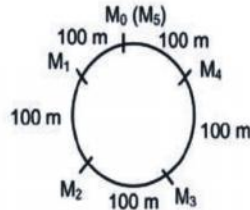


Solutions with Answerkeys

1. D	11. C	21. C	31. A	41. B	51. C	61. D	71. B	81. C	91. B
2. C	12. C	22. D	32. C	42. B	52. D	62. B	72. A	82. A	92. D
3. C	13. D	23. A	33. B	43. C	53. D	63. C	73. B	83. C	93. B
4. B	14. C	24. C	34. D	44. A	54. D	64. B	74. C	84. B	94. A
5. B	15. C	25. D	35. D	45. D	55. C	65. B	75. B	85. A	95. B
6. D	16. B	26. A	36. A	46. D	56. A	66. D	76. A	86. B	96. C
7. B	17. D	27. A	37. C	47. B	57. C	67. D	77. B	87. D	97. B
8. B	18. D	28. B	38. C	48. D	58. D	68. A	78. C	88. B	98. C
9. D	19. C	29. D	39. C	49. D	59. A	69. D	79. A	89. A	99. D
10. C	20. C	30. C	40. C	50. D	60. A	70. B	80. B	90. B	100. A

**Quant Part**

1. Let the length of the track be 500 m



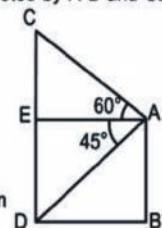
Let us suppose Mohan runs clockwise and Sohan runs anticlockwise  
Ratio of initial speeds of Mohan and Sohan = 4 : 1  
∴ First meeting would occur after Sohan covers 100m. This is M<sub>1</sub> and is as shown above they would exchange their speeds and directions now.  
∴ Second meeting would occur after Mohan covers 100m anti clockwise i.e., at M<sub>2</sub>.  
Similarly they meet at M<sub>3</sub>, M<sub>4</sub>, M<sub>5</sub> as shown in the figure.  
∴ M<sub>5</sub> coincides with M<sub>0</sub>. **Choice (D)**

2. Let the cost price of the milk be ₹x/lit. Let us say the shopkeeper usually sells 100 litres.  
Usual cost price = (x) (100) = ₹100x  
Usual profit = ₹  $\frac{30}{100}$  (100x) = ₹30x  
Usual selling price = 100x + 30x = ₹130x.  
If he dilutes, he would be adding  $\frac{30}{100}$  (100) = 30 litres of water to 100 litres of milk and hence he would be selling 130 litres of mixture.  
As he would sell at the same rate, his selling price =  $\frac{130}{100}$  (130x) = ₹169x, his cost price would remain unchanged (∵ cost of water = 0)  
∴ His profit = 169x - 100x = ₹69x. His profit percentage =  $\frac{69x}{100x} \cdot 100\% = 69\%$  **Choice (C)**
3. Let the costs of each sharpener, each eraser and each pen be s, e and p respectively.  
5s + 7e + 9p = 88 and 8s + 11e + 14p = 138  
2(8s + 11e + 14p) - 3(5s + 7e + 9p) = 1s + 1e + 1p.  
∴ 1s + 1e + 1p = 2(138) - 3(88) = 276 - 264 = 12. **Choice (C)**
4.  $\sqrt{108} = \sqrt{36 \times 3} = 6\sqrt{3} = 6(1.732) = 10.392$  **Choice (B)**
5. Required number of ways = Number of ways of drawing (three white or three red or three black) balls one after another = 4(3)(2) + 5(4)(3) + 6(5)(4) = 204. **Choice (B)**
6.  $\log x^8 = \log 14^{12}$   
 $x^8 = 14^{12}$  (∵  $\log p = \log q \Rightarrow p = q$ )

$$x = (14^{12})^{\frac{1}{8}} = 14^{\frac{3}{2}} = 7^2 \times 2^{\frac{3}{2}}$$

**Choice (D)**

7. Let the number of tests conducted upto the time his average score was 69 be N.  
69N + 81 = 75(N + 1) = 75N + 75  
12 = 6N  
2 = N  
Average score per test would be 73 when his score in that test is 73(2 + 1) - 69(2) = 219 - 138 = 81. **Choice (B)**
8. Let us say the rate at which each man constructs is x m/hr/day.  
Work = (Rate) (Number of persons) (Time for which work is done.)  
∴ A = x(A) ((2A) (3A) hrs) = 6A<sup>3</sup>x  
 $x = \frac{A}{6A^3} = \frac{1}{6A^2}$   
Required length of the wall  
= x(B)  $\left(\frac{B}{2}\right)$  (12B) =  $\frac{1}{6A^2} 6B^3 = \frac{B^3}{A^2}$  m **Choice (B)**
9. P + Q is even  
∴ Both P and Q odd or both are even.  
**Choice (A):**  
If P = 3 and Q = 1, P<sup>2</sup> + Q<sup>2</sup> = 10 which is not a multiple of 4.  
**Choice (B), Choice (C):**  
If both P and Q are even  
- P<sup>2</sup> + Q<sup>2</sup> = (even)<sup>2</sup> + (even)<sup>2</sup> = even - even = even  
- P<sup>3</sup> - Q<sup>2</sup> = (even)<sup>3</sup> - (even)<sup>2</sup> = even  
**Choice (D):**  
(P - Q)<sup>2</sup> = (odd - odd)<sup>2</sup> or (even - even)<sup>2</sup>  
In either case, (P - Q)<sup>2</sup> = (even)<sup>2</sup> = even  
∴ **Choice (D)** must be true. **Choice (D)**
10. 5 + 12x - x<sup>2</sup> = 5 - (x<sup>2</sup> - 12x) = 5 - (x<sup>2</sup> - 12x + 36) + 36 = 41 - (x - 6)<sup>2</sup>  
When x = 6, x - 6 = 0.  
∴ (x - 6)<sup>2</sup> = 0. ∴ 5 - 12x - x<sup>2</sup> = 41  
When x ≠ 6, x - 6 ≠ 0 i.e., it is +ve or -ve. In any case, (x - 6)<sup>2</sup> = +ve.  
∴ 41 - (x - 6)<sup>2</sup> ≤ 41 i.e., 5 - 12x - x<sup>2</sup> ≤ 41.  
∴ Maximum value of (5 - 12x - x<sup>2</sup>) = 41 **Choice (C)**
11. Let the tower and the building be denoted by A B and CD respectively  
CD - AB = 30 m  
CD - ED = 30 m  
CE = 30 m  
 $EA = \frac{CE}{\tan 60^\circ} = \frac{30}{\sqrt{3}} = 10\sqrt{3}$  m  
ED = EA tan 45° = 10√3 (1) = 10√3 m  
CD = CE + ED  
= (30 + 10√3) m = 10√3 (√3 + 1) m **Choice (C)**



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12. Let the first term of the GP and its common ratio be  $a$  and  $r$  respectively. Let the number of terms in the GP be  $n$ .  
 $ar^{n-1} = 258$

$$\text{Third term from the last} = \frac{\text{Last Term}}{r^2}$$

$$= \frac{ar^{n-1}}{r^2}$$

$$ar^2 \cdot \frac{ar^{n-1}}{r^2} = 512 \text{ (given)}$$

$$a \cdot ar^{n-1} = 512 \text{ i.e. product of the first and the last term is } 512$$

$$ar^{n-1} = \frac{512}{a}$$

$$a + \frac{512}{a} = 258$$

$$a^2 + 512 = 258a$$

$$a^2 - 258a + 512 = 0$$

$$(a - 256)(a - 2) = 0$$

$$a = 256 \text{ or } 2.$$

Choice (C)

13. The cow tied at the middle of one of the plot can graze on area of  $\pi \left(\frac{S}{2}\right)^2$

Each of the cows tied at one of the corners of the other plot can graze an area of  $\frac{90^\circ}{360^\circ} \times \pi \left(\frac{S}{2}\right)^2 = \frac{\pi}{4} \left(\frac{S}{2}\right)^2$

Ungrazable areas in the plots are  $S^2 - \pi \left(\frac{S}{2}\right)^2$  and  $S^2 - 4$

$$\left(\frac{\pi}{4} \left(\frac{S}{2}\right)^2\right)$$

$$\text{i.e. } S^2 - \frac{\pi S^2}{4} \text{ each. } \therefore \text{ Required ratio} = 1 : 1$$

Choice (D)

14. Quantity of provisions available in the fort initially =  $(975 \times 51 \times 4400)$  gms  
Quantity consumed in the first 13 days =  $(975 \times 13 \times 4400)$  gms  
Remaining quantity =  $975 \times (51 - 13) \times 4400$   
=  $(975 \times 38 \times 4400)$  gms. This will last for 6000 soldiers (if each consumer 950 gms/day) for  $\frac{975 \times 38 \times 4400}{950 \times (4400 + 1600)}$   
= 28.6 days.  
Choice (C)

15. Total number of ways of drawing two notes from the pocket containing 12 notes is  ${}^{12}C_2$  ways. The number of ways in which two fifty rupee notes can be drawn =  ${}^5C_2$   
The probability of choosing two fifty rupee notes =  $\frac{{}^5C_2}{{}^{12}C_2} = \frac{5}{33}$   
 $\therefore$  Odds in favour of the event = favourable ways:  
unfavourable ways =  $\frac{5}{33} : \frac{28}{33}$   
= 5 : 28  
Choice (C)

16. The point of intersection of the lines  $2x + 3y - 12 = 0$  and  $3x + 4y - 17 = 0$  is (3, 2).  
Given that (3, 2) lies on  $4x + ay - 22 = 0$ .  
 $\Rightarrow 4(3) + a(2) - 22 = 0$   
 $\therefore a = 5$   
Choice (B)

17. Non vertical Parallel lines have equal gradients. True.  
Perpendicular lines (Non vertical) have the product of their gradients as  $-1$ . True.

A line parallel to the  $x$  - axis has its gradient as 0. So, it is also true.

$\therefore$  All of the three statements are true. Choice (D)

18. Let  $x$  be the number of bacteria of type I (which doubles every 10 seconds) and  $y$  be the number of bacteria of type II (which triples every 10 seconds). We have

	type I	type II
At the beginning	$x$	$y$
At the end of 10 secs	$2x$	$3y$
At the end of 20 secs	$4x$	$9y$
At the end of 30 secs	$8x$	$27y$
At the end of 40 secs	$16x$	$81y$

$$\text{Now } 16x + 81y = 337$$

Clearly  $y \leq 4$

when  $y = 4$ ,  $16x = 13$  not possible

when  $y = 3$ ,  $16x = 94$  not possible

when  $y = 2$ ,  $16x = 175$  not possible

when  $y = 1$ ,  $16x = 256 \Rightarrow x = 16$

Hence total number. of bacteria at the beginning is  $x + y = 17$ .  
Choice (D)

19. Let the number of persons in the group be  $x$   
And the weight of the person who joined the group be  $w$  kg  
Average weight of  $x$  boys = 42 kg  
When two boys with weights 38 kg and 43kg left and the boy with weight  $w$  kg joined the group, there is no change in the average.

$$\text{i. e., } \frac{42x - 38 - 43 + w}{x - 1} = 42$$

$$\Rightarrow 42x - 81 + w = 42x - 42$$

$$w = 39 \text{ kg}$$

Choice (C)

20. For any symmetric distribution, mean = median = mode.  
Each of these may or may not be equal to the range.  
 $\therefore$  Three of the quantities must be equal. Choice (C)
21. Let each possible number which can be formed be denoted by  $abc$   
 $a$  has 9 possibilities ( $a$  cannot be 0)  
 $b$  has 9 possibilities ( $b$  can be 0. As no digit is repeated,  $b \neq a$ )  
 $c$  has 8 possibilities ( $c \neq a, b$ )  
Number of three digit numbers which can be formed =  $9(9)(8) = 648$   
Choice (C)
22.  $1 \times 1! + 2 \times 2! + 3 \times 3! + \dots + 20 \times 20!$   
 $= (2 - 1)1! + (3 - 1)2! + (4 - 1)3! + \dots + (21 - 1)20!$   
 $= 2! - 1! + 3! - 2! + 4! - 3! + \dots + 21! - 20!$   
 $= -1 + 21! = 21! - 1$   
Choice (D)
23. Let the principal be ₹P

$$P + \frac{P(3)(R)}{100} = 600 \text{ and } P + \frac{P(3)(R)}{100} + \frac{P(4)(2R)}{100} = 880$$

$$\text{i.e. } P + \frac{3PR}{100} = 600 \text{ and } P + \frac{11PR}{100} = 880$$

$$P + \frac{11PR}{100} - \left(P + \frac{3PR}{100}\right) = 880 - 600$$

$$\frac{8PR}{100} = 280$$

$$\frac{PR}{100} = 35$$

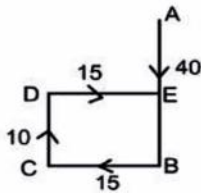
$$P = 600 - \frac{3PR}{100} = 600 - 3(35) = 495 \text{ Choice (A)}$$



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40. Choice (A): All the gates in Patel Street can be black.  
Choice (B): All the gates in Patel Street can be Grey.  
Choice (C): Always true  
Choice (D): False as houses on other streets can also be black. Choice (C)

41.



$AE = AB - CD = 40 - 15 = 25$  km Choice (B)

42. Given that, Amaravati's mother is Chandrakanta. Rajshekhar is Chandrakanta's brother. Vikramaditya is Rajshekhar's father. Thus, Vikramaditya is Chandrakanta's father. Thus Vikramaditya is Amaravathi's maternal grandfather. Choice (B)

43. In 8 min the clock loses 10 sec  
Thus, in 60 min the clock loses =  $\frac{10}{8} \times 60 = 75$  sec  
Or, 1.25 minutes.  
Thus, in every 4 hours it loses 5 minutes.  
Thus, at 7:30 it will show 7:25 and at 11:30 it will show 11:20. Choice (C)

44. When a cube is cut into  $n^3$  identical cubes, then the number of smaller cubes with no face painted is given by  $(n - 2)^3$ . Here  $n = 5$ . Thus, the number of unpainted cubes =  $(5 - 2)^3 = 3^3 = 27$ . Choice (A)

45. According to statement (e), B and C beat the same team. Both B and C won 3 matches each. P cannot be the team which lost against B as well as Q because P won 3 matches. Hence, B and C won against Q, R and S. Now, combining this information with the data given in Table - 1 and Table - 2 we get the following.

→ Teams ↓	P	Q	R	S
A	A	Q	R	S
B	P	B	B	B
C	P	C	C	C
D	P	D	R	D

Thus, statement (d) is true. Choice (D)

46. According to the given information.

	Mon	Tue	Wed	Thur	Fri	Sat
A	EC		✓	✓	✓	✓
B	✓	✓	✓	✓		✓
C	✓	✓	✓	✓	✓	
D		✓		✓	✓	✓
E	✓	✓	✓			EC
F	✓			✓	✓	✓

EC: Emergency class  
Each day at least 4 - teachers must be present to take classes in all the four batches.  
Thus, all the teachers who can come on Tuesday, Wednesday, and Friday, must take classes on these days.  
Now, if A doesn't take class on Saturday, then E must take class on Saturday.  
But E can take classes on at most three days.  
He must be present on Tuesday and Wednesday. Thus he will not take classes on Monday. Thus, A, B, C and F must

take classes on Monday. As B can take classes on at most 4 days, he won't take class on Thursday.  
Thus, Monday: A, B, C, F  
Thursday: A, C, D, F  
Saturday: B, D, E, F  
Thus A and C are correct. Choice (D)

47. Parallel reasoning checks for similarity in the structure of the information and the line of reasoning.  
Choice (A) is incorrect since TV shows are not compared to any other entity unlike the given information.  
Choice (B) correctly parallels the given information in structure and reasoning.  
Choice (C) is an incorrect choice as it concludes differently from what the parallel conclusion should have been (Hence, more people prefer books to magazines-should have been the parallel conclusion.)  
Choice (D) is incorrect since the comparison is not parallel-'approximates' is different from 'exceeds.' Choice (B)

48. We need to choose an answer choice that supports the article that animal experimentation is necessary.  
Choice (A) does not address the issue that humans tend to benefit from any successful results of animal experimentation.  
Choice (B) weakens the article since it gives an alternative evidence where animal experimentation has not been conducted.  
Choice (C) is not complete in information since there is no clue to identify if polio vaccine was developed based on animal experimentation or not. Hence, irrelevant.  
Choice (D) perfectly supports the article. Choice (D)

49. As per the new initiative, banks will be able to raise money against loans they already disbursed. The assumption here is that money can be raised provided there are people/institutions willing to put their money in bonds.  
Choice (D) addresses that.  
Choice (A) is misleading since the information already states that 'this strategy will ensure that more money is readily available for further lending'. That does not necessarily imply that there is not enough money in the markets now.  
Choice (B) may be a result of the initiative, hence may be an inference that can be drawn, not an assumption.  
Choice (C) is merely a restated version of what is already given.  
Hence, Choice (D). Choice (D)

50. The advertisement talks of certain number of Indian states believing that smoking cigarettes is healthy based on a ban imposed in these states on smokeless tobacco.  
This argument is clearly flawed. Choice (A) is superficial in that it does not describe in depth what the flaw is.  
Choice (B) targets the flaw only partially since it does not talk about the latter part of the advertisement. Choice (C) is irrelevant. Choice (D) hits the nail on its head! Firstly, it clearly points out that the first part of the advertisement is a misinterpretation (as explained above) and then questions the extent/ degree of harm that the number of chemicals can pose. Choice (D)

**English Part**

51. A 'recluse' is a 'loner'. Choice (C)
52. In sentence D, the context suggests that they had nowhere to go, so, she let them stay there. Therefore, the correction is 'nowhere to stay so I couldn't turn them away'. 'Turn down' means to reject a proposal or offer. Choice (D)
53. The first three words are related to punishment. The fourth is not. Choice (D)
54. The word 'ambit' as used in the passage means 'scope'. Choice (D)

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55. The second para tells us that US cyber law allows sale of immovable property through the internet. The third para tells us that in India such transactions are not allowed. Hence option (C) is appropriate. Choice (C)
56. The last para renders option (A) to be correct. Options (C) and (D) are irrelevant, while option (B) is already part of the system. Choice (A)
57. The phrase means 'obsession'. Choice (C)
58. 'Now white-collar jobs are \_\_\_\_\_ vulnerable' shows that (D) is correct. Choice (D)
59. The author's criticism of the furniture company is based on the use of wood for making boards for furniture since furniture is made from wood any way, without any elaborate process or research. Choice (A) thus becomes the reason for the criticism. Choice (A)
60. Option (A) is the right choice. Because it explains or supports the idea that people are willing to forego good salaries and cut down on expenses to take care of children. (B) has carrier which is wrong (C) has significant work, it should be significantly redefined attitudes. (D) tense is wrong Choice (A)
61. Only 'e' which specifies 'kutch museum' can follow 'a'. 'd' spells out the result of the earthquake. Hence it follows 'e'. 'b' and 'c' are a pair because 'b' says the museum rose like a phoenix and 'c' tells us how long it took for this to happen. Hence 'b' cannot follow 'c' but must precede it. edbc is the answer. Choice (D)
62. 'The Buddhist monks' who came to the ravine set about, 'decorating the wall'. Refer to the second sentence of the paragraph. Choice (B)
63. The monks 'set about decorating the walls' with the help of the sunshine reflected by the large mirrors. Refer to the fourth and fifth sentence of the passage. Only option (C) follows. Choice (C)
64. The subject of the first clause, the singular noun 'lull', must take the present tense 'has raised' rather than the past 'had raised'. The context of the verb tense must show action continuing into the present as the use of the present perfect does here.  
(A) 'Had raised' is the wrong verb tense; 'for ... being' is awkward and wordy.  
(B) Correct. In this sentence, the verb and subject agree, and the verb is in the appropriate tense; 'an improvement is finally' is clear and concise.  
(C) Subject and verb do not agree; 'there is' is wordy.  
(D) 'Raised' indicating completed action, is the wrong verb tense; 'for an improvement finally' is awkward and ungrammatical. Choice (B)
65. Murali's views are against Mr. Pandey but when Meena offers evidence against what he says (that is, in favour of Mr. Pandey) he refutes what she says with unsupported assertion. Hence his argument goes round in a circle. Choice (B)
66. Choice (D) is correct. Choice (D)
67. Choice (A) has a dangling modifier. The phrase 'using . . . . from space, which is at the beginning of the sentence cannot be used to modify cyclonic storms. The sentence does not contain a noun which the phrase can logically modify. Contrast this with the best choice (D) – here, the phrase modifies the noun meteorologists correctly. Choice (B) contains the same main clause and the dangling modifier, now at the end. The wording in choice (C) makes an absurd suggestion that meteorologists can make use of the satellite pictures after the storm has been predicted. Choice (D)
68. Obnoxious, means something very unpleasant. Hence, the answer is vile, which is similar in meaning. Choice (A)
69. From paragraph 2, penultimate sentence, option (D) can be arrived at. Options (A), (B) and (C) are irrelevant. Choice (D)
70. The author says that if the rich and the middle classes do not feel a sense of duty towards the poor, then it is a stain on those classes. Hence, option (A) is incorrect. Options (C) and (D) are irrelevant. Option (B) is the correct choice, (3<sup>rd</sup> para, first sentence). Choice (B)
71. In the absence of a clue, the two words should be congruent so as to render the sentence meaningful. 'Challenges' cannot be 'developed' which rules out choice (A) opportunities are open to everyone, and cannot be claimed as 'one's (your) own'. Further we can seize or utilize the opportunity; we don't work on opportunities. Choice (B) is meaningful. 'Investments' are not 'developed', but made. Choice (B)
72. Statement (A) is right. Statement (B) and (D) do not have the subject 'we' for 'can't be sure of course'. Statement (C) is wrong because the second half of the sentence is structurally incorrect. Choice (A)
73. We have to find the reason why benefits of government schemes are not reaching the targeted people. The government does not expect the poor to go through the documents. The schemes are made popular through awareness campaigns. Hence, (A) is not a possible cause. Not making the schemes known can be a possible reason for such failure. Hence, (B) is a possible cause. Being in rural areas cannot be a reason for failure. Lack of knowledge of existence of such schemes can be a reason. Hence, (C), (D) cannot be a possible reason. Hence, (B) is a possible reason. Choice (B)
74. To weaken the view expressed, we have to find a statement which shows that it may not be winter in August 1946. None of the choices (A), (B) and (D) provides such information. Choice (C) states that prior to 1970 very low temperatures were recorded in rainy season also. Hence the fact that lowest temperature was recorded in August does not allow us to conclude that it was winter at that time. Hence, (C) weakens the argument. Choice (C)
75. To contradict the view we have to provide a proper reason specific to the college which indicates that conducting classes on Sundays is not a cruel decision. Neither choice (A) nor (D) provides such reason. Weekly holiday is not necessarily for studying. It is not stated that the other colleges are not interested in securing top ranks. Hence, (C) does not provide a proper reason. Choice (B) provides a reason for this college to conduct classes on Sundays. Hence, (B) contradicts the view. Choice (B)