EXPLANATORY ANSWERS
SECTION -1

1. Let the cost of one apple, banana and orange is A, B and O respectively
20A + 20B + 20O = 220. ……(1)
A + 2B + 3O = 19 …… (2)
Dividing (1) by 5 we get, 4A + 4B + 4O = 44…(3)
(3)-(2) Þ 3A + 2B + O = 25 He needs 25 – 19 = 6 more Rs. Hence [1]

2. Let Father's age be F years and mother's age is M years (At the time of birth of twins). The Father's age when the twins attained the mother's age will be F + M.
$\frac{F+M}{2} = 24$ Þ F+M = 48 yrs Hence [3]

3

Coin	No of 5 Rs coins	No. of 1 Rs coins	No of 50 NP coins.	Total No of coins
Anoop	1	1	44	46
Sudheer	5	2	2	9

Anoop has 37 Coins more than sudheer. Hence [2]

4. Let the tangent RS touches the circle at point X. Let PR = RX = a.
Let XS = SQ = b .Then TR = TP-a and TS = TP- b.
Perimeter of RST = TP- a + a TP- b + b = 2 TP. Hence [2].

5. x + 2y + 5z = 33 ……..(1)
2x + 3y + z = 27……(2)

7x + 10y – z = 75 Þ (2) ´ 4 –(1)
8x + 13y + 13z = 147 Þ (2)´ 3 + (1)´ 2
4z – x – y = 6 Þ (1) – (2). The equations given in the first 3 options are derived from the two equations given in the problem. To get unique solutions, if there are 3 variables we need 3 different equations. Hence [4].

6. Let B be the number of boys, G be the number of girls and C be the number of chairs
B + G – 1 = C…(1)
$\frac{B}{2} + G + 3 = C$…(2) Equating (1) and (2) we get,
$B + G - 1 = \frac{B}{2} + G + 3$ Þ $\frac{B}{2} = 4$ = 8. Hence [4]

7. Let AB = $\sqrt{11}$, AC = $\sqrt{15}$ and BC = 4. Let the median drawn to the longest side be AD. Then, $[AC]^2 + [AB]^2 = 2([AD]^2 + [CD]^2)$
$26 = 2(AD^2 + 4)$ Þ $26 = 2AD^2 + 8$
$2AD^2 = 18$ Þ $AD^2 = 9$ Þ AD = 3. Hence [3]

8. Let the larger number and smaller number is L and S respectively.
$0.2\,L = 0.3\,S - 2.3 \Rightarrow 2L - 3S = -23$
$L - S = 10 \Rightarrow 2L - 2S = 20$
Solving the above two equations we get L = 53 Hence [3]

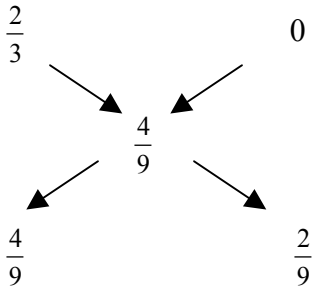
9. Let total cost of two machines = 800 Rs.

	Machine I 500Rs	Machine II 300Rs	Depreciation	
			Machine I	Machine II
I Year	425	240	75	60
II year	361.25	192	63.75	48

Total cost of 2 Machines at the end of 2 yrs = 553.25
Total depreciation = 246.75
$\% = \frac{246.75}{800} \times 100 = 30.84\%$ Hence [1]

10. Ratio of the milk and water in the resulting mixture $= \frac{8 \times 0.75 + 8 \times 0.62 + 8 \times 0.63}{8 \times 0.25 + 8 \times 0.38 + 8 \times 0.37}$
$= \frac{2}{1}$
Let x litres of resulting mixture is replaced by water.

$Q_1 = (24 - x)$ lit — Resulting mixture
$Q_2 = x$ lit — water.



$\frac{Q_1}{Q_2} \quad \frac{24 - x}{x} = \frac{2}{1} \Rightarrow 24 - x = 2x \Rightarrow x = 8$ litres. Hence [3]

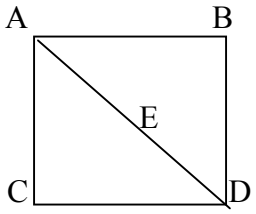
11.

Word starting with	No of Words.
Y	6
R	6
PY	2
PRY	1

16^{th} word = PREY. Hence [3]

12 17^{th} word = PREY
18^{th} word = PREY Hence [3]

13. AE = 20
AD = $20\sqrt{2}$
DE = $20\sqrt{2}$ -20 Þ DE = 20 ($\sqrt{2}$ -1)
Area that can be totally grazed by the goat = $\frac{p}{4}[20(\sqrt{2}-1)]^2$.
Hence [1]



14. Ð CED = Ð CDE (D CED is isosceles triangle)
Ð C = 90 + 60 = 150^0
Ð CED = Ð CDE = 15^0
Ð BEC = x + 15^0 = 60^0 Þ x = 45^0 Hence [2]

15. Let x be the Amount that A withdraws and B invests at the end of every month.
Then, 35,000 – 11x = 11,000
11x = 22,000 Þ x = 2000 Hence [2]

16. Let Length = L units and Breadth = B units.
2(0.65L + 1.5B) = 2 (L+ B)
0.65L + 1.5B = L+B Þ 0.5B = 0.35L Þ $\frac{L}{B} = \frac{0.5}{0.35} = \frac{10}{7}$ Hence [4]

17. 13 Hence [3]

18. New spots, 13-5 = 8 Hence [3]

19.

X	Remainder when X divided by 21
2^1	2
2^2	4
2^3	8
2^4	16
2^5	11
2^6	1

$2^{73} = (2^6)^{12} \cdot 2^1$ The remainder when $(2^6)^{12}$ when divided by 21 = 1
The remainder when 2^{73} when divided by 21 = 2 Hence [1]

20. Smallest No satisfying the given condition = (4 5+1) 3+2 = 65.
Any such Number satisfying the given condition = 65 + 84k When k is integer
65 + 84k when divided by 21, the remainder is = 2 Hence [1].

21 Ð DBC = $x^0 + y^0$ [exterior angle of Ð XBC]
Ð DCY = Ð DBC [Alternate segment theorem] Hence [1]

22. $\log_a a + \log_{a^2} a + 15 \log_{a^3} a + \ldots\ldots + (2n^2-n) \log_{a^n} a = 1369$

$1+\frac{6}{2} + \frac{15}{3}+\ldots\ldots + \frac{2n^2}{n}= 1369 \Rightarrow 1 + 3 + 5 + 7 + \ldots\ldots+(2n-1) = 1369$

$n^2= 1369 \Rightarrow n = 37$ hence [4]

23. $x= a\left(\frac{p^2 + q^2}{2pq}\right)^{\frac{1}{2}} \Rightarrow \frac{x}{a}= \left(\frac{p^2 + q^2}{2pq}\right)^{\frac{1}{2}} \Rightarrow \frac{x^2}{a^2}= \frac{p^2 + q^2}{2pq}$

$\frac{x^2 + a^2}{x^2 - a^2} = \frac{(p+ q)^2}{(p- q)^2} \Rightarrow \frac{\sqrt{x^2 + a^2}}{\sqrt{x^2 - a^2}} = \frac{p+ q}{p- q} \Rightarrow \frac{\sqrt{x^2 + a^2} + \sqrt{x^2 + a^2}}{\sqrt{x^2 + a^2} - \sqrt{x^2 - a^2}} = \frac{p}{q}$ Hence[3]

24.

$\sqrt{x}+\sqrt{x+\sqrt{1-x}} =1 \Rightarrow \sqrt{x+\sqrt{1-x}} =1-\sqrt{x}$

squaring both the sides, we get

$x+\sqrt{1-x} =1+x-2\sqrt{x} \Rightarrow \sqrt{1-x} =1-2\sqrt{x}$

squaring both the sides, we get

$1-x =1+4x-4\sqrt{x} \Rightarrow 5x =4\sqrt{x}$

squaring both the sides, we get

$25x^2 =16x \Rightarrow 25x^2 -16x =0 \Rightarrow x(25x-16) =0$

$x =0 \, or \, x =\frac{16}{25}$

But when $x =\frac{16}{25}$, *does not satisfy the* equation given in the question.

Hence x= 0
Hence [2]

25. OA ´ OD = OC ´ OB Þ 6 ´ OD = 5 ´ 12 Þ OD = 10
DA = OD – OA = 10 – 6 = 4 Hence [3]

26. Total sum received by all clubs P, Q and R = 2´ 1100 + 2´ 1200 + 2´ 1000
=6600

Average contribution by A, B and C = $\frac{2A+ 2B+ 2C}{3}= \frac{6600}{3}$ =2200 Hence [4]

27. Let the 3 numbers in A.P. be (a-7), a, (a+7). Then, (a-7), (a-1), (a+11) are in G.P.

$\frac{a-7}{a-1} = \frac{a-1}{a+11}$ Þ (a-7) (a+11) = $(a-1)^2$ Þ $a^2 + 4a - 77 = a^2 + 1 - 2a$

6a = 78 Þ a =13. Largest number = 20. Hence [2]

28. Area of V ABC =36 cm^2 and Area of V BCE = 3 times Area of V ABC =108 cm^2
Area of V AEC =144 cm^2 and Area of V ECD = 5 times Area of V AEC =720 cm^2
Area of V AED =864 cm^2. Hence [1]

29.

Group	No of Days
0.75A+0.5B	$7\frac{1}{2}$
3A + 2B	?

Group (3A + 2B) is equivalent to 4 times the group (0.75A+0.584).
4(0.75 + 0.5B) = 3A + 2B.

Hence number of days required = $\frac{7\frac{1}{2}}{4} = \frac{15}{8} = 1\frac{7}{8}$ Hence [3]

30. Let the price 1 kg wheat = x Rs.
Let y kg be the present consumption of wheat
1.20 [60x] = 1.44 (x)(y).

Y = $\frac{1.20 \times 60}{1.44} = \frac{72}{1.44}$ Þ Y = 50 kg Hence [3]

31. Let S = $\frac{1}{(1)(3)} + \frac{1}{(3)(5)} + \frac{1}{(5)(7)} + \ldots\ldots + \frac{1}{(2x+1)(2x-1)}$

2S = $\frac{1}{1} - \frac{1}{3} + \frac{1}{3} - \frac{1}{5} + \frac{1}{5} - \frac{1}{7} + \ldots\ldots \frac{1}{2x-1} - \frac{1}{2x+1}$

2S = 1- $\frac{1}{2x+1} = \frac{2x+1-1}{2x+1} = \frac{2x}{2x+1}$ Þ S = $\frac{x}{2x+1}$ Hence [3]

32. Let the person hits small, medium and big circle x times each.
Let y be the number of times he misses out.
10x + 6x + 4x – 15y = 50 Þ 20x – 15y = 50 Þ 4x – 3y = 10
y > 1 and x and y are integers. The Least value of x = 4, and corresponding value of y = 2 . Total throws on the board = 3 × 4 + 2 = 14. Hence [2]

Section 2

Explanatory answers

Passage 1

33. While why man has vastly different needs have been mentioned in the passage, the answer to the question has not been mentioned. Hence 4.
34. Refer last para first 2 lines. The author clearly mentions that due to success in focusing his energy to use other forms of energy, man has been different from animals.
35. Answer is 2, and the various factors has been mentioned in para 5 as type of work, skill, etc. Option 3 is not correct as maximum efficiency recorded is 37%. Option 4 is incorrect as it is not impossible, only problematic. Option 1 is not directly stated.

Passage2

36. Only 3 is false as a society needs different levels of capital different stages (Paragraph 2)
37. (3) is correct .The author mentions improvement in basic skills sets of "active" members, and does not explicitly state education.
38. All the 3 points are mentioned in paragraph 1.
39. Only (4) has been mentioned in the last part of the passage. Option 2 is incorrect as nowhere it is mentioned that the efforts of farmers are harnessed by traders.

Passage 3

40. Only (2) can be attributed to Plato. (3) is not correct as Plato only talks about ignorance and wisdom and not good and evil. (4) is stated not by Plato, but by the author.
41. The author is of the opinion that the dignity of life must be preserved (last Para).The facts stated in (1), (4) are only to highlight that he quantitative increase has been higher than the qualitative increase. The author dos not explicitly state (2), in fact says that "….beyond certain point, quality and quantity may become competitive.
42. Obviously (4)
43. A careful glance at the Plato example shows that to a limited extend it does provide a counterargument to the economist. However, the author uses Plato's words to demonstrate his aversion towards inhuman behavior by man, and the improper usage of his "control over environment. In this case (3) is correct. The line has nothing to do with the quantity v/s quality debate.

Passage 4

44. Refer last line of 7th para. Option 1 is not correct as "ideas about reality" cannot be equated to illusion.
45. Refer 6th para. Option 1 is wrong as Newtonian Physics was inadequate. Option 2 is a very broad generalization from a specific instance. 3 is not mentioned anywhere.
46. Einstein neither mocked co-physicists, nor won over the critics or accepted defeat.
47. Option 1 is not a belief of the author, but of Stapp. Option 2 is correct. Option 3 is incorrect as the definition was clear in Copenhagen interpretation. And 4 is incorrect as Einstein did not disapprove it.

Passage 5

48) Refer penultimate paragraph where the author talks about Darwinian belief of the British.

49) While (4) is not stated anywhere in the passage, (1) and (3) have not been said specifically for youngsters. (2) Is correct.

50).The British did not consider management education important because they believed in that management was a class and not an activity .All three options are incorrect as they are the views of then author, and m\not the British.

51). Refer to the penultimate paragraph. Option (3) is what the author believes and not what the British believe.

Questions 52 to 54 : These questions are answered best by evaluation whether the options have all the key messages or not.

52) the key word are "poor –self efficiency'," rich- economic sense –out source', "similarity with knowledge based organizations ', "specializations "and a few examples. Hence 4 is correct. Option 3 is incorrect as nowhere the passage mentions getting richer – just like KBOs.

53) (2) is correct as it captures all the key words of the passage in different hues. The key words are "difference in perception ", "technical Jargon"," the simplicity of their work", "lack of our understanding and getting paid to enjoy their work.

54) The key words are "aging population, older people unless change in birth rate, especially in richer countries' with the examples of grand parents. Option 4 is incorrect as it narrows the phenomena to richer countries alone. Option 3 is incorrect as it says that you definitely will be able to see all great grandparents.

55. B and C are linked.

56. A tough one. Note that A and C are linked, and CA would be incorrect as "say thing that interested me" cannot start with "candid simplicity", but some idea or words. So AC is better. Now it is easy.

57. E and C are linked.

58. F is linked with A and C. Hence order is ACF. And 'he' obviously refers to Dil and not the sadhu as the sadhu would not look from the corner of his eye and ask what is going on (in the context of the story)

59. E and D are linked. Then the author wonders if "it" is not visible, then where is it hidden". He asks a senior and he gets a reply. C after a does not make sense as when he gets an answer, he cannot wonder "whatever it was".

60. The last sentence is always the climax. To end with F would be not such a good ending as ending with D. Also, when you first introduce a person/thing you refer to it as "a". Once familiarity has been established, then you use "the".

61. Number of students is collected together as one. So it is singular. Hence 'is', and not 'are'.

62. The choice is between 2 and 3. 'His' is possessive pronoun, and 'him' is reflexive. Hence 'him' is better. Using 'his' also indicates that "I" is willing to stand against "whom he is opposing".

63. Option 2 is correct. 1 is an unnecessary complex sentence. And an before union is incorrect.

64. The choice is between 2 and 4. And in 2 the part "was because" is inappropriate.
65. The objects when used with "as well as" are singular. Hence 'is' should be used. In option 2, as they have been made plural, then 'are' should have been used.
66. Obviously 2.
67. A popular proverb.
68. Here the usage has to be of a possessive pronoun. Hence 4 is correct.
69. In such cases always break up the sentence and read. It is incorrect to say "All are expected to attend but I", and it is correct to say "All are expected to attend but me" or "All, but me, are expected to attend." Hence 3 is best.

SECTION -3

70-74

	CAT DETAILS						XLRI DETAILS	
Name	Part 1 score	Part 2 score	Part 3 score	Number of unanswered questions	Total score	Total negative marks	Number of unanswered questions	Total score
Amit	14.67	20.67	30.67	66	49.5	21.5	65	48.75
Alok	16.67	18.67	17.33	36	43.67	21.33	58	51.25
Anil	16	17	18	67	34.25	22.75	65	46.25
Arun	22	12	29	65	46.75	21.25	58	50

70. Hence [1]
71. Hence [2]
72. Hence [1]
73. Hence [2]
74. Hence [1]

75. If Dukhi joins SP Jain then Kushal joins XLRI (As per condition 3). Since Dukhi has got only 3 admissions (XLRI, SP Jain and TISS), Dukhi joins TISS.
Hence [2]

76. Only Anjaan, Mangal and Bekar got the admissions in FMS. If Mangal chooses IIM-L, Anjaan will not choose FMS (As per condition 1). If Chatur chooses MDI, Bekar will not choose FMS (As per condition 4). Finally no body chooses FMS.
Hence [4]

77. Hence [3]

78. If Chatur goes to MDI, and if only one out 6 goes to IIM, then Beaker is the only person goes to IIM (As per condition 4). Anjaan and Mangal both would go to FMS (As per condition 1). Since 3 persons (Anjaan, Mangal and Chatur) choose colleges in Delhi Kushal cannot go to IIFT, which is in Delhi. Hence [4]

79. Hence [2]

80. Hence [3]

81. Hence [2]

82. Hence [2]

83. Total sum collected by IATTA = 200 ´ 10 = 2000
If there is no profit or no loss for IATTA then, Fine paid by IATTA = 2000
Total number of numbers caught in that month = $\frac{2000}{20 \text{ ´ } 10} = 20$

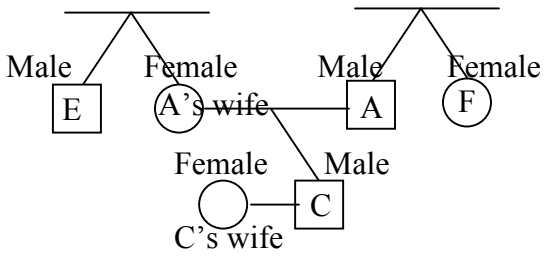
Gamma = $\frac{\text{No of members caught in the month}}{30}$

Gamma = $\frac{20}{30} = \frac{2}{3}$ Hence [1].

84. Profit = 50 ´ 5000 - 1 ´ 30 ´ 20 ´ 25
= 2,50,000 – 15,000
= 2,35,000 Hence [2].

85. Let Number of members = x To break the even,
20 ´ x - 30 ´ 30 ´ 20 ´ 10 = 0
20x = 180000
x = $\frac{180000}{20} = 9000$ Hence [2].

86 – 89.



86. A's wife could be either D or B. Hence [4]

87. [1] is not possible, because A, C, E are males. Hence [4]

88. E's sister is A's wife. She could be either D or B. Hence [4]

89. F > A > C Hence [3]

90. Time taken for mig = $\frac{625}{400}$ = 1.57 hrs

Time taken for Jaguar = $\frac{750}{200}$ = 3.75 hrs

Time taken for Mirage = $\frac{875}{300}$ = 2.9 hrs Hence [1].

91. Time taken for Jaguar = $\frac{1125}{200}$ = 5.62 hrs

Time taken for mirage = $\frac{875}{300}$ = 2.91 hrs Hence [3].

92. Time taken for mig = $\frac{625}{250}$ = 2.5 hrs

Time taken for Jaguar = $\frac{750}{125}$ = 6hrs

Time taken for Mirage = $\frac{875}{187.5}$ = 4.66 hrs

Time taken for B2 = $\frac{1000}{120}$ = 8.33 hrs Hence [1]

93. Time taken for mig = $\frac{625}{250}$ = 2.5 hrs

Time taken for Jaguar = $\frac{625}{125}$ = 5hrs

Time taken for Mirage = $\frac{625}{187.5}$ = 3.33 hrs

Time taken for B2 = $\frac{625}{120}$ = 5.20 hrs Hence [1]

94. Time taken for Jaguar = $\frac{750}{125}$ = 6hrs

Time taken for B2 = $\frac{1000}{200}$ = 5 hrs Hence [2]

95. $\frac{400+200+300+200}{4} = 275$ Hence [1]

96. Since only the ratio is given we cannot determine the total number of medals won by Pakistan and India. Hence [4]

97.

Olympics	Ratio of the medals India : Pakistan.	Number of medals won by India	Number of medals won by Pakistan
Montreal	1 : 3	1	3
Sydney	1 : 4	1	4
Seoul	1 : 2	1	2
Atlanta	3 : 2	6	4
Athens	2 : 1	6	3

Hence [4]

98. Ratio of the medals in Sydney = 1 : 4
Let number medals secured by India be x. Then number medals secured by Pakistan is 4x .Then 5x = 65.
x = 13. The difference between the medals = 3x = 39. Hence [1]

99. Hence [4]

100 Hence [4]

101. $R_1C_1 \rightarrow R_2C_1 \rightarrow R_2C_2 \rightarrow R_2C_1$

Score $\frac{(5-3)\times 0}{-3} = 0$ Hence [1]

102. The minimum possible number of moves is 3.
$R_3C_1 \rightarrow R_3C_2 \rightarrow R_2C_2 \rightarrow R_1C_2$
Score = $(2 \times 1) - 0 - 4 = -2$ Hence [1]

103. The player should either have started with R_2C1 or R_1C_3. If he starts with R_2C_1, he cannot get positive score within a move. Hence he should have started with R_1C_3. He must be now on the cell R_2C_3. Hence [2]

104. If the score should become infinity, player's last move should have been from R_2C_3 to R_2C_2. He has to make 4 moves. $R_1C_1 \rightarrow R_1C_2 \rightarrow R_1C_3 \rightarrow R_2C_3 \rightarrow R_2C_2$ Hence [1]

105 -106.

	Total points
Money	240
Power	380
Fame	280

105. Hence [2]

106. Hence [1]

107. If the 20 CEOs rated money as rank 1 are liars, then the number of CEOs who rated money as rank 1 becomes 0. This is the minimum number of CEOs who could have rated money rank 1. Hence [1]

108. If the 50 CEOs who rated money as rank 3 are liars, it is possible that they could have rated money as rank 1. If 25 CEOs who rated money as rank 2 are liars who lie in at least one of the parameters, it is possible that they could have rated money as rank 1. Hence the maximum number of CEOs who could have rated money as rank 1 is 95. Hence [1]

109. If the 20 CEOs who rated money as rank 1 and if the 30 CEOs who rated money as rank 2 are liars who lie in all the three parameters, it is possible that they could have rated money as rank 3. In that case the maximum number of CEOs who could have rated money as rank 3 becomes 100. Hence [3]

110. If 50 CEOs who rated power as rank 1 and if 25 CEOs who rated power as 2 are liars who lie in all the 3 parameters and in at least one of the parameters, it is possible that they could have rated power as rank 3. Hence [1]