).

So, let the expenses be 100. Then the expenses of A, B, C, D and E = 24, 22, 18, 16 and 20 respectively.

As we can see, Expenditure of A in Item III = $\frac{5}{12} \times 24 = 10$

Expenditure of B in Item III = $\frac{4}{11} \times 22 = 8$

Expenditure of C in Item III = $\frac{2}{9} \times 18 = 4$

Expenditure of D in Item III = $\frac{4}{16} \times 16 = 4$

Expenditure of E in Item III = $\frac{4}{5} \times 20 = 16$

Now, The profit of A for item III = 36% of 10 = 3.6

The profit of B for item III = 27.5% of 8 = 2.2

The profit of C for item III = 40.5% of 4 = 1.62

The profit of D for item III = 40% of 4 = 1.6

The profit of E for item III = 40% of 16 = 6.4

Hence, minimum profit for item III is for company D.

49. b) Overall percentage profit will be a weighted average of the profits of Items I, II and III, where the weights are the ratios in which the expenditures on the three parts are incurred.

Thus, Overall percent profit for company A = $\frac{4 \times 42 + 3 \times 48 + 5 \times 36}{4 + 3 + 5} = 41\%$

Overall percent profit for company B = $\frac{3 \times 44 + 4 \times 33 + 4 \times 27.5}{3 + 4 + 4} = 34\%$

Overall percent profit for company C = $\frac{4 \times 45 + 3 \times 36 + 2 \times 40.5}{4 + 3 + 2} = 41\%$

Overall percent profit for company D = $\frac{5 \times 48 + 7 \times 32 + 4 \times 40}{5 + 7 + 4} = 39\%$

Overall percent profit for company E = $\frac{2 \times 45 + 1 \times 35 + 2 \times 40}{2 + 1 + 2} = 41\%$

Hence, minimum overall percentage profit is for company B.

50. a) Taking, a cue from the previous question, it is clear that percentage profit for company E = 41%.

This means, income for company E must be 41% more than its expenditure i.e. 141% of its expenditure.

Thus, Income of company E = 141% of 20% of 9600 = 2707.2 million.

51. d) Taking a cue from the second and the third questions of this set, we get

Overall profit of company A = 141% of its expenditure = 141% of 24% = 34% (approx.)

Overall profit of company B = 134% of its expenditure = 134% of 22% = 29.5% (approx.)

Overall profit of company C = 141% of its expenditure = 141% of 18% = 25.5% (approx.)

Overall profit of company D = 139% of its expenditure = 139% of 16% = 22% (approx.)

Overall profit of company E = 141% of its expenditure = 141% of 20% = 28% (approx.)

Thus, the maximum overall profit is for Company A.

Note: The reason we ignored the value 9600 is because all of them will be multiplied by this value. Hence, relative comparison between them would not change.

52. a)

$= \frac{3^{24} \times 4^{22}}{5}$

$= \frac{\left(3^2\right)^{12} \times \left(4^2\right)^{11}}{5}$

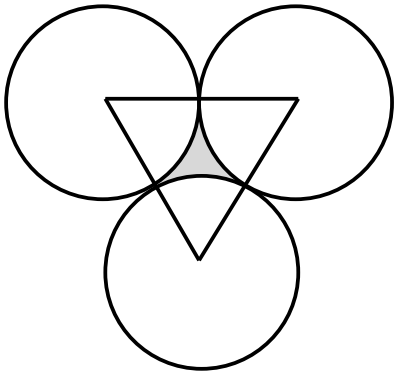
$= \frac{(9)^{12} \times (16)^{11}}{5}$

$= \frac{1 \times 1}{5}$

Gives 1 as the remainder.

Alternately, cyclist of 3 is 4 & 4 is 2. Thus last digit of 3^{24} & 4^{22} will be 1 & 6 respectively. Both leave a remainder of 1 when divided by 5.

53. a)



As we can see in the diagram, the area of the enclosed portion =

(Area of the equilateral triangle of side 7 cm) – (Area of 3 sectors, each of 60^o angle and radius 3.5 cm)

Hence, the required answer = $\frac{\sqrt{3}}{4} \times (7)^2 - 3 \times \frac{60}{360} \times \pi \times \left(\frac{7}{2}\right)^2$

$= \frac{49}{4} \times \left(\sqrt{3} - \frac{\pi}{2}\right)$ $= 1.96 \text{ cm}^2$.

54. d) P = Rs. 25000

Time = 3 years

Rate = 8% bi annual = 16%

Simple interest = $\frac{PRT}{100}$

$= \frac{25000 \times 16 \times 3}{100}$

= Rs. 12,000.

Compound interest = Amount – principle

$= P\left(1 + \frac{R}{100}\right)^T - P$

$= 25{,}000\left(1 + \frac{10}{100}\right)^3 - 25{,}000$

= Rs. 8275

Thus, he would have paid = (12,000 – 8275) = Rs. 3725 less.

55. b) The answer will be obtained by getting the numbers divisible either by 2, 3 or 5 No. of integers divisible by only one of them – no. of integers divisible by any two of them + no. of integers divisible by all three of them50 + 33 + 20 – 17 – 10 – 7 + 3 = 72 No. not divisible by any of them = 100 – 72 = 28

However, 101 is not inclusive (as the numbers are between 101 & 200).

Hence, there are 27 values.

56. b) Statement I: Not sufficient to answer the question. If Ram alone takes 30 days, and he leaves after 5 days, exactly one-sixth of the job will be completed.

This means, the remaining five-sixth of the work needs to be completed by Vikas and Sarfraz.

However, we do not know the exact days taken by either of them alone or together to complete the job. We only know the relationship between their efficiencies.

Statement II: Is sufficient to answer the question. If Ram can do, one-third of the job in 10 days, he should have done one-sixth of the job in 5 days and left.

This means, the remaining five-sixth of the work needs to be completed by Vikas and Sarfraz.

These two complete, one-third of the job in 2 days, hence one-sixth of the job in 1 day or the remaining five-sixth of the job in 5 days.

57. b) The mini-station I is receiving power, directly from R.
Hence, only 20% of the original electricity (from R) will be lost in transit (since it is 2 km away).
Thus, if 100 units of electricity is supplied through R, I would receive 80 units.

However, if 100 units of electricity is supplied through R, then the 100 units of electricity must also be supplied through Q (as P supplies equal electricity to Q and R).

In that case, A would receive only 90 units (10% loss of original electricity as it is 1 km. away).

Thus, the ratio of the electricity received by A and I is 9 : 8.
Thus, 9 : 8 = ? : 10 or ? = 11.25 A.

58. b) Let P produce 200 A of electricity.
So, Q gets 100 A and A gets 90 A (10% loss).
Of these 90 A, A retains 45 A and supplies 45 A further down. (50% retention)
Of these 45 A, 4.5 A will be lost in transit (10% loss)

So, B will receive only 40.5 A.

Of these, B will retain 20.25 A and supply 20.25 to C. (50% retention)
Of these 20.25 A, 2.025 A will be lost in transit (10% loss).

So, C will receive only 18.225.

Thus, the ratio of the electricity produced by P to the one received by C = 200 : 18.225

Hence, 200 : 18.225 = ? : 364.5
? = 4000 A.

59. d) Without the device, the current loss of electricity is 20% of that supplied by R.
However, because of this device, the loss would only be 15% i.e. 75% of original loss.

Thus, if 100 units of electricity is supplied from R, only 85 units will be received by H.

Also, if 100 units of electricity is supplied from R, even though Q, 100 units of electricity will be supplied. (as P supplies equal electricity to Q and R).

In that case, G would receive only 90 units (10% loss of original electricity as it is 1 km. away).

Thus, the ratio of the electricity received by G and H is 90 : 85 i.e. 18 : 17.
Thus, 18 : 17 = ? : 34 or ? = 36 A.

60. a) Let Q supply 300 units of electricity.

Thus, it will supply 100 units each to A, D and G (since it supplies equally to all mini-stations).

Of these, G and D will only receive 90 units (10% loss in transit).

D in turn, will retain 45 units and supply 45 units further down to E & F.

i.e. F will get 22.5 units.

However, F will receive only 20.25 units (10% loss in transit).

Hence, the ratio of electricity received by F and G is 20.25: 90 i.e. 81 : 360

Thus 81 : 360 = 9 : ? or ? = 40 A.

61. a) Taking a cue from the previous question, if P produces 600 units, Q would receive 300 units and F would receive 20.25units.

Thus, percentage of electricity that reaches F = $\frac{20.25}{600} \times 100 = 3.375\%$

62. b) LCM of 12, 13, 14, 15 = 5460
Required number will be of the form 5460k + 5
Smallest value of k for which (5460k + 5) is divisible by 19 is 2.
Hence the number is 10925.

63. a) 25% of the content of 1 liter bottle are emptied = 250 ml is removed from the bottle and 250 ml of black liquid is placed in the bottle

Cost of 1000 ml bottle = Rs. 27

Therefore, cost of 750 ml of Pepsi = $\frac{27 \times 750}{1000}$ = Rs. 20.25

Cost of 1000 ml of black liquid = Rs. 3

Therefore, cost of 250 ml of black liquid = $\frac{250 \times 3}{1000}$ = Rs 0.75

Therefore, cost price of the contents of 1 liter bottle = Rs. 20.25 + Rs. 0.75 = Rs. 21

64. c) Let the height of the cylinder = 2 units.
Hence the radius of the cylinder = 3 units (50% more than the height).

Hence, the radius of the bowl = 3 units (same as that of the cylinder).

Volume of the bowl (Hemisphere) = $\frac{1}{2} \times \frac{4}{3} \times \pi \times (3)^3 = 18\pi$.

Volume of the cylinder = $\pi \times (3)^2 \times 2 = 18\pi$.

65. c) Let all those who liked exactly one brand be 'x' and the ones who liked exactly two brands be 'y'.

Since, 72% of the population liked one of the three brands, x + y + 10 = 72 ---------- (1)

Also, if we add sets I, II and III separately, the region corresponding to the ones who liked exactly one brand will be added once, the once corresponding to those who liked exactly two brands would be added twice, while that corresponding to those who liked all 3 brands will be added thrice.

Hence, x + 2y + (3 × 10) = 40 + 25 + 35 = 100. ---------- (2)

Subtracting, equation (1) from (2), we get y + 20 = 28 or y = 8.

66. a) Knowing the time that a train takes to cross a signal post, we will be able to find the length of the train, provided we know the speed of the train.

Statement I: Is sufficient to answer the question. If the train crosses the signal post in 20 s and the 100 m long platform in 30 s, it is clear that to cover the additional 100 m, it takes additional 10 s. Hence the speed of the train is 10 mps.

Statement II: Is not sufficient to answer the question, as we do not know the speed of the train coming in opposite direction.

67. b) As per the question, If Shyam does 2 units in a day, Ram does 3 units in a day.

Statement I: Is a repetition of the data given in the main question. If the ratio of their efficiencies is 3 : 2, the ratio of the times taken to complete the same piece of work would be 2 : 3.

Statement II: Is sufficient to answer the question. This tells us that the total job is worth 60 units (as together they can manufacture 5 units in a day) and hence Shyam can alone complete it in 30 days (as he does 2 units in 1 day).

68. d) Total expenditure = 2136
Total revenue = 2266

Total expenditure is smaller than the revenue by $\frac{2266 - 2136}{2266} \times 100 = 5.7\%$

69. b) Maximum percentage increase in revenue is in year 3; viz. $\frac{288 - 246}{246}$ (approx..)

Minimum percentage decrease in revenue is in year 8; viz. $\frac{170 - 174}{174} \times 100 = 2.3\%$ (approx..)

Hence, percentage point difference in these two values = 17 – 2.3 = 14.7%

70. c) Statement I: Is obviously false.

Statement II: Is also false. For example in year 3, both show a decrease.

Statement III: Is true. As the percentage increase in expenditure is the highest in year 7 i.e. 28.7%.

Statement IV: Is false. The revenue has fallen for 6 years and not 7.

71. c) Let us try and understand this question using small values.

If the first term is 1 and the last term is 10, then the following AP series' are possible with integral values of common differences:

(i) 1, 10(d = 9), (ii) 1, 4, 7, 10 (d = 3), (iii) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (d = 1)

And if you look at the common differences carefully (i.e. 1, 3, 9), these are the factors of 9, which is the difference between the first term and last term.

Similarly, in our question, the first term is 1 and the last term is 100.

So, extending the above logic further, the difference between the first and the last terms is 99.

The factors of 99 are, 1, 3, 9, 11, 33, 99 i.e. 6

Hence, 6 such AP series are possible.

72. a) Since we are replacing the solution by water every time, the no change component is milk.

Since, the ratio of milk and water in the vessel is 27 :37, the fraction of milk in this vessel would be $\frac{27}{64}$ i.e. $\frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$

This simply means that, in every replacement we were leaving behind $\frac{3}{4}$th of milk.

In other words, in every replacement we were removing $\frac{1}{4}$th of milk.

Thus, if $\frac{1}{4}$th of the solution corresponds to 8 litres, the entire solution corresponds to 32 litres.

73. b) The catch here is to understand that the difference in the ages of the mother and the daughter would remain the same at all points of time.

Let the daughter's age if the past (that mother is referring to) be 'd'.

So, at that point of time, the mothers age would be '3d'

In other words, at all points of time, she would be '2d' years older than her daughter.

Presently, the daughter is '3d' years old (the mother was as old the daughter is)

So, her mother would presently be '5d' years old (2d years older).

Thus, 3d + 5d = 32 or d = 4.

Now, you are not supposed to wonder "How can daughter be 4 years old, when her mother was 12 years old?". Take it purely from a mathematical point of view ☺.

74. b) For the equation that is given to us,

Sum of the roots = a + b = $-\frac{5}{2}$ and the Product of the roots = ab = $\frac{3}{2}$

For the new equation, the roots are '3a + 2' and '3b + 2'.

Hence, the sum of its roots = 3(a + b) + 4 = $3 \times \left(-\frac{5}{2}\right) + 4 = -\frac{7}{2}$

Product of its roots = (3a + 2) × (3b + 2) = 9ab + 6(a + b) + 4 = $9 \times \left(\frac{3}{2}\right) + 6 \times \left(\frac{-5}{2}\right) + 4 = \frac{5}{2}$

Any, quadratic equation can be represented in the form x^2 – (Sum of its roots)x + (Product of its roots) = 0

Hence the required equation = $x^2 - \left(-\frac{7}{2}\right)x + \frac{5}{2} = 0$ or $2x^2 + 7x + 10 = 0$

75. d) The 103rd term of a G.P. is represented by ar^{102}, while the 107th term is represented by ar^{106}.

Their ratio would be $\frac{1}{r^4} = 81$ or $r^4 = \frac{1}{81}$ i.e. $r = \pm\frac{1}{3}$

If the 10th term is 2, the 7th term would be $2 \div r^3$ i.e. $2 \div \left(\pm\frac{1}{3}\right)^3$ = 54 or –54.

Hence, cannot be determined.

76. d) On the face of it, it seems that the sales and price show an inverse proportion.

However, if the proportion between two quantities is inverse, then their product is constant.

However, this is not what is seen out here.

At Rs.2 per pen, 10 lakh pens are sold (product = 20 lakh)

At Rs. 4 per pen, 8 lakh pens are sold (product = 32 lakh)

At Rs. 6 per pen, 6 lakh pens are sold (product = 36 lakh)

Since, none of these products are equal, the proportion is not inverse.

77. c) In 1999, the demand for the pens was 10 lakh.
However, the company produced only 6 lakh pens.

Hence, it would be able to sell only 6 lakh pens.

Total sales in 1999 = 6 × 2 = 12 lakh (since price is Rs. 2 per pen)

In 2003, the demand for the pens was 2 lakh.

Hence, it would be able to sell only 2 lakh pens (irrespective of the demand).

Total sales in 1999 = 2 × 10 = 20 lakh (since price is Rs. 10 per pen)

Hence, percentage increase in sales = $\frac{20-12}{12} \times 100 = 66.67\%$

78. c) It is clear that the maximum value of the sales is in the year 2001.
In this year, the demand and the production are the same i.e. 6 lakh pens.

Also, the price per pen is Rs. 6 per pen.

Hence, Sales = 6 × 6 = 36 lakhs.

79. a) In 1999, the demand was of 10 lakh pens, but the company produced only 6 lakh pens.

Hence, it could sell only 6 lakh pens, which is 60% of the demand.

80. c) The price change from Rs. 2 per unit to Rs. 10 per unit.

In other words, it became 5 times or there was a 400% increase.

81. d) The first letters of each term is in alphabetical order i.e. H, I, J, ?, L.

Hence, the first letter of the missing term is 'K'.

The second letters of each term is in reverse alphabetical order i.e. H, G, F, ?, D.

Hence, the first letter of the missing term is 'E'.

The third letters of each term is in alphabetical order but leaving a gap of two letters i.e. E, H, K, ?, Q.

Hence, the first letter of the missing term is 'N'.

Hence, the missing term = KEN

82. d) It is possible that the forest may have trees other than Sandal or Ashoka.

In the light of that, none of the statements are definitely true.

For example, the forest may have 5% Sandal trees, 5% Ashoka trees and 90% other trees.

As per the data given in the question, 75% of the trees are old. All of these may be other trees. Thus option c) need not be true.

As per the question, 50% of the trees are at flowering stage. All of these again may be other trees. Thus option a) and b) also need not be true.

83. b) The father-in-law of mother is my paternal grandfather.

The only son of this person would be my father.

The boy's father, is also my father.

Hence, the boy is my brother.

84. b) A, B and C are siblings (with 'A' being the brother and nothing mentioned about B and C)
D and E are their parents (with D being the mother and E being the father)

Thus, except for statement b) all are definitely true. 'A' is not the daughter, but son of B.

85. c) Option a) is incorrect, because '78' is L and not A.

Option b) is incorrect, because '45' is T and not N.

Option d) is incorrect, because '76' is P and not A.

86. c) Neither of the conclusions follows.

87. d)

Explanations for questions 88 to 91:

From clue (iv) we know that C2 was the fastest and got shortlisted by excelling in the test. So C2 came 1st.

Clue (ii) indirectly tells us that C6 was the slowest and C4 finished the test second last. So ranks 1, 5and 6 are found.

Now for finding 2nd and 3rd ranks look at clue (iii) carefully. It says that difference in timing of C1 and C4 is more than that of C3 and C4. What it clearly means is that C3 is slower than C1.

Also from clue (i) C1 is not as fast as C5 means that C5 finished earlier than C4. The only position left for C5 is 2nd. Therefore the order in which the candidates finished the test from first to last are:

C2-C5-C1-C3-C4-C6

88.d) **89. b)** **90.b)**

91. a) The reason provided in Statement 1 is absolutely true and it justifies the fact that C5 was not shortlisted. In second statement though it is true that C5 took lesser than time to complete than C3, it does not justify the reason or the Cause for C5 not being shortlisted. Hence only statement 1 is appropriate.

Explanations for questions from 92 to 94:

It is clear that the logic of rearrangement is positional. For this, we number the words in the input statement as per their positions.

Input: you do things to help others in difficulty (12345678)
1 2 3 4 5 6 7 8

Step I: do you others to help things difficulty in (21645387)

StepII: do others you help to difficulty things in (26154837)

StepIII: do others help you difficulty to things in (26518437)

StepIV: others do help you difficulty to in things (62518473)

After this, the logic of Steps I, II, III and IV would again continue.

StepV: do others to you difficulty help things in (26418537)

Step VI: do to others difficulty you things help in (24681357)

Step VII: do to difficulty others things you help in (24863157)

Step VIII: to do difficulty others things you in help (42863175)

92. c) If Step II is 26154837, then step VII would be 24863157

Thus, if Step II is: why are you not in contact with me
2 6 1 5 4 8 3 7

Then Step VII would be: why in contact are with you not me

93. b) If Step VI is 24681357, then Step III is 26518437

Thus, if Step VI is: above is the message to you from me
2 4 6 8 1 3 5 7

Then Step III would be: above the from to message is you me

94. c) Let us number both sentences and then compare.

Input: I am talking about you DigvijayPranav Ashok
1 2 3 4 5 6 7 8

Given Arrangement: about amAshok Digvijaytalking I Pranav you
4 2 8 63 1 7 5

As we can see, 42863175 is the code of Step VIII.

95. d)

96. d) Both the inferences follow.

Explanations for questions 97 to 99:

97.d) The Series is $1^2 + 1 = 2$, $2^2 - 1 = 3$ (First bracket is wrong), $3^2 + 1 = 10$, $4^2 - 1 = 15$, $5^2 + 1 = 26$ (Second bracket is wrong), $6^2 - 1 = 35$, $7^2 + 1 = 50$.

98. b) The difference between successive terms is consecutive odd numbers.
Thus, 2 + 1 = 3, 3 + 3 = 6 (First bracket is right), 6 + 5 = 11, 11 + 7 = 18, 18 + 9 = 27 (Second bracket is wrong) and 27 + 11 = 38.

99.c) This is an Arithmetic Series with common difference 3.

Thus, 4 + 3 = 7, 7 + 3 = 10 (First bracket is wrong), 10 + 3 = 13, 13 + 3 = 16 (Second bracket is right), 16 + 3 = 19, 19 + 3 = 22.

100. d) Option a) is incorrect, because '86' is L and not N.

Option b) is incorrect, because '78' is K and not W.

Option c) is incorrect, because '24' is M and not N.

101. a)
A. Both [A] and [R] are true and [R] is the correct reason for [A]

102. b)
Both [A] and [R] are true but [R] is not the correct reason for [A]

Explanations for questions 103 to 106:

F is the Father of H whose aunt is C and B is the mother of C explains that B is the Grandmother of H.

Further since it is given that A is the grandfather of G and Father of D and that G lost his/her dad in childhood, G is the offspring of C and H is the offspring of F and D.

Thus A and B have two daughters D and C. F is the husband of D and H is their child whereas G is C's child.

103. d) We know that G and H are cousins.

104. b) A and F are the two Fathers

105. b) Since we are not sure about the gender of H we cannot say option no. a) directly. Options c) and d) are vague. So option b).

106. c) There are two couples, A-B and F-D

107. a)

108. b) Inference 1 is not supported. Inference 2 is supported as the instructions from the Principal cannot be unimportant.

109.b) If read the question carefully, you would realize that SPRINTER is the code, and you are supposed to find the word.

Thus, if JOBMLZQF is the code, MARGINAL is the word.

The logic of coding is that the word is split mid-way. i.e. JOBM-LZQF

The two halves interchange. i.e. LZQF-JOBM.

In the first half, the letters are replaced by the next letters in the alphabetical sequence, while in the second half they are replaced by the previous letters in the alphabetical sequence.

Thus, LZQF becomes MARG and JOBM becomes INAL. Hence, MARGINAL.

Applying the same logic to our code, SPRINTER, we first split it mid-way and interchange the halves.

Thus, SPRI-NTER becomes NTER-SPRI.

In the first half, the letters are replaced by the next letters in the alphabetical sequence, while in the second half they are replaced by the previous letters in the alphabetical sequence.

Thus, NTER becomes OUFS and SPRI becomes ROQH. Hence, OUFSROQH.

Note that, some of you may have got the correct answer even after reading the question incorrectly (i.e. code to word and not word to code). This is so because of this particular logic of coding. It may not work every time.

110. c) is Moon, which is a satellite. While all others are planets.

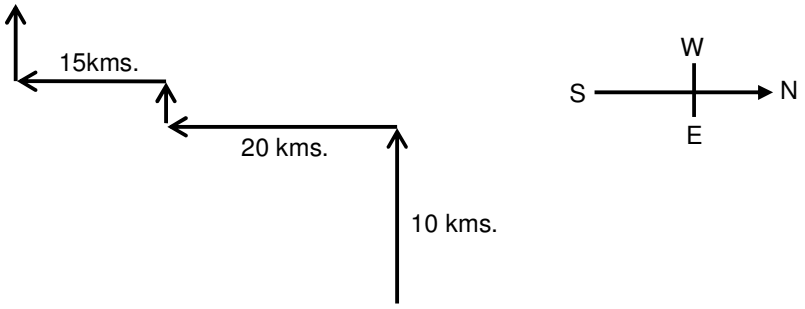
111. d) He starts his journey an hour before noon (when the Sun is on East, and his shadow is towards West).

Since his shadow was in front of him when he started, he must have started facing West.

He ends his journey, an hour after noon (when the Sun is on West, and his shadow is towards East).

Since his shadow was behind him when he ended, he must have ended facing West again.

And hence, as seen in the diagram, the last turn that he must have taken must be a right turn.



As seen in the diagram above, Option d) is the only true statement about his journey.

112. b) 9^{th} character to the right of the 5^{th} character from the left end is the 14^{th} character from the left end.

3^{rd} character to the left of this is the 11^{th} character from the left end.

Finally, the 7^{th} character to the right of this would be the 18^{th} character from the left end.

Since, the sequence has 20 characters in all, the 18^{th} character from the left end will actually be the 3^{rd} character from the right end i.e. $.

113. c) $13^2 + 1 = 170$, $17^2 + 1 = 290$. Hence, $19^2 + 1 = 362$.

114. a) Only the first conclusion follows.

115. c)

Explanations for questions 116 to 118:

There are a total of five fishes, of which three need to be served on any day.

Hence, the restaurant has to repeat one fish that is served on the previous day (as does not repeat more than 1).

Bombil and Pomfret need to be separate days. Hence, these cannot be the fishes that can be repeated.

116. d) Option d) is incorrect, as on Day 2, Bombil is served without Pomfret.

Note that, some may feel even c) is incorrect. This is so because, on Day 1, Pomfret is served without Bombil.

However, this is possible. The statement says, if Bombil is served on any given day, then Pomfret has to be served on the same day.

This does not mean, if Bombil is not served on any given day, then Pomfret cannot be served on the same day.

117. c) Bombil cannot be repeated on two consecutive days.
This is so because, if Bombil is repeated, then Pomfret also has to be repeated. But they cannot repeat more than one fish.

118. a) If Pomfret and Bombil are served on any given day, and Pomfret is repeated on the next day, the remaining three fishes have to be served on these two days as well.

For example, Let us say, Pomfret, Bombil and Rawas are served on the first day, then Pomfret, Surmai and Bangda have to be served on the next day (as not more than 1 fish can be repeated).

Now, on the third day if they were to repeat a fish between Surmaior Bangda (And they cannot repeat both), then the other fish that is repeated cannot be Pomfret (or else two fishes will be repeated from the second to the third day).

Hence, on the third day, the remaining two fishes have to be Bombil and Rawas.

However, this is not possible, as Bombil cannot be served without Pomfret.

Hence, on the third day, the same combination of fishes need to be served as on the first day.

This means, Pomfret will be served every day.

119. d) The writer explains the fact of “popular outrage” by making a judgment about the people’s assumption.

120. b) It is a reasoned judgment based on the points placed before it and immediately after it.

Answer Key

Q	A	Q	A	Q	A	Q	A	Q	A
1.	c)	**25.**	c)	**49.**	b)	**73.**	b)	**97.**	d)
2.	c)	**26.**	b)	**50.**	a)	74.	b)	**98.**	b)
3.	c)	**27.**	b)	**51.**	d)	**75.**	d)	**99.**	c)
4.	d)	**28.**	d)	**52.**	a)	**76.**	d)	**100.**	d)
5.	a)	**29.**	b)	**53.**	a)	**77.**	c)	**101.**	a)
6.	b)	**30.**	a)	**54.**	d)	**78.**	c)	**102.**	b)
7.	d)	**31.**	d)	**55.**	b)	**79.**	a)	**103.**	d)
8.	c)	**32.**	d)	**56.**	b)	**80.**	c)	**104.**	b)
9.	a)	**33.**	d)	**57.**	b)	**81.**	d)	**105.**	b)
10.	c)	**34.**	d)	**58.**	b)	**82.**	d)	**106.**	c)
11.	b)	**35.**	a)	**59.**	d)	**83.**	b)	**107.**	a)
12.	b)	**36.**	d)	**60.**	a)	**84.**	b)	**108.**	b)
13.	a)	**37.**	c)	**61.**	a)	**85.**	c)	**109.**	b)
14.	b)	**38.**	b)	**62.**	b)	**86.**	c)	**110.**	c)
15.	b)	**39.**	d)	**63.**	a)	**87.**	d)	**111.**	d)
16.	a)	**40.**	b)	**64.**	c)	**88.**	d)	**112.**	b)
17.	c)	**41.**	d)	**65.**	c)	**89.**	b)	**113.**	c)
18.	d)	**42.**	a)	**66.**	a)	**90.**	b)	**114.**	a)
19.	c)	**43.**	d)	**67.**	b)	**91.**	a)	**115.**	c)
20.	d)	**44.**	c)	**68.**	d)	**92.**	c)	**116.**	d)
21.	b)	**45.**	d)	**69.**	b)	**93.**	b)	**117.**	c)
22.	b)	**46.**	b)	**70.**	c)	**94.**	c)	**118.**	a)
23.	a)	**47.**	a)	71.	c)	**95.**	d)	**119.**	d)
24.	b)	**48.**	d)	**72.**	a)	**96.**	d)	**120.**	b)