CAT 1998 Answer Key

No.	Ans	No.	Ans	No.	Ans	No.	Ans	No.	Ans
1.	4	41.	1	81.	3	121.	1	161.	2
2.	2	42.	3	82.	2	122.	4	162.	4
3.	3	43.	2	83.	4	123.	3	163.	2
4.	1	44.	1	84.	1	124.	2	164.	1
5.	1	45.	2	85.	1	125.	3	165.	2
6.	2	46.	1	86.	2	126.	2	166.	2
7.	4	47.	3	87.	2	127.	2	167.	2
8.	2	48.	4	88.	3	128.	1	168.	3
9.	4	49.	4	89.	1	129.	2	179.	2
10.	3	50.	1	90.	3	130.	3	170.	2
11.	1	51.	2	91.	3	131.	2	171.	4
12.	2	52.	3	92.	2	132.	1	172.	4
13.	2	53.	3	93.	3	133.	2	173.	3
14.	1	54.	2	94.	3	134.	4	174.	4
15.	3	55.	1	95.	1	135.	3	175.	3
16.	2	56.	3	96.	2	136.	3	176.	1
17.	4	57.	3	97.	3	137.	2	177.	4
18.	2	58.	1	98.	2	138.	1	178.	3
19.	3	59.	2	99.	3	139.	1	179.	4
20.	3	60.	2	100.	1	140.	2	180.	1
21.	2	61.	3	101.	3	141.	3	181.	1
22.	1	62.	2	102.	4	142.	1	182.	1
23.	2	63.	4	103.	2	143.	2	183.	1
24.	3	64.	1	104.	2	144.	1	184.	3
25.	1	65.	4	105.	1	145.	1	185.	2
26.	2	66.	1	106.	4	146.	1		
27.	1	67.	1	107.	4	147.	3		
28.	1	68.	3	108.	1	148.	3		
29.	4	69.	2	109.	3	149.	3		
30.	2	70.	1	110.	2	150.	2		
31.	2	71.	3	111.	2	151.	4		
32.	2	72.	3	112.	1	152.	2		
33.	4	73.	1	113.	3	153.	4		
34.	2	74.	2	114.	1	154.	2		
35.	4	75.	1	115.	4	155.	1		
36.	1	76.	3	116.	2	156.	2		
37.	2	77.	4	117.	3	157.	1		
38.	2	78.	1	118.	2	158.	2		
39.	1	79.	2	119.	2	159.	1		
40.	3	80.	4	120.	1	160.	1		

CAT 1998 Solutions

1.	'To forge' implies to create a lasting relationship based on hard work. 'forge ... links' (smithy) makes better enginering sense than 'build links' or 'create links'. 'Links' also goes with the purpose - Aeroplanes.
2.	Bank deposits 'swelled' implies that they increased to a great extent. The banking industry can flourish, not the deposits. Bank deposits cannot be 'enhanced' or 'flummoxed'.
3.	The original phrase is the best suited for the given sentence. The 'revival' has taken place, hence (a) is not true. (d) also cannot be true in light of the 'revival'. (c) is a more precise choice than (b).
4.	'At will' fits here perfectly in contrast to 'freely'. 'umbrage' can be given without intention, so (b) is not right. (d) does not make sense. 'scolding' happens spontaneously most of the times, hence it is unlikely that it involves a decision-making process.
5.	'To write at random' is more concise than 'to write at a random speed' and conveys the meaning perfectly. 'writing without affectation' in no sense means writing 'fast' or 'with speed'. We choose (a) over (b) because of the parallel construction with 'write without affectation'.
6.	'Lukewarm' fits in the first blank, and in the second, we need a verb. So 'electrifies' is the best suited of all the given choices. 'boiling' and 'fascinating' cannot grammatically fit the second blank. 'almost' and 'genuinely' are unlikely to go together.
7.	Social studies, science matters of health and safety and the atmosphere of the classroom, help in formation of proper emotional responses. Hence these can be referred to as the 'important areas'. 'things' is too vague a word to fill the first blank. Emotional reactions cannot be 'inculcated'. Given 'basis' and 'formation', the second word is more appropriate to fill in the second blank.
8.	'Audilble' sounds as opposed to 'visual' symbols, fits here. 'without making intelligible sounds' does not make sense in the sentence. 'aural' and 'vocal' are technical words that draw attention away from the crux of the sentence i.e. one need not be heard all the time to gain meaning.
9.	Learning is always more efficient when it is fun and less efficient when it is a drudgery (boring). Learning need not be efficient when it is fast or rapid, this may lead to loss of retention. Never can learning be more efficient when it is tedious.
10.	The rulers get too much power while those who are ruled show passive obedience. (d) makes an incomplete sentence with the second phrase. It is unlikely that a crusade is pointless. (a) does not make sense. (c) shows a proper parallel and logical structure.
11.	(a) has is the only pair of words that fits in without creating any contradictions. When it comes to arithmetic, you can count the number of copy cats (imitation). This inference does not come across in choices (b), (c) and (d).
12.	The farmers are protesting and want their voice to be heard. (a) and (d) do not fit into the semantic context of the sentence. The farmers, by themselves, cannot curb the prices, so (c) is not right.
13.	In terms of general rules, science as a news agency
	is comparable to other news agencies. 'principal' means 'chief' and this is not the meaning that the sentence is trying to convey, so (a) and (c) are wrong. 'in spirit and form' also sounds directionless, when the sentence is saying that the underlying values are the same.
14.	'Actuated' means motivated. Leaders cannot be 'led'. One cannot categorise people 'by' desires. 'convinced' similarly sounds vague.
15.	'Buy cheap and sell dear' is the only option that will, without any doubt, lead to a commercial success. (d) gives an unwarranted warning. (a) is not sound commerce. (b) is needlessly verbose, as compared to (c). (c) sounds like a formula, it is also the best choice after the hyphen.
16.	After 1, (C) states a fact about salvation. (B) states the Christian belief in that regard. (A) opposes it to Buddhism, by using 'but'. (D) elaborates the fact.
17.	After the factors stated in 1, (A) states the relationship between size of a state and development. (B) states that the problems of agricultural sector will remain with us in the next century. (C) emphasizes the need to improve agriculture. (D) states that rural India has to start moving, an idea that is continued in (6).
18.	(B) shows the relationship between a magazine and its editor, 'editors' are referred to as 'they'. (C) states that the number of editors should be determined by the contributions it gets. (D) continues with this fact. (A) follows by using 'furthermore'.
19.	(B) follows (1) by using 'especially'. (D) explains the 'NRI phase'. (A) states that the East and the West meet in the NRIs. (C) states a fact that has been overlooked, and (6) tells us that the festival of feature films and documentaries is trying to fill this gap.
20.	(C) gives a reason for a market for Indian art coming into being. (B) states what simultaneously happened in India. (A) states what happened as a fallout of the festivals of India. (D) elaborates on it and leads to (6).
21.	(B) introduces a figure walking slowly, (A) describes it. (D) states that Annete followed the figure with a triumph of recognition, and (C) tells us the name of the figure and states that 'she' followed him.
22.	(C) states that learning is important. (A) states that in contrast today unlearning is the real challenge. (D) followed by (B) states why unlearning is a real challenge.
23.	(B) states that 'we' reached the field soaked. (D) states that Claudius was standing there. (C) states the effect of being wet on Claudius, and (A) elaborates on it.
24.	(A) states that Alex had never been happy with his origins. (C) states what he would rather have been. (B) states what he tries to do to rectify the facts, and (D) shows his wife's reaction to his actions.
25.	(B) states the influence of Indian colours and cuts on Western styles. (A) states that it is seen most on the beaded evening wear. (D) tells us the most popular colours and (C) states how the international fashion scene has been affected by the Indian outfits.
26.	(D) introduces the point of emergence of theocratic states. (B) states how it benefits the politicians. (C) shows how the politicians act and (A) concludes the paragraph.
27.	(C) introduces the subject of the passage. (A) describes him. (B) shows why he was in that place, and (D) describes his mental state.
28.	(A) shows the director walking into the room. (C) tells us that the managers stared at him. (B) states Mitch's reaction, and (D) states what he finally did.
29.	(A) states the influence of Third Reich. (D) elaborates on the events that accompanied the Third Reich. (C) states that while speaking out against Hitler, mericans

	favoured isolationist policies, and (B) elaborates on such policies.
30.	(A) introduces Of Studies as the main idea of the passage. (B) states that the essay requires complete attention of the reader. (C) states Bacon's stand on studies, and (D) continues with the same.
31.	(C) relates logic to reasoning. (A) states what reasoning means. (B) states what logical reasoning covers, and (D) states how we can understand arguments and draw inferences correctly.
32.	If Sita is not sick, it follows that she is careless. One of the either/or conditions hold good.
33.	Ram does not eat hamburgers, so it follows that he does not get a swollen nose. When X, then Y. Not Y, hence not X.
34.	If the employees have confidence in the management, it follows that they are hostile. The first of the either/or condition is false, so the second one has to be true.
35.	None of the given options relates logically to the given statements.
36.	As all irresponsible parents do not shout, it follows that the children cavort. When X, then Y. X, hence Y.
37.	If only strong have biceps and no faith is strong, it follows that no faith has biceps. In A, X and Y need not overlap. In B, the Sona and crazy set need not overlap. In D there is no logical conclusion at all.
38.	In (C) and (D) the first two statements do not logically lead to the third. In C, we do not know if the hand and the head set overlap. D leads to an unpredictable conclusion. The icicles which are cycles are at least men. In B, if no teeth is yellow, no girl can be yellow, since all girls are teeth.
39.	If no sun is not white, it implies that all sun is white. All moon is sun, so it follows that all moon is white. B and C lead to undefined conclusions. In D, there is a possibility that X and Y sets can intersect.
40.	If all Ts are square and all squares are rectangular, it follows that all Ts are rectangular. Also, if idiots are bumblers and bumblers fumble, it follows that idiots fumble. In B, there is a possibility that fat and huge sets need not intersect. D plays with words and leads to uncertain conclusion again.
41.	As the passage says that efficiency won't be content to reign in the shop, but will follow us home, it implies that efficiency can become all-pervading. (b) is not the focus of the questions. (c) goes beyond the scope of the argument.
42.	As each project is being stalled for some reason or the other and no consensus has been reached on any of the projects, we can infer that the projects will be stalled for an indefinite period. (a) is stated in the argument, and (b) is likely to be a conclusion.
43.	The passage states that designations are forgotten during the meetings and even a sales engineer can question the CEO on company policies. The company's ulterior motive is not the focus of the argument, so (a) and (c) are ruled out.
44.	The passage states that the rape of Indian architectural wealth can be attributed to the blend of activist disunity and local indifference. (b) may not be true as Indians may be gullible. (c) and (d) are stated in the passage.
45.	The moral police feel that Fire would influence the Indian psyche and ruin the moral fabric of the nation, which it should not be allowed to do. (a) is not true, as Indian audiences may be discriminating. (c) is not an inference, it is true to a certain extent.
46.	The passage states that the rich have never felt secure against the poor and their aggressiveness stemmed from fear of the poor. (b) refutes the

	conclusion in the argument.
47.	The passage states that the second kind of traveller visits only such monuments as the time at his disposal allows him to contemplate without irreverent haste. The preference of the writer is not the focus of the argument, hence (a) is wrong. (b) is too caustic.
48.	None of the given options is supported by the passage. (c) may not be true in the immediate temporal context of the argument. (b) is clear from the argument, it is not an inference. (a) is, of course, wrong.
49.	The passage supports none of the given options. (c) does not seem to be true in light of facts presented in the passage. (b) is stated anyway in the passage. What the director aimed at does not seem to be the focus of the argument, which discusses a general consequence.
50.	The Indian middle-class, what it wants and what it buys has been the focus of economic policies since the mid-80s. (b) infers far beyond what can be reasonably inferred from the argument.
51.	In one day, A would do 1/3 of the job, B would do 4/1 of the job and C would do 6/1 of the job. Hence, if all three of them work simultaneously, in one day they would do of the job. Hence, to complete the entire job together they would take $\frac{4}{3}$ days. **Shortcut:** A can complete the job in 3 days. So A, B and C combined will take less days than A alone to finish the job. So straightway option (b).
52.	If n^3 is odd, then n should also be odd. Hence, n^2 should also be odd. And n^2 will again be odd and not even. So only I and II are true.
53.	We can see that there are two types of cost: (i) Transportation cost (viz. hiring truck) and (ii) storing cost. It can be seen that the daily production is far less than the capacity of the truck. So a truck can be hired to carry multiple days production at one go. So as long as the storing cost is less than the cost of hiring the truck (i.e. Rs. 1,000), it makes sense to store the production. When the storing cost exceeds Rs. 1,000, it is best that the entire lot be sent to the market. The cost pattern is as given in the following table:

Units produced	Units to be stored	Cost of storing (Rs.)	Cost of sending to the market (Rs.)	Should you hire truck?	Cost Incurred (Rs.)
150	150	750	1,000	No	750
180	(150+180)=330	1,650	1,000	Yes	1000
120	120	600	1,000	No	600
250	(120+250)=370	1,850	1,000	Yes	1,000
160	160	800	1,000	No	800
120	(160+120)= 280	1,400	1,000	Yes	1,000
150	150	750	1,000	Yes	1,000
				Total Cost	**6,150**

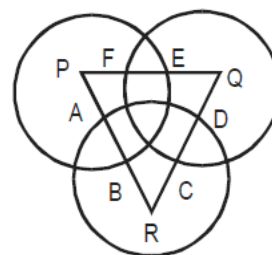|	
	In spite of the fact that storing is cheaper than hiring truck on the last day, we have to do with the latter option because everything that is manufactured has to be sent to the market. So according to this table, if the truck is hired on 2nd, 4th, 6th and 7th days, total cost = Rs. 6,150. But is this the most cost-effective scheme? It can be seen that we are hiring truck on two consecutive days (6th and 7th). Hence, since everything that is manufactured has to be sent to the market, we have yet another option of hiring the truck on the 5th day and sending the 6th and 7th days production together on the last day. In that case, the cost on 5th day would be Rs. 1,000 (i.e. Rs. 200 more than the present cost), the cost on the 6th day would be (120×5) = Rs. 600 (i.e. Rs. 400 less than the present cost) and the cost on the 7th day would be Rs. 1,000 (the same as the present cost). Hence, we can say that the total cost would actually come down by $(+200 - 400 = -200)$ Rs. 200. Hence, this becomes the most cost-effective scheme. So we should hire trucks on 2nd, 4th, 5th and 7th days.
54.	If the storage cost is reduced to Re 0.8 per cubic feet, then the cost pattern is as given in the following table.

Units produced	Units to be stored	Cost of storing (Rs.)	Cost of sending to the market (Rs.)	Should you hire truck?	Cost Incurred (Rs.)
150	150	120	1,000	No	120
180	(150+180) =330	264	1,000	No	264
120	(330+120)= 450	360	1,000	No	360
250	(450+250) =700	560	1,000	No	560
160	(700+160)= 860	668	1,000	No	688
120	(860+120) = 980	784	1,000	No	784
150	(980+150)= 1130	904	1,000	Yes	1,000
				Total Cost	**6,150**

In spite of the fact that storing is cheaper than hiring truck on the last day, we have to do with the latter option because everything that is manufactured has to be sent to the market. Hence, the most cost-effective scheme would be sending the entire production on the 7th day.

| 55. | Let us try and find a pattern. Let there be x bacteria in the first generation. Hence, n_1 = x. But only x/2 among them will be able to produce the next generation. And they would give rise to $8\left(\dfrac{x}{2}\right) = 4x$ bacteria. Hence, $n_2 = 4x$. Of these only 2x will give rise to next generation. So number of bacteria in the third generation = $8(2x) = 16x$. So $n_3 = 16x$. Similarly, we would find that $n_4 = 64x$. If we observe: $n_1 = x$, $n_2 = 4x$, $n_3 = 16x$, $n_4 = 64x$, this will form a GP |

with a = x and r = 4. The seventh term of this GP = 4096. So we can write $4096 = x(4)^6 = x(2)^{12}$ = 4096x. Hence, x = 1, i.e. 1 million.

| 56. | Since AB = 5, PA = PB – AB = 20 – 5 = 15
Similarly, RB = RA – AB = 20 – 5 = 15
Hence, PR = PA + AB + BR = 15 + 5 + 15 = 35
Since CD = 10, RC = RD – CD = 20 – 10 = 10
Similarly, QD = QC – DC = 20 – 10 = 10
Hence, QR = RC + CD + DQ = 10 + 10 + 10 = 30
And since EF = 12, PF = PE – EF = 20 – 12 = 8 and EQ = QF – EF = 20 – 12 = 8,
then PQ = PF + FE + EQ = 8 + 12 + 8 = 28
Hence, perimeter of ΔPQR = (35 + 30 + 28) = 93 |

Shortcut:
Since PQ = QR = RP = 20 unit and it is given that AB = 5, CD = 10, and EF = 12 unit.
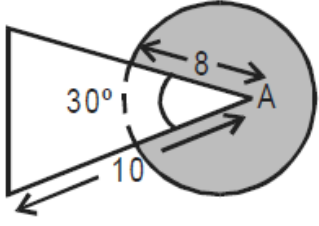So perimeter of ΔPQR = $6 \times 20 - (5 + 10 + 12)$ = 120 – 37 = 93 unit. Hence option (c).

57.	Since both 2 and 1 are positive, (2 # 1) = 2 + 1 = 3. $(1\nabla2)= (1\times 2)^{1+2} = 2^3 = 8$. Thus, the given expression is equal to 3/8.
58.	Let us first simplify the numerator. Since 1 is positive, (1 # 1) is 1 + 1 = 2 which again is positive. Then (1 # 1) # 2 = 2 # 2 = 2 + 2 = 4 Now note that log10 0.1 = $\log_{10} 10^{-1} = -1$ Then $10^{1.3} \log_{10} 0.1 = 10^{1.3} \times (-1)$ is negative. So $10^{1.3} \nabla \log_{10} 0.1 = 1$ Hence, the numerator is equal to 4 –1 = 3 Since $1 \times 2 = 2$ is positive, $(1\nabla2)= (1\times 2)^{1+2} = 2^3 = 8$. So the denominator = 8. Hence, the answer is 3/8.
59.	The best possible way to solve this is to check each of the given answer choices. In options (a), (c) and (d), either both X and Y are positive or both X and Y are negative. Since we have (–Y) in the numerator of our expression and (–X) in the denominator, X and Y will never be both positive and neither will XY be positive. Hence, both the numerator and the denominator of our expression will be 1 and the value will always be 1. Hence, the only possible answer choice is (b).
60.	Since MPB is a three-digit number, and also the square of a two-digit number, it can have a maximum value of 961 viz. 312. This means that the number BE should be less than or equal to 31. So B can only take the values 0, 1, 2 and 3. Since the last digit of MPB is also B, it can only be 0 or 1 (as none of the squares end in 2 or 3). The only squares that end in 0 are 100, 400 and 900. But for this to occur the last digit of BE also has to be 0. Since E and B are distinct integers, both of them cannot be 0. Hence, B has to be 1. BE can be a number between 11 and 19 (as we have also ruled out 10), with its square also ending in 1. Hence, the number BE can only be 11 or 19. 112 = 121. This is not possible as this will mean that M is also equal to 1. Hence, our actual numbers are 192 = 361. Hence, M = 3.
61.	The maximum and the minimum five-digit numbers that

	can be formed using only 0, 1, 2, 3, 4 exactly once are 43210 and 10234 respectively. The difference between them is 43210 – 10234 = 32976.
62.	The digit in the unit's place must be greater than that in the ten's place. So if we have 5 in the unit's place, the remaining 4 digits need not be in any particular order. So we will have 4! numbers. However, if we have 4 in the unit's place, we cannot have 5 in the ten's place. Hence, the ten's place has to be one among 1, 2 or 3. This can be done in 3 ways. The remaining 3 digits can be filled in the remaining three places in 3! ways. Hence, total we will have (3 × 3!) numbers ending in 4. Similarly, if we have 3 in the unit's place, the ten's place can only be 1 or 2. This can be done in 2 ways. The remaining 3 digits can be arranged in the remaining 3 places in 3! ways. Hence, we will have (2 × 3!) numbers ending in 3. Similarly, we can find that there will be (3!) numbers ending in 2 and no number ending in 1. So total number of numbers satisfying the given condition = 4! + (3 × 3!) + (2 × 3!) + 3! = 4! + 6 × 3! = 24 + (6 × 6) = 60
63.	Since A and B are moving in opposite directions, we will add their speeds to calculate the effective speeds. In other words, in the first hour they would effectively cover a distance of (4 + 2) = 6 km towards each other. In the second hours, they would effectively cover a distance of (4 + 2.5) = 6.5 km towards each other. In the third hour, (4 + 3) = 7 km. In the fourth hour, (4 + 3.5) = 7.5 km and so on. We can see that the distances that they cover in each hour are in AP, viz. 6, 6.5, 7, 7.5 ... with a = 6 and d = 0.5. Since they have to effectively cover a distance of 72 km, the time taken to cover this much distance would be the time taken to meet each other. So the sum of the first n terms of our AP has to be 72. If we are to express this in our equation of sum of first n terms of the AP, we will get $S_n = n/2 × [2a + (n – 1)d]$. Substituting our values, we will get $72 = n/2 × [12 + 0.5(n – 1)]$ Solving this, we get n = 9 hr. In 9 hr A would have covered (9 × 4) = 36 km. So B would also have covered (72 – 36) = 36 km. Hence, they would meet mid-way between A and B.
64.	If P is true, then both Q and R have to be true. For S to be true, either Q or R must be false. Hence, if P is true, S cannot be true.
65.	 It can be seen that if the length of the rope is 8 m, then the cow will be able to graze an area equal to (the area of the circle with radius 8m) – (Area of the sector of the same circle with angle 30°). This can further be expressed as $\pi(8)^2 - \dfrac{30}{360}\pi(8)^2$ $= 64\pi - \dfrac{1}{12}(64\pi) = 64\pi\left(\dfrac{11}{12}\right) = \dfrac{176\pi}{3}$ sq.m **Shortcut:** Area grazed without restriction is 64π m^2 it should be less than 64π sq. m. with restriction. So choice (d).

66.	If the length of the rope is 12 m, then the total area that can be grazed by the cow is as depicted in the diagram. Area 1 is (the area of the circle with radius 12) – (Area of the sector of the same circle with angle 30º) So area 1 = $\pi(12)^2 - \dfrac{30}{360}\pi(12)^2 = 132\pi$ Since the length of the rope is higher than the sides of the triangle (viz. AB and AC), if the cow reaches point B or C, there would still be a part of the rope (12 – 10) = 2 m in length. With this extra length available the cow can further graze an area equivalent to some part of the circle with radius = 2 m from both points, i.e. B and C. This is depicted as area 2 and area 3 in the diagram. Hence, the actual area grazed will be slightly more than 132π. The only answer choice that supports this is (a).
67.	Since C and D cannot be together, they can occupy either of the following seats: (1st and 3rd), (1st and 4th) or (2nd and 4th). In the last two cases, since B cannot be in the 3rd place, A will have to be there. Thus, we can see that A can never be in the 1st place. Hence, statement (a) is false.
68.	Since neither A nor B can be at 3rd place, this place has to be occupied by either D or C. And if either of them occupies this place, the other one has to occupy the 1st place (since D and C cannot be together). Hence, C can only occupy either 1st or 3rd place.
69.	If A and B are together, but C and D are not, then the only places that A and B can occupy are 2nd and 3rd. And since B cannot be at 3rd place, A has to be at 3rd place.
70.	Let the cost of the turban be T. Hence, total payment for one year = Rs. 90 + T. So the payment for 9 months should be ¾ (90 + T). But this is equal to (65 + T). Equating the two, we get T = Rs. 10.
71.	Let R be the radius of each circle. Then $\dfrac{\pi R^2}{2\pi R} = \dfrac{2\pi R}{\pi R^2}$ which implies that $\dfrac{R}{2} = \dfrac{2}{R}$, i.e. R2 = 4, i.e. R = 2. Then the length of the square is 8. Thus, the area of the square is 64, while the area covered by each coin is $\pi 2^2 = 4\pi$. Since there are four coins, the area covered by coins is $4(4\pi) = 16\pi$. Thus, the area not covered by the coins is $64 - 16\pi = 16(4 - \pi)$.
72.	The time taken by the white spots on all three wheels to simultaneously touch the ground again will be equal to the LCM of the times taken by the three wheels to complete one revolution. The first wheel complete 60 revolutions per minute. This means that to complete one revolution, it takes. The second wheel completes 36 revolutions per minute. So to complete one revolution, it takes
73.	The best way to solve this question is the method of simulation, i.e. take a number which when divided by 899 gives a remainder of 63. The smallest such number is (899 + 63) = 972. 972, when divided by 29 gives a remainder of 5. Hence, the answer is 5. Students, please note that 899 itself is divisible by 29. Hence, the required remainder is the same as obtained by dividing 63 by 29, i.e. 5. **Shortcut:** Since 899 is divisible by 29, so you can directly divide the remainder of 63 by 29, so $\dfrac{63}{29}$ will give 5 as a remainder, option (a).
74.	Note that the difference between the divisors and the

	remainders is constant. $2 - 1 = 3 - 2 = 4 - 3 = 5 - 4 = 6 - 5 = 1$ In such a case, the required number will always be [a multiple of LCM of (2, 3, 4, 5, 6) – (The constant difference)]. LCM of (2, 3, 4, 5, 6) = 60 Hence, the required number will be 60n – 1. Thus, we can see that the smallest such number is $(60 \times 1) - 1 = 59$ The second smallest is $(60 \times 2) - 1 = 119$ So between 1 and 100, there is only one such number, viz. 59.
75.	For, if any one of them collects the maximum number of coins, the remaining three should collect the minimum number of coins. And from the conditions given this has to be 10, 12 and 14. So if the three of them collect $(10 + 12 + 14) = 36$ coins, the fourth one has to collect $(100 - 36) = 64$ coins which has to be the maximum by any one person.
76.	Since A has collected 54 coins out of 100, he should obviously be the person who collected the maximum number of coins. For the difference between him and the second highest person to be minimum, the second highest person should collect the maximum number of coins possible under the given conditions. And for this to happen, the remaining two should collect the minimum number of coins. So if the two of them collect 10 and 12 coins, i.e. 22 coins between themselves, the third person would have to collect $(100 - 54 - 22) = 24$ coins. Hence, the difference between him and the highest person should at least be $(54 - 24) = 30$.
77.	If A has collected 54 coins, the remaining three of them should collect $(100 - 54) = 46$ coins between themselves. Let us assume that C has collected 10 coins. So B will collect $(2 \times 10) + 2 = 22$. So A will collect $(46 - 10 - 22) = 14$ coins, which is a possible combination. Let us now assume that C picks up 12 coins. So B should pick up $(2 \times 12) + 2 = 26$. So A will have to collect $(46 - 12 - 26) = 8$ coins. This combination is not possible. It can be concluded that C cannot pick up more than 10 coins and hence B has to pick up 22 coins to satisfy the given condition.
78.	Since Amar does not wear red shirt, it has to be worn by either Akbar or Anthony. So both of them either wear red shirt or one among green or blue shirt (depending on what Amar is wearing). Now since Akbar does not wear green and Anthony does not wear blue shirt, it is confirmed that both of them wear red shirts. So Amar wears either blue or green shirt. Thus, we can see that statement (a) is not true.
79.	If two of them wear the same colour, the following six combinations will exist: since Amar does not wear red, he can either wear blue or green. In either case, the remaining two will have to wear red, Akbar does not wear green, and Anthony does not wear blue. This gives the combinations 1 and 2 below. Similarly, the other combinations can be worked out.

	Amar	Akbar	Anthony
1	Green	Red	Red
2	Blue	Red	Red
3	Green	Red	Green
4	Green	Blue	Green
5	Blue	Blue	Green
6	Blue	Blue	Red

	Using this we can evaluate the statements. (I) is true as we can see that in all the cases, if Amar wears blue, Akbar does not wear green. (II) needs not be false always, as in combination 4, we can see that Amar does not wear blue but Akbar wears blue. (III) is also not necessarily false as in combinations 1 and 3, both Amar and Akbar do not wear blue. Statement (IV) is necessarily false since if Amar wears green and Akbar does not wear red, then combination 4 is the only combination possible and hence Anthony should wear green. So only one of the four statements must always be false.
80.	HCF of 60, 84 and 108 is 12. Hence, 12 students should be seated in each room. So for subject A we would require $\left(\dfrac{60}{12}\right) = 5$ rooms, for subject B we would require $\left(\dfrac{84}{12}\right) = 7$ rooms and for subject C we would require $\left(\dfrac{108}{12}\right) = 9$ rooms. Hence, minimum number of rooms required to satisfy our condition = $(5 + 7 + 9) = 21$ rooms.
81.	Let us find some of the smaller multiples of 125. They are 125, 250, 375, 500, 625, 750, 875, 1000 ... A five-digit number is divisible by 125, if the last three digits are divisible by 125. So the possibilities are 375 and 875, 5 should come in unit's place, and 7 should come in ten's place. Thousand's place should contain 3 or 8. We can do it in 2! ways. Remaining first two digits, we can arrange in 2! ways. So we can have 2! × 2! = 4 such numbers. There are: 23875, 32875, 28375, 82375.
82.	To maximise the value of the wealth, we must carry more of the one whose value per kilogram is more. Value per kilogram of ruby $= \left(\dfrac{4}{0.3}\right) = 9 = \text{Rs.}13.33 \text{crore}$ and value per rupee of each emerald $\left(\dfrac{5}{0.4}\right) = \text{Rs.}12.5 \text{crore}$ It is obvious that we should carry entire 12 kg of ruby. This would amount to $\left(\dfrac{12}{0.3}\right) = 40$ Rubies.
83.	Since the number of coins are in the ratio 2.5 : 3 : 4, the values of the coins will be in the ratio $(1 \times 2.5) : (0.5 \times 3) : (0.25 \times 4)$ = 2.5 : 1.5 : 1 or 5 : 3 : 2 Since they totally amount to Rs. 210, if the value of each type of coins are assumed to be 5x, 3x and 2x, the average value per coin will be $\dfrac{210}{10x}$ So the total value of one-rupee coins will be $5 \times \left(\dfrac{210}{10x}\right) = \text{Rs. } 105$ So the total number of one-rupee coins will be 105.
84.	The cost of each chocolate is Re 1. So the cost of apple should be Rs. 2 and that of one biscuit should be Re 0.5. Thus, if he eats x chocolates, he has to eat 2x biscuits. Hence, the total value of chocolates will be Rs. x and that of biscuits will be $(0.5)(2x) =$ Rs. x. Hence, we see that the value of chocolates is to the value of biscuits will always be 1 : 1. As per our assumption he will have to eat more than $(x + 2x) = 3x$ apples and hence the total value of the apples will

be more than (2)(3x) = 6x. In other words, the ratio of value chocolates to apples or biscuits to apples will be more than 1 : 6. In other words, if the value of chocolates and biscuits is Re 1 each, then the value of apples has to be more than Rs. 6, or the combined value will be more than Rs. 8. This means that the value of apples will always constitute more than $\dfrac{6}{8}$ of the entire bill. It can further be observed that the total value of chocolates and biscuits together will always be an even integer and so will be the value of apples. This means that the combined value of all three of them has to be even and not odd. So Rs. 33 cannot be the answer. Also Rs. 8 cannot be the answer as, if we take the value of chocolates and biscuits to be minimum, i.e. Re 1 each, then the value of apples can be a minimum of Rs. 8. Hence, the total value will always be Rs. 10 or higher. The only option possible is Rs. 34. To verify this let us find two even numbers (one of them higher than $\dfrac{3}{4}$ of 34) which adds 34.

We can find many such numbers e.g. 32 + 2, 30 + 4, 28 + 6 and 26 + 8. All of these could be a possible combination.

85.	Let us assume that the total production cost is Rs. 100. So component A's share in this would be Rs. 30 and that of B would be Rs. 50. Thus, we can see that there is a component of (100 − 30 − 50) = Rs. 20, that constitutes other expenses. The product is currently sold at 20% profit = Rs. 120. Now due to change in international scenario, cost of component A increases by 30% to Rs. 39 and the cost of component B by 22% to Rs. 61. Hence, the total cost of production of the product = (39 + 61 + 20) = Rs. 120 (Note that no change has been indicated in other expenses.). It is further said that selling price cannot be increased beyond 10%. Hence, the maximum selling price can be Rs. 132. This means that the maximum gain can only be $$\left(\dfrac{12}{120}\right)=10\%$$
86.	The cost of component A will now be (1.2 × 30) = Rs. 36 and that of B will be (0.88 × 50) = Rs. 44 So the total cost of production = (36 + 44 + 20) = Rs. 100 Since the selling price is not altered, i.e. Rs. 120, the gain will be the same as the original one, i.e. 20%.
87.	Ms Maharashtra was wearing white. Since Ms West Bengal was not the runner-up, she was not wearing green and neither was Ms Andhra Pradesh. Hence, it was Ms Uttar Pradesh who was wearing green saree. So red could have either be worn by Ms West Bengal or by Ms Andhra Pradesh. Now participants wearing yellow saree and white saree were at the ends, but Ms West Bengal did not occupy any of these positions. Hence, it can be concluded that Ms Andhra Pradesh sat at one of the ends and wore yellow, while Ms West Bengal wore red.
88.	From the previous answer it can be concluded that Ms Maharashtra and Ms Andhra Pradesh occupied the seats at the end. So Ms West Bengal and Ms Uttar Pradesh, should occupy middle two seats. So the answers could be either (b) or (c). It can further be

	concluded that since Ms Andhra Pradesh wore yellow, she was the winner and since Ms Uttar Pradesh wore green, she was the runner-up. So these two cannot sit together. Option (b) would contradict this. Hence, (c) is the only option left.
89.	From answer to question 87, it can be seen that Ms Andhra Pradesh had worn the yellow saree.
90.	From answer to question 87, it can be seen that Ms Uttar Pradesh was the runner-up.
91.	Since the distance travelled was the same both ways and also it was covered in the same time, the average speed will be the same uphill and downhill. Hence, statement (a) is false. Statement (b) need not be true. It would be true and had the speeds (and not average speed) been the same both ways. But it is clearly indicated that he varied his pace throughout. Now it has to be noted that the journey uphill and the journey downhill started at the same time, i.e. 6 a.m. and also ended at the same time 6 p.m. (though on different days). So if we were to assume a hypothetical case in which one person starts downhill at 6 a.m. and other one starts uphill at 6 a.m., along the same path, then there would be a point on the path where they would meet (i.e. they would reach at the same time), irrespective of their speeds. Our case is similar to that, except for the fact that here, we have only one person moving both ways. So there has to be a point on the path, where he reached at the same time on both days.
92.	Since 2 has a cyclicity of 4, i.e. 21 = 2, 22 = 4, 23 = 8, 24 = 16, 25 = 32, 26 = 64 ..., the last digits (2, 4, 8, 6) are in four cycles. ∴ On dividing $\dfrac{51}{4}$, we get the remainder as 3. ∴ The last digit has to be $2^3 = 8$ **Shortcut:** Since cyclicity of the power of 2 is 4, so 251 can be written in 24(12) + 3 or unit digit will be 23 = 8.
93.	Let the capacity of each cup be 100 ml. So 300 ml of alcohol is taken out from the first container and poured into the second one. So the first vessel will have 200 ml of alcohol and the second one will have 500 ml of water and 300 ml of alcohol. So the ratio of water to alcohol in the second vessel is 5 : 3. Hence, proportion of alcohol in B = 3 : 8 Now if 300 ml of mixture is removed from the second container, it will have $\left(300\times\dfrac{5}{8}\right)=187.5$ ml of water and $\left(300\times\dfrac{3}{8}\right)=112.52$ ml of alcohol. Now if this mixture is poured in the second vessel, that vessel would have (200 + 112.5) = 312.5 ml of alcohol and 187.5 ml of water. Hence, ratio of alcohol to water in this container = 312.5 : 187.5 = 5 : 3 Hence, proportion of water = A = 3 : 8 Hence, we find that A = B **Note:** This result will be independent of the capacity of the cup.
94.	The number formed by the last 3 digits of the main number is 354. The remainder is 2 if we divide 354 by 8. So the remainder of the main number is also 2 if we divide it by 8.
95.	It can be seen that each of the 26 players played 25

	matches. Since none of the matches ended in a draw, the scores for each of the players has to be even (since a win gives 2 points). So the highest score possible for a player would be 50 and the lowest would be 0. Since all 26 of them had different scores varying between 0 and 50, the scores should indeed be all the even number between 0 and 50. And since the ranks obtained by players are in alphabetical order, it can be concluded that A scored 50, B scored 48, C scored 46 and so on and Z scored 0. Now the only way A can score 50 is, if he wins all his matches, i.e. he defeats all other players. Now B has scored 48. So he has lost only one of his matches, which incidentally is against A. He must have defeated all other players. Similarly, C has scored 46 matches. So he must have lost two matches, (i.e. to A and B) and defeated all other players. So we conclude that a player whose name appears alphabetically higher up in the order has defeated all the players whose name appear alphabetically lower down. Hence, M should win over N.		idea is shown by its ability to survive great stress that it is placed under and in the sense of belonging that the people feel for it. Refer to the third paragraph. (b) has not been stated in the passage.
96.	The Nehru-Gandhi ideologies led to the formation of the idea of India that inspired the writer's generation. This answer is given in the tenth paragraph. Don't be misled by (c); the writer mentions 'formative ideas', not 'formative years'. (a) and (d) are again imprecise answers.	108.	The writer says that if Western civilisation is in a state of a permanent crisis, something is wrong with its education. The opening statement confirms (a). There is insufficient evidence to support (b), (c) and (d) as the answer.
97.	The writer agrees that the 50th anniversary is a great moment, but does not share Naipaul's conclusions about it. Refer to the tenth paragraph. Hence, (a), (b) and (d) are not correct.	109.	Lord Snow seems to see the intellectual life of the Western society as split between scientists and literary intellectuals. The answer is given in the second paragraph. (a), (b) and (d) are not stated in the passage.
98.	The writer believes that India will come back and does not feel that India's loss is forever. Refer to the last paragraph. (a), (c) and (d) are inaccurate observations.	110.	The writer does not agree that education can help in tackling all new problems and complexities. The answer is given in the penultimate paragraph. The views expressed in (a) and (c) find no mention in the passage.
99.	The writer feels that the politicians incite the general public to demonstrate against writers and also that it does not reflect the people's will. Refer to the penultimate paragraph.	111.	He defines prejudice as fixed ideas with which people think, without being aware of doing so. Refer to the ninth paragraph. (a), (c) and (d) are imprecise definitions of prejudice.
100.	Whatever he says about India is based on his experience, as is shown by the last line of the passage. There is insufficient evidence in the passage to support (b), (c) and (d) as the answer.	112.	Lord Snow says that the politicians, administrators and the entire community needs to be educated to understand the works of scientists and engineers. Refer to the second paragraph. (b) and (c) are partially correct answers.
101.	The writer's friend says that we can move beyond things only after we know we are capable of those things. The answer is given vividly in the sixth paragraph. (a) and (b) are not mentioned in the passage. (d) is not an exact representation of the writer's views.	113.	The writer does not agree with the scientists' stand on the neutrality of their labours. (c) can be amply inferred from the third paragraph. (a), (b) and (d) are imprecise answers.
102.	The passage states that the civilizing influence prevents us from giving in to violent, terrible urges. (d) is again stated explicitly in the sixth paragraph. (a), (b) and (c) may be partially true.	114.	The author feels that the main purpose of education is to transmit ideas of value. (a) is clearly given in the fifth paragraph. (b) and (d) are not supported by the passage.
103.	The writer fears the long-term damage to democracy that the corruption can bring about, as it is a subversion of democracy, and says that it will harm India too as corruption is everywhere in India. The answer is given in the seventh paragraph. Hence, (a) and (c) are imperfect answers.	115.	(a) is not stated anywhere in the passage. (b) and (c) also find no explicit mention in the passage.
		116.	The author says that values are more than mere dogmatic assertions. Refer to paragraph 6, line 3. (a), (c) and (d) are stated in the same paragraph.
104.	The writer says that no one is an objective observer. The answer is given in the eighth paragraph. Hence, (a), (c) and (d) are imperfect answers.	117.	According to the passage, thinking is application of pre-existing ideas to a situation. Refer to paragraph 10, line 2. In light of (c), it will be a folly to mark (a), (b) or (d).
105.	The writer says that there never had been a political entity called India prior to 1947. (a) is the best representation of the writer's views. (b), (c) and (d) do not give the exact picture.	118.	The writer says that a large part of the American population indulges in word trade. Refer to the second paragraph. (a), (c) and (d) cannot be even remotely inferred from the passage.
		119.	The hallmark of gag writers is that they have fun with words. Refer to paragraph 4, line 1. (a), (c) and (d) are not stated in the passage.
106.	The writer feels that the difference lies in the fact that Pakistan was under-imagined. The answer is given in the second paragraph. (a), (b) and (c) are not substantiated by the passage.	120.	The second level of language is important if one wants to be comfortable listening and reading. (a) is stated in the third paragraph. (b) and (c) are not stated in the passage.
		121.	The writer says that the gag writers thrive on the double layered aspect of the language. The middle portion of the passage amply demonstrates (a). (b), (c) and (d) may be isolated aspects of the trade.
		122.	In gag writing, both, long words as well as combining of parts of words to produce a hilarious effect are important. (a) cannot be inferred from the passage. (b) and (c) can be inferred from the fourth paragraph as well as various examples in the passage.
		123.	Gag writers simulate ignorance. The answer is given in the fifth paragraph. (b) is an isolated observation and (a) is not true.
107.	The writer feels that the strength of the nationalist	124.	According to the passage, radio artistes have taken advantage of the techniques of gag writers. (a) and (c) are not mentioned in the passage.

125.	The theory has been suggested to be an attempt at appeasing the religious psyche of that time by stating that God indirectly created life. (c) is stated in the second paragraph. (a) and (b) are misleading answers.
126.	All four have been referred to as working or writing at the same time. This is evident in the second paragraph. (a) is only partially right. (c) is not true.
127.	Pasteur did not work on arbitrary or spontaneous discoveries. He worked on logical premises. This is evident in the fourth paragraph. (a) is certainly not true, considerable differences of opinion existed even then. (c) and (d) are nor true either.
128.	Pasteur based his work on the belief that either air contained a factor necessary for the spontaneous generation of life or viable germs were borne in by the air and seeded in the sterile nutrient broth. (b) is only an observaation, not the hypothesis. (a) is stated in the fourth paragraph.
129.	The well water of Montanvert led to the discovery of the porcelain filters. (a) is nowhere stated in the paragraph. (b) is clear from the fourth paragraph.
130.	Pasteur declared that his experiments had dealt a mortal blow to the spontaneous generation doctrine. The conclusion of the fifth paragraph makes (c) a clear choice. (a), (b) and (d) are rather extreme.
131.	The writer feels that the works of the proponents of spontaneous generation was ruined by experimental errors. (b) is mentioned in the seventh paragraph. (a) is clearly not true.
132.	This cross fire ruled out the possibility of partial sterilisation. (b) is clear from the penultimate paragraph. (b) is not directly stated in the passage and (c) sounds vague.
133.	Pasteur's experiments supported the Biblical version of creation of life, but denied many other philosophical systems. (b) is explicitly given in the fifth paragraph. Given (b), the other choices (a), (c) and (d) seem extreme.
134.	The author says that the cell theory represents biology's most significant and fruitful advance. Refer last paragraph, line 1. (a) is thus wrong and (b) and (c) are not supported by the passage.
135.	Rs. 85,000 crore has been entrusted to the care of mutual funds. (c) is stated in the second paragraph.
136.	The individual investors led the move for the end of mutual funds. Refer to the first paragraph. (a), (b) and (d) are wrong choices.
137.	The mutual funds were flawed in their imprudent and irresponsible handling. Refer to the end of the first paragraph. (a) and (c) are not valid reasons.
138.	The indiscipline attitude of the mutual funds in their approach to investment led to their fall. Refer to the second paragraph. The claims in (b), (c) and (d) are not completely substantiated by the passage.
139.	The passage states that at least 18 of the big schemes due for redemption over the next 3 years will be unable to service their investors. Refer to the fourth paragraph. (b) plays with words 'only very few' and (c) is not correct.
140.	The passage shows the facts that lead to the inference that many of the mutual funds offices indulged in malpractices. Refer to the fifth and sixth paragraphs. (a), (c) and (d) are not stated in the passage.
141.	Mutual fund industry ranks fourth on safety and fifth in terms of returns on deposits. Refer to the seventh paragraph. (a), (b) and (d) are thus wrong.
142.	More cellphones were subscribed as calls made on them could not be lodged in the company records. Refer to the fifth and sixth paragraphs. (b), (c) and (d) are not stated in the passage.

143.	Mutual funds have caused a loss of Rs. 11,000 crore of the investors' money. Refer to the tenth paragraph. (a), (c) and (d) are wrong.
144.	Investors have the option of either exiting at a loss or holding on in vain hope. Refer to the eleventh paragraph. (b), (c) and (d) are not very perfect choices.
145.	The stock market boom in the late eighties and early nineties led to the initial euphoria in the mutual funds industry. Refer to the passage from the twelfth paragraph onwards. (b) is clearly not true.
146.	If we were to take the highest quantity supplied from various states in different months, we will get the following table:

Month	Highest Supply	Total	Total percentage
April	7	73	9.5%
May	12	13	92.3%
June	9741	18015	54.0%
July	71497	90247	79.2%
August	77675	97961	79.2%
September	56602	110514	51.2%
October	79591	92219	86.3%
November	41872	45413	92.2%
December	14822	16578	89.4%
January	10922	11438	95.4%
February	11183	11285	99.0%
March	683	769	88.8%

	Hence, we find that the highest percentage of apples supplied by any state is 99% (J & K in February).
147.	If we were to add the quantity of apples supplied by various states, it can be found that HP supplied 2,31,028 tonnes, UP supplied 258 tonnes, and J & K supplied 2,62,735 tonnes. Thus, it was J & K that supplied the maximum number of apples.
148.	If J & K supplied the highest quantity of apples, it is obvious that it would supply the highest percentage of total apples supplied as well.
149.	It is given that in case demand is more than the supply, additional demand is met by taking the stock from the cold storage. So it can be figured out that in all those months when supply was greater than the demand, no stock would have been used from the cold storage. Looking at the table, we can find that during the period May to September, no stock was taken from the cold storage, and hence supply should have been greater than the demand.
150.	From question 147, it can be seen that the total quantity of apples supplied to Delhi during the year was (231028 + 258 + 262735) = 494021 tonnes = 494021000 kg If one tree yields 40 kg of apple, then the number of trees required to yield 49,40,21,000 kg $$= \frac{494021000}{40} = 1,23,50,525 \text{ trees:}$$ = 12.5 million trees (approximately)
151.	If there are 250 trees per hectare, then area required to have 12350525 $= \dfrac{12350525}{250} = 49402 = 49450$ (approximately)
152.	It can be seen from the graph that the southern region showed the highest growth in number of households in all the income categories for the period.

153.	We only know the total number of households for all four regions combined. Nowhere have they given the region-wise break-up of this value. In the light of this, the given question cannot be answered.
154.	It is very clear from the graph that the percentage increase in total number of households for the northernr egion for upper middle income category is 200%.
155.	As seen from the table, the average income of highincome group in 1987-88 is Rs. 75,000.
156.	The total income of high income category in 1987-88 is Rs. (5000 × 75000). The total income of upper-middle class category in 1987-88 is Rs. (10000 × 50000). Hence, the current ratio of their total incomes = 3 : 4 = 0.75 Since the number of households in each category were equally distributed in all regions, we can have the following table for high income category.

Region	Households in 1987-88	Percentage increase	Households in 1994-95
North	1250	240%	4250
South	1250	425%	6562.5
East	1250	175%	3437.5
West	1250	150%	3125
Total	5000		17375

The average household income for high-income category increased by 90%. Hence, average household income for this category in 1994-95 = (75000 × 1.9) = Rs. 1,42,500
Hence, the total income for high-income category in 1994-95 = (17375 × 142500) = Rs. 2,476 million
The same table can be drawn for upper-middle class category as follows:

Region	Households in 1987-88	Percentage increase	Households in 1994-95
North	2500	200%	7500
South	2500	340%	11000
East	2500	125%	5625
West	2500	140%	6000
Total	10000		30125

The average household income for upper-middle class category increased by 60%. Hence, the average household income for this category in 1994-95 = (50000 ×1.6) = Rs. 80,000
Hence, the total income for high-income category in 1994-95 = (30125 × 80000) = Rs. 2,410 million
Hence, the ratio of total income for these two

categories in 1994-95 $= \dfrac{2476}{2410} = 1.02$

Hence, percentage increase in ratio

$= \dfrac{(1.02 - 0.75)}{0.75} = 36\%$

157.	For northern region, we can draw the following table for 1987-88.

Category	Households in 1987-88	Average household income	Total income (Rs. in millions)
Middle income	10000	Rs. 30,000	300
Upper-middle	2500	Rs. 50,000	125
High income	1250	Rs. 75,000	93.75
Total	13750		518.75

Hence, the average income for northern region

$= \dfrac{518.75}{13750} \times 10^6 =$ Rs. 37,727

158.	It is said that Gopal and Ram invested equal amounts initially. Let the amount paid by both of them to Krishna be 2x and 3x respectively. Gopal further invested Rs. 2 lakh. Hence, we can say (2x + 2) = 3x or x = 2 lakh. Hence, the initial amounts paid by Gopal and Ram to Krishna is 4 lakh and 6 lakh. So Gopal and Ram together put in (6 + 6) = 12 lakh initially (note that this includes Rs. 2 lakh put in by Gopal later). The total revenue generated is 25% of 12 lakh = 3 lakh. The revenue from coconut and lemon trees are in the ratio 3 : 2. Hence, 3 lakh when divided in the ratio 3 : 2 gives Rs. 1,80,000 from coconut and Rs. 1,20,000 from lemons. And since each coconut costs Rs. 5, the total output of coconut would be $\left(\dfrac{180000}{5}\right) = 36000$
159.	Lemon and coconut trees were planted on equal areas of land, viz. 5 acres each. The value of lemon output per acre of land $\left(\dfrac{120000}{5}\right) = 0.24$ lakh per.
160.	The total revenue of Rs. 3,00,000 was divided equally by Gopal and Ram. Hence, the amount received by Gopal in 1997 = 1/2 × 300000 = Rs. 1.5 lakh
161.	The ratio of the number of trees of coconut and lemon was 5 : 1. Since the number of lemon trees is 100, the number of coconut trees is 500. So they totally obtained a revenue of Rs. 1,80,000 from 500 coconut trees. Hence, the value per tree $= \left(\dfrac{180000}{500}\right) = 360$
162.	We have not been given the cost of one lemon. In the light of this fact, we cannot find the number of lemons produced and hence the required ratio cannot be determined.
163.	Profit = Revenue – Variable Cost – Fixed Cost = Revenue – (Variable Cost + Fixed Cost). If we consider (Fixed Cost + Variable cost) as total cost, then as long as the revenue is higher than the total cost, there is a profit. In case the revenue is less than the total cost there would be a loss. If we are to compile the data given in the question it would be as follows:

Production	Fixed cost (Rs.)	Variable cost (Rs.)	Total cost (Rs.)	Revenue (Rs.)	Profit /loss (Rs.)
9	70	126	196	180	−16
10	70	140	210	200	−10
12	70	168	238	240	+2
20	70	280	350	400	+50
30	70	420	490	600	+110
40	100	560	660	800	+140
50	100	700	800	1,000	+200

Thus, we can say that at a production of 12 units, there is a profit of Rs. 2. Above 12 units there is always a profit and below 12 units there is loss. Hence, to make sure there is no loss, one has to manufacture a minimum of 12 units.

The answer is clearly not indeterminable, it should be 12 units, but among the options given the one closest to it is 10 units.

164. It can be seen that at 20 units there is a profit of Rs. 50. Below this the profit will reduce. Hence, to ensure that the profit is at least Rs. 50, then 20 units have to be manufactured.

165. Let us verify for the given options.

Production	Fixed cost (Rs.)	Variable cost (Rs.)	Total cost (Rs.)	Revenue (Rs.)	Profit/loss (Rs.)	Profit/unit (Rs.)
25	70	350	420	500	+80	3.20
34	70	476	546	680	+134	3.94
35	100	490	590	700	+110	3.14
40	100	560	660	800	+140	3.50

Hence, we can see that to maximise profit per unit, we need to manufacture 34 units.

166. Extending the above table for 45 units, we get

Production	Fixed cost (Rs.)	Variable cost (Rs.)	Total cost (Rs.)	Revenue (Rs.)	Profit/loss (Rs.)	Profit/unit (Rs.)
45	100	630	730	900	+170	3.77

Thus, it can be figured out that still he has to manufacture 34 units.

167. Referring to the table in question 163, we can see that if the fixed cost increases by Rs. 40, the profit will reduce by Rs. 40. Hence, we can see that at 10 units he will make a loss of Rs. 30 and at 20 units he will make a profit of Rs. 10. Hence, the answer has to be between (b) and (c). Let us verify for them:

Production	Fixed cost (Rs.)	Variable cost (Rs.)	Total cost (Rs.)	Revenue (Rs.)	Profit/loss (Rs.)
15	110	210	320	300	−20
19	110	266	376	380	+4

Thus, we see that to make sure there is no loss, he has to manufacture 19 units.

168. The data can be represented in the following table.

	Plywood		Saw timber		Logs	
	Price	% increase	Price	% increase	Price	% increase
87	3	−	10	−	15	−
88	3	−	10	−	16	6.67%
89	4	33.33%	12	20%	18	12.5%
90	5	25%	10	−	15	−
91	4	−	13	30%	18	20%
92	6	50%	15	15.38%	19	5.55%
93	7	16.66%	19	27%	20	5.26%

Thus, we can see that the maximum increase is 50%

169.

	Price in 1987	Price in 1993	Percentage increase
Plywood	3	7	133.33%
Saw timber	10	19	90%
Logs	15	20	33.33%

Thus, we see that the maximum percentage increase over the period is shown by plywood.

170. Since the price of saw timber is given in rupees per tonne and that of log is given in rupees per cubic metre, we cannot compare the two. Hence, using the given conversion, let us convert the price of saw timber in per cubic metre. The table will be as follows:

(Note: 1 tonne = 4/3 = 1.33 cubic m)

Year	Saw timber (Price in Rs./tonnes)	Saw timber (Price in Rs./cubic metres)	Logs price in (Rs./cubic metres)	Difference in price
1989	12	9	18	9
1990	10	7.50	15	7.50
1991	13	9.75	18	8.25
1992	15	11.25	19	7.75

Thus, we see that the difference is least in the year 1990.

171. As in the previous table, we can draw a similar table for saw timber and logs.

(**Note**: One tonne of plywood = $\dfrac{10}{7}$ cubic m = 1.43 cubic m and one tonne of saw timber = $\dfrac{5}{4}$ cubic m = 1.25 cubic m.

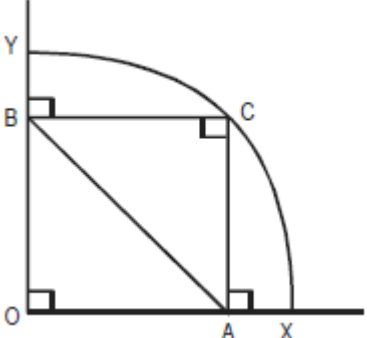| Year	Saw timber (Price in Rs./ tonnes)	Saw timber (Price in Rs./cubic metres)	Plywood (Price in Rs./ tonnes)	Plywood	Difference in price
1989	12	9.60	4	2.80	6.80
1990	10	8.00	5	3.50	4.50
1991	13	10.40	4	2.80	7.60
1992	15	12.00	6	4.20	7.80

Hence, it can be seen that the difference is maximum for 1992.

| 172. | Note that one tonne = $\dfrac{4}{3}$ m³ = 1.33 m3, for both plywood and saw timber.

In 1993, price of logs = Rs. 20 per cubic metre.

Price of plywood = $\left(\dfrac{7}{1.33}\right)$ = Rs. 5.26 per cubic metre.

And price of saw timber = $\left(\dfrac{19}{1.33}\right)$ =14.28 per cubic metre.

Now the sales volume of plywood, saw timber and logs are in the ratio 4 : 3 : 3. So the average realization per cubic metre of sales is indeed the weighted average.
This is given as
$$\frac{\left[\left(4\div5.26\right)+\left(3\times14.28\right)+\left(3\times20\right)\right]}{\left(4+3+3\right)}$$
= Rs. 12.4
= Rs. 13 (Approximately) |

| 173. | The only change would be the accounting for price increase. This is given as
$$\frac{\left(4\times5.26\times1.05\right)+\left(3\times14.28\times1.01\right)+\left(3\times20\times1.10\right)}{\left(4+3+3\right)}$$
= Rs. 13.15 |

| 174. | Do not make the mistake of assuming O to be the centre of the circle. Since the centre is not known, knowing radius is not of great help. It can be observed that ∠BCA is also 90°, as in the quadrilateral OBCA, the remaining three angles are 90°.
So the quadrilateral can either be a square or a rectangle. As we do not know even this, we cannot make use of the second statement as well. Hence, both |

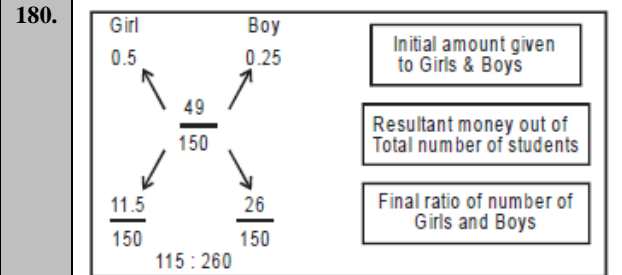the statements are not sufficient to answer the question.

| 175. | LCM of 3, 5, 7, 9 = 315. Hence, all the multiples of 315 will be divisible by 3, 5, 7 and 9. These may be even or odd. Hence, the first statement in itself is not sufficient to answer the question. The second statement however suggests that the number is 315 itself (as it is the only multiple that lies between 0 and 400). Hence, n is indeed odd. We require both the statements together to answer this. |

| 176. | It is clear that statement II alone is needed to answer the question. This statement gives the value of the function a ⊗b, so we can find the value of 2⊗3.
So 2 ⊗ 3 = $\dfrac{\left(2+3\right)}{2}$ = 2.5 |

| 177. | Even by using both the statements, we can only find out the proportion of the paper solved by Radha and Rani. In the light of the fact that the number of questions solved by either or both of them is not given, we cannot answer the question asked. |

| 178. | From the statement II, we can frame the equation that: (Cold drink) = 3(Tea) and (Coffee) = (Cold drink) − 5 = 3(Tea) − 5. So we have one equation in terms of prices of tea and coffee. Although, this alone may not be sufficient to answer the question, in the light of the equation provided by the first statement, viz. (Coffee) = (Tea) + 5, we can solve the two equations simultaneously and get the price of tea. |

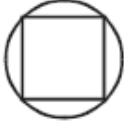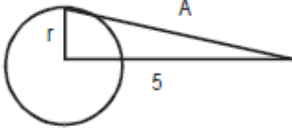| 179. | Note that both the statements give the same piece of information that a : b = 3 : 5 and that a and b are both positive. But none of the statements either in itself or together can give the value of a. |

| 180. |

Using the first statement alone, we can alligate and find the ratio of boys to girls and hence the number of girls, i.e. as shown in the adjacent diagram, 150 students when divided in the ratio 115 : 260, give 46 girls and 104 boys. The second statement, however, does not throw any further light on the data given in the question as it simply suggests 0.3B + 0.3G = 45 or B + G = 150, which is already known. Hence, only statement I is required to answer the question. |

| 181. | The issue at hand is to make C_2 identify in which envelope is the letter L_2. The first statement actually tells him this. Hence, is sufficient to answer the question. The second statement only implies that his letter would be in either E_1, E_2 or E_4 and hence is not sufficient to answer the question. |

| 182. | From the question itself, we can figure out that book 4 can either be in rack 1 or rack 3. The first statement says that book 2 has been kept in rack 3. Hence, book 4 has to be kept in rack 1. So this statement is sufficient to answer the question. The second statement, however, does not add any additional information to what we already know. As books 3 in rack 2 would still imply book 4 can be in rack 1 or 3. |

| 183. | Statement II is not required at all as no way can we express X in terms of 'a'. Statement I implies that X + Y
= 2a and XY = a². Solving these two, we can say that X = a. Hence, this statement indeed gives us the |

	answer.
184.	The information given in the question implies that $r_1 > r_2$. The first statement suggests that $(r_1 - r_2)$ $$= \frac{k}{(2\pi)}$$ The second statement implies that $(r_1^2 - r_2^2)$ $$= \frac{m}{\pi}$$ Hence, again this statement alone is not sufficient to answer the question. But in the second equation, we simplify $(r_1^2 - r_2^2)$ as $(r_1 + r_2)(r_1 - r_2)$ and then substitute the value of $(r_1 - r_2)$ from the first equation, we will get the value of $(r_1 + r_2)$. Now we have two equations in r_1 and r_2, which can be solved simultaneously to get the value of r_1. Hence, both the statements when together taken can answer the question.
185.	Statement I itself is sufficient to answer the question. As, if we know the radius of the circle we can find out the length of the diagonal of the square (which will be the diameter) and if we know the diagonal of a square we can find the length of its sides and hence the area. Again the second statement in itself can answer the question. As, from the data that is given we can find the radius of the circle and hence the area of the square (as given before). This can be explained from the diagram given. Since the tangent makes a right angle with the radius at the circumference, the triangle is a right-angled triangle. Hence, $A^2 = 5^2 + r^2$. Hence, knowing the value of A, we can find out r. Hence, both statements in itself can answer the question. Therefore, the answer is (b).