

Mock CAT – 9

Answers and Explanations

1	4	2	3	3	2	4	1	5	2	6	4	7	2	8	4	9	2	10	3
11	3	12	2	13	2	14	3	15	4	16	2	17	4	18	3	19	3	20	3
21	3	22	3	23	1	24	2	25	2	26	2	27	1	28	3	29	1	30	3
31	4	32	2	33	4	34	3	35	3	36	1	37	2	38	4	39	3	40	4
41	1	42	4	43	2	44	2	45	3	46	1	47	2	48	4	49	3	50	1
51	1	52	1	53	4	54	1	55	3	56	2	57	3	58	3	59	4	60	1
61	4	62	1	63	1	64	2	65	2	66	3	67	1	68	2	69	3	70	1
71	1	72	3	73	4	74	4	75	3	76	1	77	3	78	1	79	1	80	4
81	3	82	2	83	1	84	3	85	2	86	3	87	2	88	2	89	1	90	3
91	3	92	1	93	1	94	4	95	1	96	4	97	1	98	2	99	4	100	3
101	2	102	4	103	2	104	1	105	1	106	4	107	3	108	4	109	1	110	3
111	1	112	1	113	4	114	2	115	3	116	2	117	4	118	4	119	2	120	1
121	1	122	1	123	3	124	2	125	1	126	1	127	4	128	3	129	3	130	4
131	3	132	4	133	1	134	2	135	1	136	2	137	2	138	2	139	4	140	3
141	4	142	3	143	2	144	2	145	1	146	3	147	1	148	1	149	2	150	2

Scoring table

Section	Question number	Total questions	Total attempted	Total correct	Total wrong	Net score	Time taken
QA	1 to 50	50					
EU + RC	51 to 100	50					
DI + DS + AR	101 to 150	50					
Total		150					

1. 4 Assume there were 100 people. The total amount raised was Rs. 5000. Hence 60 people contributed Rs. 4000. The remaining 40 contributed Rs. 1000. Hence average contribution of these 40 is Rs. 25.
2. 3 $x^3 - x^2 + x - 1 > 0$ (or) $x^2(x - 1) + 1(x - 1) > 0$ (or) $(x^2 + 1)(x - 1) > 0$
Hence the solution is $x > 1$.
3. 2 Check with options :
If B's speed is 1 m/sec then the first time they meet at the starting point after A covers full five rounds and B only one full round and second time when A complete full ten rounds and B exactly two rounds. Hence both meet exactly 18 times during the course.
- Similarly, If B's speed is 3 m/sec then the first time they meet at the starting point after A covers full five rounds and B covers 3 rounds and second time when A complete full ten rounds and B covers two rounds. Hence both meet exactly 17 times during the course.
4. 1 The number of routes from A to C is $A \rightarrow B \rightarrow C$ (or) $A \rightarrow C$.
So there are $3X + Y = 20$ routes. Since X and Y are natural numbers the following are the solutions for $(X, Y) \dots (1, 17), (2, 14), (3, 11), (4, 8), (5, 5), (6, 2)$.
Since the number of roads are minimum the case that we would consider is $(X, Y) = (6, 2)$. So the number of routes from B to C is $6 + (3 \times 2) = 12$.
5. 2
$$\frac{1}{1+x^{-2}+x^{-3}} + \frac{1}{1+x^{-1}+x^2} + \frac{1}{1+x+x^3}$$
$$= \frac{x^3}{x^3+x+1} + \frac{x}{x^3+x+1} + \frac{1}{x^3+x+1}$$
$$= \frac{x^3+x+1}{x^3+x+1} = 1$$
6. 4 Draw in lines BD, BE and BF. There are now 4 equilateral triangles with side length 1.
(For instance, $\triangle FAB$ is equilateral because $AF = AB = 1$ and $\angle A = 60^\circ$)
Thus the total area is $4 \times \frac{\sqrt{3}}{4} \times 1^2 = \sqrt{3}$ sq. unit.
7. 2 Let x be the number of rupees in the cheque, and y be the number of paise.
Then, after buying the newspaper, Sami has $3x + 3y$, of which the paise portion is $x - 50$.
Equating rupees and paise, and depending upon the relative values of x and y, one of the following three sets of simultaneous equations must be true:
 $3x = y$, $3y = x - 50$ or $3x = y - 1$, $3y = x + 50$ or $3x = y - 2$, $3y = x + 150$.
Only the third set of equations has positive, integer solutions, which are $x = 18$, $y = 56$.
So the cheque was for Rs. 18.56.

8. 4 $(3^{2x+1} - 3^x) - (3^{x+3} - 3^2)$
 $\Rightarrow 3^x(3^{x+1} - 1) - 3^2(3^{x+1} - 1) = 0$
 $\Rightarrow (3^{x+1} - 1)(3^x - 3^2) = 0$
 $\Rightarrow 3^{x+1} = 1$ or $3^x = 3^2 \Rightarrow x = -1$ or 2
Hence x has two values.

For questions 9 and 10:

Assume the values of $x^{1/4}$, $y^{1/4}$, $z^{1/4}$ to be $a - 1$, a , $a + 1$ respectively.

So $(a - 1)^2 + a^2 + (a + 1)^2 = 1325$.

So, $3a^2 + 2 = 1325$. So $a^2 = 441$.

Hence $a = 21$. So $y^{1/4} = 21$.

It follows that $z = (22)^4$

So $z = 234256$.

9. 2

10. 3

11. 3 Use the choices.

$$\frac{80}{5} + \frac{120}{8} + \frac{120}{4} + \frac{80}{1} = 141 \text{ s} = 2 \text{ min } 21 \text{ s.}$$

This is the calculation that we get when we check the choice (3).

12. 2 Find L.C.M of 2,3,4,5,6,7,8,9 and subtract 1.

The number is $2520 - 1 = 2519$. Hence the sum of the digits is 17.

13. 2 The sum of the numbers in the base 6 system is (11111) $(1 + 2 + 3 + 4 + 5) (40)$

Note : 40 is the conversion into base 6 of the decimal representation 4 !.

Hence the sum of the numbers is the following product in base 6.

$(11111) (23)(40) = 15555400$

14. 3 A covers $\frac{3}{7}$ th distance less than B. This implies the ratio of their speed is 4 : 7. So if B beats A by 48 m this must be equal to 3 parts in a 7 part race.

So the race has a length of $\left(\frac{7}{3}\right) \times 48 = 112 \text{ m.}$

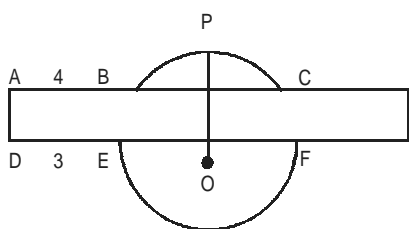
15. 4 Given $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225$
 $\Rightarrow 6a + 68d = 225$ (d be the common difference)
 $\Rightarrow 2a + 23d = 75$

So $a_1 + a_2 + a_3 + a_4 + \dots + a_{24} = \frac{24}{2} [2a + 23d]$
 $= 12 [75] = 900$.

16. 2 Draw in the perpendicular bisector to chord EF as shown. This bisector must go through the center O of the circle. Since PO is perpendicular to chord BC as well, it bisects BC.

Since $PO \parallel AD$, we have $DO = AP = 4 + \frac{5}{2} = \frac{13}{2}$

Thus $EF = 2EO = 2(DO - DE) = 7 \text{ cm}$



17. 4 Two cases arise:
Case I: Even-Odd-Even — Total favourable 49 cases.
Case II: Odd-Even-Odd — Favourable for even number multiple of 8, i.e. 12 cases.
Total favourable = 49 + 12 = 61
Total cases = 98
Probability = $\frac{61}{98}$
18. 3 A gets the sum of the roots correct i.e 5 and B gets the product of the roots correct i.e -6.
Hence, from the choices the answer is (3)
19. 3 In the first 9000 numbers there are 94 perfect squares and there are 1000 numbers divisible by 9. Among these perfect squares all squares of the multiples of 3 are also divisible by 9. There are 31 of them. Hence the number of number which are either perfect squares or are divisible by 9 is $1000 + 94 - 31 = 1063$.
20. 3 Assume V be the sales volume.
 $V(1.2S - 0.9C) = 1.5[S - C] \times V$
or $S = 2C$
 \therefore Profit = $1.5 \times C \times V$
In the second case, profit = $\frac{2}{3}V(1.2(2C) - 1.2C)$
 $= 0.8 \times C \times V$
 \therefore Ratio = $\frac{1.5}{0.8} = 15:8$.
21. 3 A side of a right triangle is geometric mean of the hypotenuse and the projection of the same side of right angled triangle on the hypotenuse.
Assume $AH = x$, it follows that
 $225 = x(x + 16)$
 $x^2 + 16x - 225 = 0$
 $(x + 25)(x - 9) = 0$
 $\Rightarrow x = 9$
Thus $AB = 25$ units. $CH = \sqrt{15^2 - 9^2} = 12$ and the area of $\triangle ABC$ is $\frac{1}{2} \times 25 \times 12 = 150$ sq. units.
22. 3 At the end of 1st year (odd year) price = $1.25 \times$ old price
At the end of 2nd year (even year) price = $0.8 \times 1.25 \times$ old price
So at the end of every even year new price = original price.
i.e. there is no change in rice for 10 years.

23. 1 Let the original pile have 'n' coconuts. Let 'a' be the number of coconuts in each of the five piles made by the first man, 'b' the number of coconuts in each of the five piles made by the second man, and so on.
Writing an equation to represent the actions of each man, we have
 $n = 5a + 1$; $n + 4 = 5(a + 1)$; $4a = 5b + 1$;
 $4(a + 1) = 5(b + 1)$; $4b = 5c + 1$;
 $4(b + 1) = 5(c + 1)$; $4c = 5d + 1$;
 $4(c + 1) = 5(d + 1)$; $4d = 5e + 1$; $4(d + 1) = 5(e + 1)$

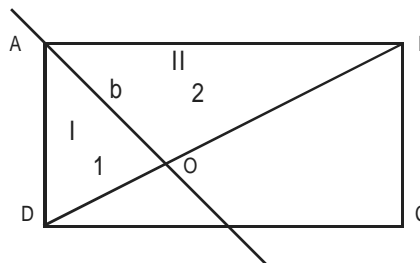
Hence $n + 4 = 5 \times \left(\frac{5}{4}\right)^4 (e + 1)$, and so

$$n + 4 = \left(\frac{5^5}{4^4}\right)(e + 1).$$

$n + 4$ has to be minimum when $\frac{e + 1}{4^4} = 1$

So $n + 4 = 5^5 \Rightarrow n = 3121$

24. 2



$\triangle AOD$ and $\triangle ADB$ are similar because
 $\angle DAO = \angle AOD = 90^\circ$ and $\angle ADB$ is common in both triangles. So $\triangle AOD$ and $\triangle AOB$ are also similar.
Thus $\frac{1}{b} = \frac{b}{2}$ and $b = \sqrt{2}$ units. The area of the rectangle is twice the sum of areas of I and II.
So the answer is $3b = 3\sqrt{2} = 4.2$ sq. units.

25. 2 The numbers which have odd number of factors are the perfect squares.
So it is the sum of the first 10 perfect squares, i.e.
 $1 + 4 + 9 + \dots + 100 = 385$.
26. 2 There are exactly seven digits that can be viewed upside down. (0, 1, 2, 5, 6, 8, 9). Think of these digits as the digits of base 7 number system. On mapping the digits
 $0 \rightarrow 0$
 $1 \rightarrow 1$
 $2 \rightarrow 2$
 $5 \rightarrow 3$
 $6 \rightarrow 4$
 $8 \rightarrow 5$
 $9 \rightarrow 6$

To find the millionth number (meaningful upside down) we will find the decimal to base 7 conversing of 1,000,000 and then do the reverse mapping.

Q		R
7	1,000,000	1
7	142857	1
7	20408	3
7	2915	3
7	416	3
7	59	3
7	8	1
7	1	1
	0	1

Q = Quotient

R = Remainder

Thus the number in base 7 is 11333311. After mapping the digits, it becomes 11,555,511.

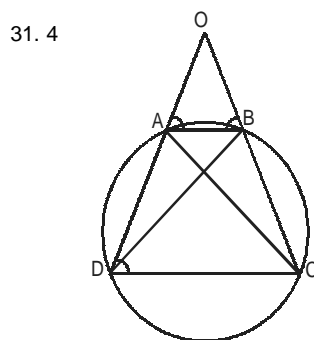
27. 1 $7x + 3 = 11y + 8$. Hence the smallest such number would be when $x = 7$ and $y = 4$. So the smallest number is $77k + 52$ where k is a positive integer. The largest number is $52 + 77(12) = 976$. So there are 12 numbers in all.

28. 3 Let the milk man buy 100 lts of pure milk for Rs 100. He dilutes it. The volume now becomes 125 lts. Due to the evaporation of water there is 115 lts of milk solution left. If he sells at Re. 1 per litre, he gets a revenue of Rs 115. Hence profit % is 15 %.

29. 1 The average marks of all the students is $A = a + 8d$. This is the marks of student ranked 9th, a being the highest mark and d the common difference. The average of the rusticated people is

$$B = \frac{5a - 40d}{5} = a - 8d \text{ which is equal to the average of the entire class.}$$

30. 3 The ratio of the heights of the pyramids are 4 : 3. Hence the ratio of their volumes is 64 : 27. This would also be the ratio of the amount of work on the two pyramids. So if the second pyramid takes x days to build for 54 people then $36 \times 32 : 54 \times x = 64 : 27$. So $x = 9$ days.



$$\angle ADC + \angle ABC = 180^\circ$$

$$= \angle ABC + \angle ABO \Rightarrow \angle ADC = \angle ABO$$

$$\text{Also } \angle ADC = \angle OAB$$

$$\therefore \angle ABO = \angle BAO$$

$$\therefore OA = OB \text{ and } \triangle OAB \sim \triangle ODC$$

$$\therefore \frac{OA}{AD} = \frac{OB}{BC} \Rightarrow AD = BC$$

$$\therefore OD = OC \Rightarrow \angle D = \angle C$$

Consider $\triangle ADC$ and $\triangle BCD$

$$AD = BC \text{ and } \angle D = \angle C$$

$$\text{So, } DC = DB$$

$$\therefore \triangle ADC \cong \triangle BCD$$

$$\therefore AC = BD$$

32. 2 Let us assume the volume of the tanker is L.C.M (20, 30, 60, 90, 120) = 360 units.

$$\therefore \text{Pipe A fills up at rate} = \frac{360}{20} = 18 \text{ unit/hr for 8 hr.}$$

$$\therefore \text{Pipe B fills up at rate} = \frac{360}{30} = 12 \text{ unit/hr for 7 hr.}$$

$$\therefore \text{Pipe C fills up at rate} = \frac{360}{60} = 6 \text{ unit/hr for 6 hr.}$$

$$\therefore \text{Pipe D fills up at rate} = \frac{360}{90} = 4 \text{ unit/hr for 5 hr.}$$

$$\therefore \text{Pipe E fills up at rate} = \frac{360}{120} = 3 \text{ unit/hr for 4 hr.}$$

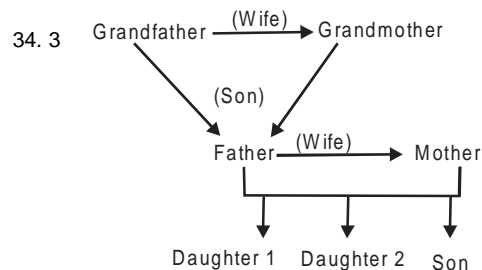
$$\therefore \text{Total units filled up by them} = 18 \times 8 + 12 \times 7 + 6 \times 6 + 4 \times 5 + 3 \times 4 = 296 \text{ units.}$$

where total acid

$$= \frac{1}{10} \times 7 \times 12 + \frac{1}{5} \times 6 \times 6 + \frac{3}{10} \times 5 \times 4 + \frac{4}{10} \times 4 \times 3 = 26.4 \text{ units.}$$

$$\therefore \frac{26.4}{296} \times 100 = 8.92\%$$

33. 4 $39^{78} = (40 - 1)^{78}$. There are 79 terms in this expansion. The first 77 of them have more than or equal to 2 zeroes. Hence the tenth digit is decided only by the last two terms which are (-78×40) and 1. Hence the sum of the last two numbers is -3119 . Since this is added to the previous 77 terms the last two digits of this addition would be 81. So the tenth's digit is 8.



$$35.3 \quad 5\pi x^2 y = \frac{1}{2} \pi y^2 x. \text{ So } \frac{x}{y} = \frac{1}{10}$$

36.1 The roots of $x^2 + 3x - 4 = 0$ are $x = -4$, $x = 1$ and that of $x^3 - 4x = 0$ are $x = 0$ and $x = 4$.
Hence, there are no common roots.

$$\begin{aligned} 37.2 \quad f^7(x) &= f(f^6(x)) \\ &= f\{f\{f^4(x)\}\} \\ &= f\{f\{f\{f^2(x)\}\}\} \\ &= f\{f\{f\{f\{f^0(x)\}\}\}\} \\ &= f\{f\{f\{f(1)\}\}\} = f\{f\{f(2)\}\} \\ &= f\{f(5)\} = f(26) = 677 \end{aligned}$$

38.4 There are 101 numbers in all. The numbers are of the form $(7x + 1)$, where the value of x ranges from 0 to 100. If $7x + 1 = M^2$.
Now for this to happen M must be of the form $7y + 1$ or $7y + 6$ where y is any non negative integer in this case. So x will take the form of $(7y^2 + 2y)$ or $(7y^2 + 12y + 5)$.
So for $y = 0$, the values of x are 0, 5 which implies the terms are 1, 36.
Similarly for $y = 1$, $x = 9, 24$. For $y = 2$ we have $x = 32, 57$; for $y = 3$ $x = 69$.
For values of y greater than 3, the value of x exceeds 100. Hence the total number of perfect squares is 7.

$$\text{Probability} = \frac{7}{101}$$

39.3 $L = \text{multiple of (LCM of 3 and 7)}$
 $21n$, where ' n ' is a positive integer.
 $L - 1 = 4mp$, where ' p ' is a prime number and ' m ' is the side of the square.
 $n = 1$, $L - 1 = 20 = 4 \times 1 \times 5$ ($p = 5, m = 1$)

$$40.4 \quad (10a + b)^2 - (10b + a)^2 = (a^2 - b^2)(99) = 792.$$

So, $(a + b)(a - b) = 8$.

41.1 C is identical with B.
Let's take an example
6 is a perfect number
Factors are 6, 3, 2, 1
So set B = {6, 3, 2, 1}

$$\therefore \text{Set C} = \left\{ \frac{6}{6}, \frac{6}{3}, \frac{6}{2}, \frac{6}{1} \right\} = \{6, 3, 2, 1\}$$

$$D \text{ is } 1 + \frac{1}{2} + \frac{1}{2} + \frac{1}{3} + \frac{1}{6} = 2$$

For all the perfect numbers the summation of reciprocals of factors is constant i.e. 2.

42.4 A, B, C, D, E are five consecutive integers. So C is the average of these 5 numbers. For C to be less than A, A must be the greatest term in the A.P.
So average of these five numbers

$$= \frac{5A - 10}{5} = A - 2$$

$$\text{Now } A - 2 < \frac{A}{4}$$

$$A < \frac{8}{3}$$

43.2 Let a = speed of army
 h = speed of horse
 d = distance travelled by horse

$$\text{Time for army to march 40 miles} = \frac{40}{a}$$

$$\text{Time for the horse to get to the front} = \frac{40}{h - a}$$

$$\text{Time for the horse to return to the rear} = \frac{40}{h + a}$$

$$\frac{40}{a} = \frac{40}{h - a} + \frac{40}{h + a}$$

$$\text{i.e., quadratic } h^2 - 2ha - a^2 = 0$$

$$\text{i.e., } h = a(1 + \sqrt{2})$$

$$\text{Hence } d = h \left(\frac{40}{a} \right)$$

$$= a(1 + \sqrt{2}) \frac{40}{a} = 40(1 + \sqrt{2})$$

$$= 96.5 \text{ miles}$$

44.2 Since $(x^2 - 1)$ is a factor of $f(x)$; $(x - 1)$ and $(x + 1)$ are the factors of $f(x)$, $+1$ and -1 are roots of $f(x)$,
 $\therefore f(1) = f(-1) = 0$. In $f(x)$ if we substitute 1 and -1 for x , then we get, respectively, $(1 + a + b + c + 1 + d) = 0$ and $(-1 + a + b + c - 1 + d) = 0$ i.e., $a + b + c + d = 2$ and $a - b + c + d = 2$.

Since graph passes through $(0, -3)$

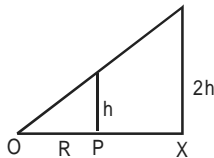
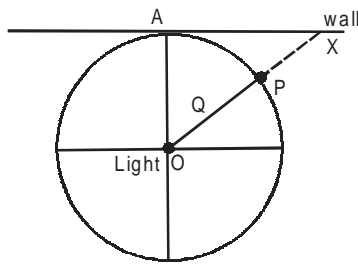
$$f(0) = -3 \text{ or } d = -3$$

$$\therefore a + b + c = 1$$

$$\text{and } a - b + c = 5$$

$$\therefore a + c = 3$$

45. 3



From similar triangle
OX = 2R

Distance between SP and point X = $\sqrt{3} R$

So angular displacement or angle AOP = 60° , if the man moves in the clockwise direction. If he moved in the anti clockwise direction then the angular displacement = 300° .

So in 30 min he covers either 60° or 300° depending on whether he moved clockwise or anti-clockwise. Hence the total time to complete 10 rounds is 30 hrs or 6 hrs.

46. 1 Let the time taken by the person of travel AC be t min and AD be $(t - 5)$ min.

As speed is constant $\frac{t_{AD}}{t_{AC}} = \frac{AD}{AC}$

(As Distance \propto time if speed constant)

$$\frac{t - 5}{t} = \frac{\frac{AB}{\sin 60^\circ}}{\frac{AB}{\sin 30^\circ}}$$

$$\frac{t - 5}{5} = \frac{\sin 30^\circ}{\sin 60^\circ}$$

$$\text{Solving } t = \left(\frac{5\sqrt{3}}{\sqrt{3} - 1} \right)$$

$$\text{Again } \frac{t_{AB}}{t_{AC}} = \frac{AB}{AC} = \sin 30^\circ$$

$$\therefore t_{AB} = \frac{5\sqrt{3}}{2(\sqrt{3} - 1)} \text{ min}$$

47. 2 We know the pattern $111^2 = 12321$. Similarly for 111^3 we have 1367631. You could use the choices to find the answer for this question.

48. 4 The base of 2772 must be more than 10 since 3588 in decimal is converted to a smaller number. Also when

we divide 3588 by this base it must leave a remainder 2 since the last digit of 2772 is 2. By trial and error we find that the base is 11. Hence 7176 when converted from decimal to base 11 can be written as 5434.

49. 3 $\angle FAD = 30^\circ$

$$\therefore FD = \frac{a}{\sqrt{3}}$$

$$\text{Area of } \triangle AFD = \frac{1}{2} \cdot \frac{a}{\sqrt{3}} \times a = \frac{a^2}{2\sqrt{3}}$$

Area of AECF = area of square - 2 \times area of $\triangle AFD$

$$= a^2 - \frac{2 \times a^2}{2\sqrt{3}}$$

$$= \left(\frac{\sqrt{3} - 1}{\sqrt{3}} \right) a^2 \text{ sq. units.}$$

50. 1 The taxi number is the smallest number divisible by 11 and leaving remainder one for other divisors. By inspection, we realize that there is no number smaller than 121 which satisfies the condition.

- 51.1 Out of the options provided, except sentence E the rest seem to be building up on a previous sentence. Sentence B further talks about the trying times when he stepped in. Sentence D talks about his actions and sentence A builds on it further. Sentence C then puts across an opinion on his work. This makes choice (1) correct.

- 52.1 Sentence B is the best option for the first sentence as it initiates a theory. Sentence E then builds on it and tells us what are these types of goods. Sentence C then starts by citing example of one type among these two and sentence A generalizes this to apply to material goods. Sentence D then talks about the second type of goods. This makes choice (1) correct.

53. 4 Though a sentence beginning with 'yet' does not seem to be the right option as a first sentence, out of the other options it seems better and presents a line of thought. Sentence C is better than A in terms of demonstrating these reactions, especially since the sentence mentions "less staunch" in comparison to Britain and France. Sentence D qualifies Germany's stance and sentence E describes the reasoning behind this. This makes choice (4) correct.

54. 1 Out of the options provided, the best option for the opening sentence is clearly sentence D. Supporting sentences about why he is competent and doubts about certain personality traits follow. Sentence B does that and sentence A mentions what are the problem areas. Sentence E mentions the reasons for the unsure outcome, which are not attributed to his personality and sentence C describes an instance where this is demonstrated. This makes choice (1) correct.

55. 3 Sentence C is the best opening sentence as it introduces the protagonist for this para Ms Kelley. Sentence E then states what is the criticism against her. Sentence A quotes a slice from this and sentence D describes what the usual scenario is in Ivy League universities and sentence B then contrasts that with what Bush did. This makes choice (3) correct.
56. 2 (4) is out because if the cities are 'forever breeding fresh ideas', they cannot 'deplete themselves'. 'ideas' cannot be 'isolated' if they are meant for 'export', so (3) is out. 'ideas' cannot be 'immunized', it does not make sense, so (1) is out. 'ideas' can be 'nurtured' for 'export' and if the cities are 'forever breeding fresh ideas', they can 'renew' themselves repeatedly.
57. 3 Nothing can be compensated with dogmatic statements, so (2) is out. There is nothing paradoxical about abstaining from controversy, it is desirable, so (1) is a wrong choice. (4) makes a very confusing fit, so we will keep our distance. Now, 'incumbent' fits with 'responsible' and 'refrain from making dogmatic statements' of course, makes sense.
58. 3 'radical' and 'innovative' cannot fit the first blank because of the 'new approach' mentioned earlier, so (1) and (2) are out. It is unfair for the managers and conservationists to be chagrined by a new approach if it is not even tested out yet, so (4) is not an appropriate choice. (3) makes sense; if the tried and tested methods are proving unsatisfactory, it makes sense to press for a new approach.
59. 4 A 'trite' plot structure cannot be 'profound', so (2) is out. 'assessment' does not fit the first blank well, an assessment is usually done by a critic, not a writer, so (1) is an inappropriate choice. (3) fills the second blank with a word 'aesthetic' that sounds rather unjustified. 'profoundly' and 'intricate' makes sense when used together, also 'character delineation' is a common term in literary circles, so (4) is the answer.
60. 1 'exemplary' and 'profound' do not go with the word 'non-existent', so (3) and (4) are not appropriate choices. For that matter, even a 'circumstantial' concern cannot be nonexistent. The word 'negligible' goes best with 'nonexistent', so (1) is the answer.
61. 4 'inchoate' means something recently, or just, begun; the beginning, so (4) is the answer.
62. 1 'impecunious' means lacking money; penniless, so (1) is the answer.
63. 1 'nihilism' means an extreme form of skepticism that denies all existence, so (1) is the answer.
64. 2 'expurgate' means to purge, to cleanse, so (2) is the answer.
65. 2. (2) is the best answer.
66. 3 (3) is the best answer.
67. 1 (1) is the best answer.
68. 2 (2) is the best answer.
69. 3 (3) is the best answer.
70. 1 (1) is the best answer.
71. 1 The author delves into this issue in para five. "As time wore on, the losses piled up, and McNealy's high-minded resolve began to look to others like simple-minded obstinacy. One by one, his team lost faith and departed." Also, "But the standoff became counterproductive. "The fight just didn't seem worth it anymore," says Jabbar. "It was an untenable situation." This makes choice (1) correct.
72. 3 This comment is made in para six. The author mentions prior to the quote – "Now some investors believe it's time for McNealy to follow his former execs out the door, or at least give up the CEO post and retain only a chairman's role." Option 1 describes the general import of the quote and the sentence (2) mentions the relevance of this to the context of the passage. This makes choice (3) correct.
73. 4 The author describes this instance in the fourth para. "Although he had thought about quitting during the boom, McNealy recommitted himself to Sun in late 2001, convinced that his credibility, experience, and sheer nerve were what the company needed during its darkest days. "I'm here, and I'm not going away. This is a really tough situation, and we're going to get through this," he told staffers at the time, according to former Executive Vice-President Larry Hamby". This makes choice (4) correct.
74. 4 The author has mentioned this quip of Scott McNealy in the first para. He follows this with two of his decisions – one where he was proved right and the second time when he was proved wrong as mentioned in para two. But, to infer that Scott McNealy would describe any of these as being contrary to his belief would be assuming too much, especially in light of his personality as portrayed across the passage. This makes choice d the most apt.
75. 3 The passage has described many instances of McNealy's approach and this has been highlighted by quotes from his colleagues and other people in the business. Iconoclastic describes someone who attacks the establishment and is not apt, innovative is a very wide term and it is something which is ubiquitous in the tech industry. Experimental is incorrect because it does not describe him as someone who dabbles in different approaches. Contrarian means someone whose approach to the popular belief, which is what has been described from the first para onwards. The first line of the fourth para also uses this adjective and this makes choice (3) correct.

76. 1 The ninth para carries these two quotes. The author mentions "Instead, McNealy is focused on turning Sun around with what he calls "disruptive innovation," the same approach that has saved it so many times before. While most rivals make plain-vanilla computers and slug it out on price, Sun's plan is to change the rules of the game". This makes choice (1) correct. Choice (2) states it in reverse and choices (3) and (4) mention features that are not described with reference to these quotes.
77. 3 The author mentions (1), (2) and (4) as reasons for companies changing the way they organize their workplaces, (3) can nowhere be inferred as a reason for organizing workplaces.
78. 1 The tenth para is where the author touches upon the role of the "Cave and Commons" office design. He mentions, "The idea is to balance individual work and teamwork, privacy and community." Even the name highlights that it allows alternation between cave (individual work) and commons (teamwork). This makes choice (1) correct.
- 79.1 The author is describing various new concepts for office design that have become popular and the motive behind their adoption. Choice (2) is too narrow and choices (2) and (3) are too wide. Choice (1) agrees the best with the theme of the passage.
80. 4 The author begins the passage talking about Alcoa. The first line of the third para mentions "This experiment has taken place only on Alcoa's top floor," making choice (1) correct. Choice (2) is verified by the first para "Pittsburgh's Alcoa Building once exemplified the power and pizzazz of the classic corporate skyscraper". Choice (3) is reflected in the quote – "We're going to have an opportunity to do things with the way people relate to each other". Choice (4) is not broached in the passage and is the correct choice.
81. 3 The author delves into their role in the eighth para. "Increasingly, architects, interior designers, facilities managers, and furniture companies are assuming a new role: strategic consultants familiar not only with blueprints but also with human behavior and organization. Corporations are using them to boost productivity, not stroke executive egos." This makes choice 3 correct.
82. 2 The author quotes the paradigm in the fifth para. He then follows this by talking about technology – "If the office of the future is a bit tardy in making its appearance, it's because technology is just catching up with economic trends." Choices (3) and (4) are not mentioned in the passage. Choice (2) is the correct option.
83. 1 The author mentions this phrase in the first sentence of the eighth para. This is a specific detail question and the answer to this is choice (1).
84. 3 The author talks about the issue of traditional knowledge and related topics in para twelve. He mentions "The most glaring conflict between rich and poor over intellectual property comes from the misappropriation of "traditional knowledge"—such as ancient herbal remedies that find their way into high-priced western pharmaceuticals without the consent of, or compensation to, the people who have used them for generations." This makes choices (1) and (2) correct. The author further mentions "The commission recommends that countries create databases to catalogue such traditional knowledge and urges that consulting such databases should be made a mandatory part of patent examinations the world over." This makes choice (4) correct and choice (3) false which mentions a database of companies.
85. 2 The author talks about these aspects in the four and the fifth para. Para seven – "...TRIPS does not create a universal patent system". Para four "countries joining the World Trade Organisation (WTO) also sign up to TRIPS (trade-related aspects of intellectual-property rights) "; "The world's poorest countries were given until 2006 to comply in full with the requirements of the treaty." Also, fifth para mentions "Rather, it lays down a list of ground rules describing the protection that a country's system must provide". This makes choice b false which mentions the international system instead. This makes choice (2) correct.
86. 3 The author talks about these issues in para 13, 14 and 15. Para 14 – "Even when armed with these weapons, poor countries will have a hard time deploying them. Drafting IPR legislation and setting up a patent office that has modern information-technology systems and trained examiners does not come cheap or easy." Para 15 –" Moreover, inventors in poor countries find it tough to use patent systems in the rich world. Merely securing a patent from America's patent office costs at least \$4,000. Defending it in court can cost millions." Also, para 13 – "That is because its communal ownership, uncertain date of creation and unwritten form does not fit the requirements of western systems of IPR." There is no ambiguity regarding the arbitrator of IPR issues and this is the correct choice
87. 2 The author mentions this in the eleventh para. "Some publications, such as the *British Medical Journal*, allow free online access for people in poor countries. The Commission recommends that developing countries allow users to sneak round technical barriers such as encryption, to gain access for fair use". This clearly shows the supportive attitude of the Commission to the *British Medical Journal*. This makes choice (2) correct.
88. 2 While putting forth the rationale for the IPR regime, the author mentions the basic premise in the second para. "The original purpose of patents was to encourage innovation, and thus growth, by creating an incentive for inventors to disclose the details of their inventions in exchange for a limited monopoly on exploitation." This makes choice (2) correct.

89. 1 The author mentions his search for Audrey in para nine. He describes meeting an attractive girl who enjoys Roman Holiday etc. and seems fit for the part, till she introduces him to her boyfriend and fails to keep the date leading the author to surmise that "Francesca, I pout, has definitely failed the audition. Audrey Hepburn would never have resorted to such an elaborate ruse simply to make a boyfriend jealous". This makes choice (1) correct.
90. 3 The author uses the cellphone instance in para seven. He mentions "Which means that, torn as they are between gesticulating and steering". The reason they are gesticulating is because – "...Italians really do talk with their hands." This makes choice (3) correct.
91. 3 The author mentions this in the last line of para six – "... dotted with fishermen's poles and families of ducks, seem oddly bucolic". He has started describing his reactions to wandering in Rome and he mentions in para five – "But before I can seek her out, I need to get my bearings. I'd been prepared for a Rome smudged with exhaust, choked with cars, and overrun by tour buses. But what I find is a highly walkable city....". This makes choice (1) and (2) correct. Choice d is not mentioned and therefore choice (3) is correct.
92. 1 The author starts off with his fascination with the film and the various places that are shown in the same. He mentions in para three, first line – "As a carefree jaunt through an enchanting place, *Roman Holiday* sets out a classic itinerary". This makes choice (1) correct as the rest of the choices do not find mention in the passage.
- 93.1 The author mentions in para two – "Director William Wyler's 1953 tale of a princess from an unnamed nation...", "...male lead Gregory Peck—playing a cynical newsman for the fictional American News Service". The fact that the movie was shot in Rome is obvious from the name and the frequent references in the passage. The author mentions ".....male lead Gregory Peck—playing a cynical newsman for the fictional American News Service—actually fell in love with a French reporter, Veronique Passani, who would become his second wife. " which is what happened in reality and was not a part of the film. This makes choice (1) correct.
- 94.4 While the author seems to be adequately impressed by the movie as well as the city, he is essentially in Rome to select a leading lady, thus, (4) is the most appropriate choice.
- 95.1 The author is showcasing this point in the fourth para, when Till puts his point forth about the reality of architecture as a profession where myths are created in order to motivate them towards the chimera of the future. This is best described in choice a where junior artistes who do not get any recognition and big fees struggle through motivated by the dream of doing something big in the future. The rest of the options do not have any connection with a view of the future and use that to endure through present situations.
96. 4 This is a specific detail question but the answer is tricky. The author makes this point in the fifth and the sixth para. He mentions "Why are architects so obsessed with models, which always take pride of place in their offices? Why are buildings always photographed empty?" in the sixth para ruling choice a and b. In the fifth para, the author mentions "Buildings have to take account of dirt, time and people, and architects are frightened of those things," says Till. This rules out choice (3). The author has mentioned all these instances. This makes choice (4) correct.
97. 1 The author delves into these nominees in the seventh para. "How can a converted house be compared...". This makes choice (3) incorrect as it is a converted house. "The prize is useful in focusing attention on a profession that gets oddly little scrutiny..." makes choice (4) incorrect. "And does what is effectively a beauty contest perpetuate the idea that all that matters are the glorious exceptions? Yes to the last question if the Eden project, the hot favourite, wins..." makes choice (2) incorrect as it has not been clearly stated what the theme is and choice (1) is correct as it is mentioned in the same sentence. This makes choice (1) correct.
98. 2 The eighth para witnesses this point being discussed. "The way a building looks is irrelevant. What matters is the way it feels". This, he says, relies on "the way one encounters space" This makes choices (1) and (3) correct. "With a great building like the Festival Hall, you can strip away all the 1950s detailing and get a sense of spatial empowerment." Makes choice (4) correct. "He admits that this is difficult to evaluate, but says you always know when it happens. " this makes choice (2) false and thus the correct answer is (2).
99. 4 A specific detail question. The answer is in the tenth para. "Till, however, not only rejects "beauty" as a good in itself,...". This makes choice (4) correct.
100. 3 Option (3) best captures the theory. (4) is false and (1) and (2) are partial ideas.
101. 2 Total sale of Low-sulphur diesel in US to industrial consumers in 2003 = 1201.1
- $$\text{Hence average sale per month} = \frac{1201.1}{12} \approx 100$$
102. 4 Since sale to retail consumers is highest on all months in 2003.
103. 2 In March and April the ratio is greater than 1.05.
104. 1 In February, percentage change = $\frac{17.90}{96.7} \times 100 \approx 18.7\%$
- $$\text{In April, percentage change} = \frac{17.2}{113.2} \times 100 \approx 17\%$$
- Hence, maximum percentage change will be in February.

105. 1 Total number of reported cases = 51,000
38% cases in Asia = $(0.38 \times 51,000) \approx 20,000$

106. 4 Asian percentage is not mentioned.

107. 3 Total number of reported cases in 1977 = 40,000
Total number of reported cases in 1981 = 65,000

Hence growth rate(r) is given by $65 = 40 \left(1 + \frac{r}{100}\right)^4$

$$\frac{13}{8} = \left(1 + \frac{r}{100}\right)^4$$

$$\text{or, } (1.63)^{1/4} = 1 + 0.01r$$

$$r = 1.13$$

108. 4 Population of different regions not known.

109. 1 3.9% of 38.3 cr = 1.49 cr

110. 3 Highest is Africa = $\frac{4.1}{2.4}$
Second highest is Middle-East.

111. 1 By counting, the following months satisfy the given condition — Aug-Dec'47, Jan'48, Jul-Sep'48, Nov'48, Aug 49.

112. 1 For all months it is more than 95%.

113. 4 The statutory minimum amount is not given.

114. 2 Loan & advances = Rs. 40463 lakh
Balance with RBI = Rs. 6564 lakh

$$\text{Hence ratio} = \frac{404}{65} \approx 6.16$$

115. 3 April Production = 30% of 127.2 Million Kg = 38.16 Mn Kg
Average price realization in April 2004 is Rs. 54.80
Therefore, Total Industry Turnover = 54.80×38.16
= Rs. 2091 million
= Rs. 209.1 Crore

116. 2 Average price realisation in 2002 = Rs. 54.16
Average price realisation in 2003 = Rs. 54.56

$$\text{Therefore percentage change} = \frac{54.56 - 54.16}{54.16} = 0.74\%$$

117. 4 Question is asked about the whole year of 2004, whereas only first four month's data is given.

118. 4 During January to April, 2003, production of tea = 57.4 Mn Kg
If production of tea would have been 15% more, it would have been $1.15 \times 57.4 = 66.01$ Mn Kg
Export = 38.2 Mn Kg
Export Percentage would have been = $(38.2/66.01)\% = 21\%$

Alternate Approach:

From given data present Export is roughly one-fourth, i.e. 25%. There is only one option, which is less than 25%.

119. 2 By observation only, the highest difference is Rs. 17.40 between March 2004 and June 2004

120.1

	Sixes	Fours	Singles
Percentage	36	24	40
Option 1	6	4	$40/6 = \text{Not possible}$
Option 2	12	8	$40/3 = \text{Not possible}$
Option 3	18	12	20

So minimum score = 50

121.1

	Minimum runs
Sachin	$50 (6 \times 3 + 4 \times 3 + 20)$
Saurav	$10 (6 \times 1 + 4 \times 1)$
Balaji	$8 (6 \times 1 + 1 \times 2)$
Sehwag	$16 (6 \times 1 + 4 \times 2 + 1 \times 2)$

Total 84

So highest runs is by Sachin.

- 122.1 If India's score is 94, there could one additional six $(94 - 84) = 10$.

Hence, highest number of sixes is Sachin which is 3.

- 123.3 For a 0.8 strike rate, minimum runs must be 20 (after 10, Saurav's run can be 20 only) Hence, minimum number of balls = 25.

- 124.2 India's minimum score is 84, hence India must win.

125. 1 From statement I we can only find the difference of the quantities.
But statement II gives an answers as 1:1.

126. 1 From II, the sequence must have been Anshuman, Chetna, Brijesh and Debashu. Statement I alone is not sufficient.

127. 4 We cannot find the polygon which is the largest area. Because we don't have any information about P.

128. 3 From statement I we know that the number of people drinking milk and tea is zero, so number of people drinking all 3 is also zero. From I and II we know that the number of people drinking exactly 1 drink or 2 drinks. So, we can find out the number of people not drinking any of the drinks.

129. 3 Combining two statements we can find his income for both years and hence tax liability for the second year.

130. 4 From both statement we cannot find the probability A winning the race because we don't know how many contestants.

131. 3 Neither of the statements independently gives the answers. Combining the two we have the information that $Z > Y > X$ and the difference between Z and X is 8. So $X + Z = 2X + 8$. For this to be divisible by 8, X must be a multiple of 4 (or) an even number, which violates the condition given.

132. 4 We cannot get the answer from statement II. Statement I is implied if statement II is true. Hence we cannot find the answer.

133. 1 We just need the second statement to answer the question.

$$X_1 \quad A \quad X_2 \quad B \quad X_3 \quad C \quad X_4$$

The average of X_2 and X_3 would be right in the middle of X_2 and X_3 . Since $A < B$, when we find the average of all the numbers it is same as finding the average of $2(X_2) + 2(X_3) + C - A$. This is greater than the average of X_2 and X_3 . Hence greater than X_2 .

134. 2 Each statement independently will give the answer. Assume in statement (I) the values of a, b, c, d as x, x + 3, x + 6, x + 9. Find ad - bc ...it is equal to -18. Similarly for statement (II) we get the difference as -8.

For questions 135 to 137:

It is given that the shorter of Laxman and Ram is the least intelligent. This implies Laxman or Ram is the least intelligent and neither of Bharat and Shatrughan is the least intelligent. From the deduction two cases arise.

Case1 : Laxman is the least intelligent.

Case2 : Ram is the least intelligent.

Let us suppose that Ram is the least intelligent.

Rank	(Height) Name	(Intelligence) Name
1		
2		
3		
4		Ram

It is given that less intelligent of Ram and Bharat is the tallest of all.

It is known that Ram is the least intelligent. Therefore, Ram must be the tallest of all. If Ram is the taller than Laxman, Laxman must be the least intelligent and this leads to inconsistency. Therefore, Ram cannot be the least intelligent. This implies that Laxman is the least intelligent. It is given that less intelligent of Laxman and Bharat is taller than exactly two others. This implies that Laxman is taller than exactly two others.

It is given that shorter of Laxman and Shatrughan is the most intelligent.

We know that Laxman is the least intelligent. Therefore, Shatrughan must be the most intelligent and shorter than Laxman.

Let us show the above inferences in the following table.

Rank	Name (Height)	Name(intelligence)
1		
2	Laxman	
3		
4		Laxman

It is given that the more intelligent of Bharat and Shatrughan is the shortest. Shatrughan is the most intelligent. Hence, he must be the shortest.

The shorter of Laxman and Ram is the least intelligent. This implies that Laxman is shorter than Ram. Ram is the tallest. If Ram is the tallest, then he must be less intelligent than Bharat. (it is given that the less intelligent of Bharat and Ram is the tallest of all). Therefore, Ram is 3rd and Bharat is second in terms of intelligence.

Bharat is less intelligent than Shatrughan. It is given that the more intelligent of Bharat and Shatrughan is the shortest. This implies that Shatrughan is the shortest and Bharat is the 3rd ranker in terms of height. The following shows their ranks in terms of height and intelligence.

Rank	Name (Height)	Name (Intelligence)
1	Ram	Shatrughan
2	Laxman	Bharat
3	Bharat	Ram
4	Shatrughan	Laxman

135. 1

136. 2

137. 2

$$138.2 \quad 4490 = 2688(1 + r)^2 \\ \Rightarrow r = 29.2\%$$

139.4 Since no other than 3 website data is given it cannot be determined

140.3 Competition Y across the given three months - 2500, 2422, 2506 (Range = 84)

For questions 141 to 145:

Max 4 digit nos. 9999 + 9999 = 19998 gives as S = 1.

So in our case also S = 1.

S + S = E so E = 2.

S + K gives a carry 1 so K = 8 or 9.

$R + S = K$ so $R = 7$ or 8 depending on $K = 8$ or 9 .
 $S + K = M$ so $M = 0$ or 1 depending on $K = 8$ or 9 .
 But M cannot be 1 as S is already 1 . So $M = 0$.
 $R + S = K$ does not give any carry so $I + I = O$.
 From the options of question 142, we get the possible options of I as $2, 3, 7, 8$. But I cannot be 2 as E is already 2 .
 If $I = 7$, then $I + I$ gives a carry and for $M = 0$, K should be 8 and R as 7 which is not possible as I is 7 .
 $I = 8$ is also not possible because R and K should be 2 consecutive nos. $7, 8$ or $8, 9$.
 Hence I has to be 3 . So $K = 9, R = 8$.
 So the required addition is

$$\begin{array}{r}
 1381 \\
 + 9311 \\
 \hline
 10692
 \end{array}$$

141. 4

142. 3

143. 2

144. 2

145. 1

146.3 The routes and distances are

Route	Kms
A – B – E – F	12
A – C – E – F	13
A – C – D – F	11
A – D – F	13

Optimal path from A to F is A-C-D-F

147.1 Optimal path from A to D is A-C-D = 5 km

148.1 Cost of travelling in A-C-D-F is $(11 \times 4.5) = \text{Rs. } 49.50$

149.2 Optimum path will be A-B-E-F = 12 km

150. 2 Travelling cost = $\text{Rs. } (4.5 \times 12) = \text{Rs. } 54$