

SECTION – I
Number of Questions = 25

DIRECTIONS for questions 1 to 7: Answer the questions independently of each other.

1. If the sum of two natural numbers and their LCM is 89, then how many such pairs of numbers are possible?

(1) 7
(4) 4

(2) 6
(5) Less than 4 (3) 5

2. In an infinite geometric progression, the first term is 0.9 times the sum of the second and third terms. The sum of all the terms after the third term is 0.8 times the sum of the second and third terms. What is the common ratio of the geometric progression?

(1) $\frac{1}{2}$

(2) $\frac{2}{3}$

(3) $\frac{3}{4}$

(4) $\frac{2}{5}$

(5) $\frac{1}{3}$

3. Bob goes to a fair and buys tokens of four different denominations, i.e., Rs.3, Rs.5, Rs.7 and Rs.15. In how many ways can he exchange exactly eight of these tokens for Rs.85?

(1) 3
(4) 4

(2) 1
(5) None of these (3) 2

4. A function $f(x)$ is defined for a real variable x , as $f(x) = \min \{2 + 3x, 21 - 5x\}$. The maximum possible value of $f(x)$ is

(1) $\frac{73}{8}$
(4) $\frac{53}{9}$

(2) $\frac{19}{8}$
(5) $\frac{19}{7}$

(3) $\frac{23}{9}$

5. Find the number of ways in which 14 identical and indistinguishable balls can be divided into three groups?

(1) 17

(2) 16

(3) 18

(4) 19

(5) 20

6. In a polygon, the measure (in degrees) of each interior angle is a distinct integer. If the largest interior angle is 145° and the polygon has the maximum number of sides possible, then find its largest exterior angle.

(1) 50°
(4) 52°

(2) 47°
(5) 48°

(3) 45°

7. In the above question, what is the number of sides of the polygon?

(1) 9
(4) 8

(2) 7
(5) 11

(3) 10

DIRECTIONS for questions 8 to 11: Each question is followed by two statements A and B. Answer each question using the following instructions:

- Mark (1) if the question can be answered using statement A alone but not by using statement B alone.
- Mark (2) if the question can be answered using statement B alone but not by using statement A alone.
- Mark (3) if the question can be answered using either of the statements alone.
- Mark (4) if the question can be answered by using both the statements together but not by either of the statements alone.
- Mark (5) if the question cannot be answered even on the basis of both the statements and additional information is required.

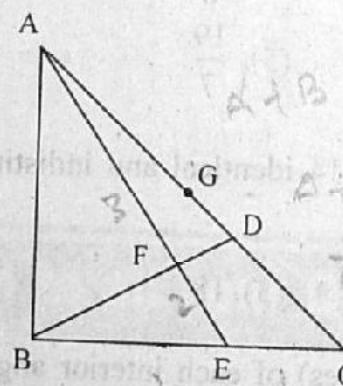
8. The sum of the first and the third digits from the left of a four-digit number equals the sum of its other two digits. Find its thousands digit.

- A. The sum of its first digit and last digit equals the sum of its other two digits. The sum of its first two digits from the left and its last two digits from the left are in the ratio 5 : 2.
- B. The sum of its first two digits from the left is 6 more than the sum of its last two digits from the left. Its first and last digits have a sum of 7.

9. The cost price and the marked price of an article are Rs.200 and Rs.300 respectively. The profit / loss percentage made in selling it was $x\%$. The discount percentage offered on it was $y\%$. Was its selling price more than Rs.250?

- A. $x \geq y$
- B. $x \leq y$

10.



In the above figure, not drawn to scale, $AF : FE = 3 : 2$ and $BE : EC = 2 : 1$. Find $\angle BAC$.

- A. $AB = BC = \sqrt{2} DC$
- B. G, the circumcentre of triangle ABC, which is isosceles, lies on AC.

11. A, B and C are natural numbers. Find B.

- A. $A^2 + B^3 = 793$
- B. $B^3 + 17 = C^2$

DIRECTIONS for questions 12 to 18: Answer the questions independently of each other.

12. In a certain institute, out of every seven students taking Accountancy, three take Economics as well. For every student taking at least one of these two courses, there are three students who take up neither. If 10% of the students take only Accountancy, the percentage of students who take only Economics is

- (1) $17\frac{1}{2}\%$
(4) $21\frac{1}{2}\%$

- (2) $23\frac{1}{3}\%$
(5) Cannot be determined
(3) $7\frac{1}{2}\%$

13. A buys a plot and sells it to B. After a month, B sells it to C. Had A bought the plot for 10% less and sold it to B for 10% more, he would have doubled his profit percentage. Had B bought the plot from A at $\frac{1}{11}$ th less and sold it to C at $\frac{1}{13}$ th more, his profit percentage would be 2.2 times what it actually was. If A had sold his plot directly to C, at the price that C had paid to B, what would have been A's profit percentage?

- (1) $51\frac{10}{11}\%$
(4) $52\frac{1}{11}\%$

- (2) $51\frac{73}{77}\%$
(5) $55\frac{1}{5}\%$

- (3) $52\frac{4}{77}\%$

14. A group of 24 workers, comprising 8 men, 8 women and 8 boys is assigned a piece of work. No two workers in the group have the same capacity to work. Each day, a sub group of workers, comprising 1 man, 1 woman and 1 boy, work together. No sub group with the same composition works for more than a day. In this manner, it takes a total of 512 days for the work to be completed. If all the 24 workers work together for one day, what part of the entire work will be completed?

- (1) $1/8^{\text{th}}$
(4) $1/64^{\text{th}}$

- (2) $1/16^{\text{th}}$
(5) Cannot be determined
(3) $1/32^{\text{nd}}$

15. If the square of $(121)_n$ is $(14641)_n$, how many values can n assume from among the first 50 natural numbers?

- (1) 40

- (2) 41

- (3) 42

- (4) 43

- (5) 44

16. How many integers satisfy the inequality $\frac{(x+3)^3(x-1)(x+9)^5}{(x-5)^7} \leq 0$?

- (1) 10
(4) More than 12

- (2) 12
(5) Infinite

- (3) 11

17. A certain relay race is conducted, where each team comprises exactly two runners. A and B are two runners of one of the teams participating in the relay race. The total length of the laps they have to run is 140 m and the total time they take is 20 seconds. If it turns out that their average speed for the entire race equals the average of their individual speeds, which of the following statements is false? (In a relay race, each team member runs only a certain portion of the total length of the race, such that together all the team members cover the entire length of the race.)

- (1) If A's speed is 6 m/s, B's speed is 8 m/s.
(2) If B takes 12 seconds for his lap, A takes 8 seconds for his lap.
(3) If B's speed is 7 m/s, A's speed is 7 m/s.
(4) If A's speed is less than 6 m/s, B runs for more than 12 seconds.
(5) None of the above

18. If $A_1 = \{3\}$, $A_2 = \{5, 7, 9\}$, $A_3 = \{11, 13, 15, 17, 19\}$, $A_4 = \{21, 23, 25, 27, 29, 31, 33\}$ and so on, what is the average of the numbers of the set A_{20} ? (25)

- (1) 761 (2) 763 (3) 765 (4) 767 (5) 771

DIRECTIONS for questions 19 to 21: Answer the questions on the basis of the information given below.

Each of three friends A, B and C, runs his own individual business. The business run by A is independent of those run by B and C and it always yields an annual profit of 0.46%. However, the businesses run by B and C are mutually competitive, such that, if the business run by B yields a gain, then it is a 6% gain and the business run by C incurs a loss of 3%. Otherwise, if the business run by B incurs a loss, then it is a 5% loss and the business run by C gains 4%.

Now Mr. D, a common friend of A, B and C, is planning to invest some amount of money in the businesses run by his friends.

19. Find the maximum guaranteed overall profit of D.

- (1) 0.48% (2) 0.47% (3) 0.49% (4) 0.56% (5) 0.50%

20. Which of the following statements is true, given that D has invested Rs.220 with C and also realized the maximum overall profit?

- (1) D invested Rs.140 with B and nothing with A.
(2) D invested Rs.140 with B and Rs.70 with A.
(3) D invested Rs.220 each with A and B.
(4) D invested Rs.140 with A and nothing with B.
(5) D invested nothing with A and B.

21. What percent of his total investment must D invest with A to get maximum overall profit.

- (1) 30% (2) 32% (3) 28%
(4) 40% (5) None of these

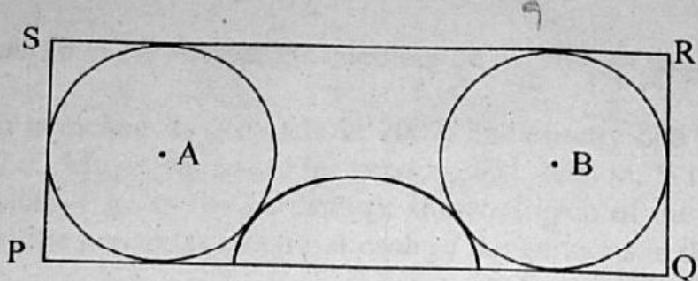
DIRECTIONS for questions 22 to 25: Answer the questions independently of each other.

22. Find the value of $\left[5^{\frac{x}{10}} - \left(\sqrt{\frac{x}{5}} \right)^5 \right] \times \left[5^{\frac{x}{10}} + \left(\sqrt{\frac{x}{5}} \right)^5 \right]$, if it is given that $5^x + x^5 = 6250$.

- (1) 0 (2) 1 (3) 2 (4) 5 (5) 4

23. In the rectangle PQRS given below, two identical circles are drawn with their centres at A and B, and each circle being tangential to both the lengths and exactly one of the breadths. Now, a semicircle is drawn as shown, with its diameter along the length PQ and the arc of the semicircle touching both the circles. If the radius of the semicircle equals the distance between the two circles, what is the ratio of the length and the breadth of the rectangle? (The distance between two

circles is defined as the shortest possible distance between any two points, taken one on each circle.)



- (1) 7 : 3
(4) 17 : 7

- (2) 8 : 3

- (5) Cannot be determined

16/1 16/2/1
17 3k
8. 10/1 21

24. All the natural numbers from 1 to 100 are written adjacent to each other in a single row. Now, this is considered as a single number, N, with 192 digits. N is then broken into two parts, each part being considered to be a new number, by placing a single partition between any two consecutive digits of N and the two numbers so obtained are added to form a new number, N_1 . Now, N_1 is broken into two parts in a manner similar to that followed above for N and the two numbers thus arrived at are again added to form another new number, N_2 . This process is continued to arrive at N_3, N_4, \dots and so on, till we finally get a single digit number N_m . What is the value of N_m ?

- (1) 5
(2) 3
(3) 1
(4) 9

- (5) Depends on the actual order of partitioning the original number N.

25. The average age of a family of seven members, including Bunti and Babli, aged 70 years and 63 years respectively, on January 1st 1986 was 33 years. N years later, Bunti died on his birthday and Mona was born on the same day. A few years after that, Babli died on her birthday and Rohan was born on the same day. N more years after that, on January 1st 2007, Raj was born. What was the average age of the family of eight members on January 1st 2008?

- (1) 28 years
(2) 32 years
(3) 33 years
(4) 29 years

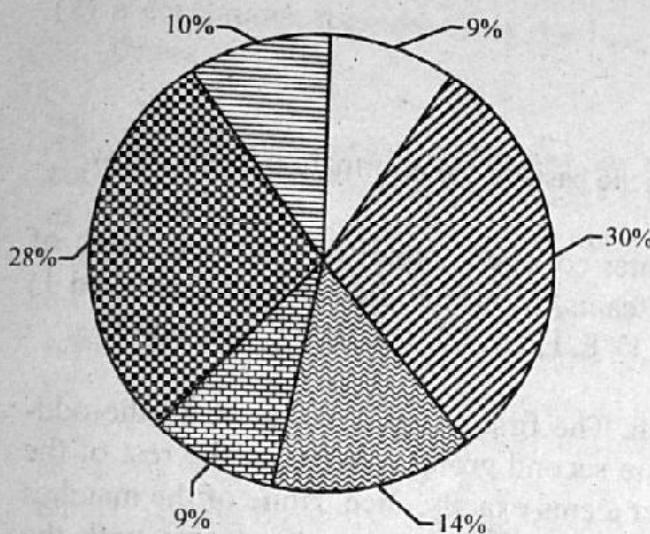
- (5) Depends on the years of death of Bunti and Babli.

SECTION - II

DIRECTIONS for questions 26 to 29: Answer the questions on the basis of the information given below.

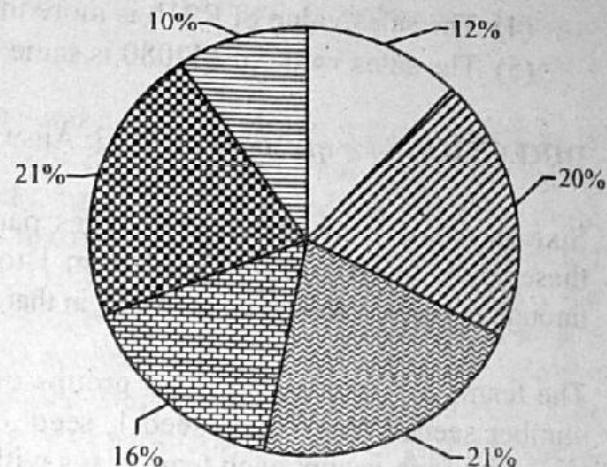
India mobiles Ltd., which launched its products in 2007, has exactly one model of mobile phone in each of the six versions, i.e., Music version, Flip version, FM version, WLAN version, Cam version and Colour version. Pie chart-1 gives the percentage share of each of the versions in the total sales value and Pie chart-2 gives the percentage share of each of the versions in the total sales volume.

Pie Chart - 1



- Colour Version Music Version
 Flip Version FM Version
 WLAN Version Cam Version

Pie Chart - 2



- Colour Version Music Version
 - Flip Version FM Version
 - WLAN Version Cam Version

The models of mobile phones in these six versions are A912i, K52, R31b, M2080, V2n and Z620, not necessarily in that order.

It is also known that:

- (i) The selling price of R31b is twice of that of M2080.
 - (ii) The selling price of V2n and that of Z620 are in the ratio 2 : 3.
 - (iii) The selling price of K52 is more than that of M2080.

26. If the selling price of Z620 is 25% less than that of K52, what is the ratio of the selling price of M2080 to that of A912i?

27. If the selling price of V2n is Rs.1200 more than that of K52, what is the selling price (in Rs.) of A912i?

28. If the sales value is the highest for R31b with its selling price as Rs.18000, what is the difference between the selling prices of K52 and Z6202?

29. Which of the following statements is definitely true?

- (1) The sales value of M2080 is the highest.
 - (2) The sales value of V2n is more than that of R31b.
 - (3) The sales value of Z620 is the least.
 - (4) The sales value of R31b is more than that of K52.
 - (5) The sales value of M2080 is same as that of R31b.

DIRECTIONS for questions 30 to 33: Answer the questions on the basis of the information given below.

Sixteen teams from different colleges participated in an inter-college football competition. Each of these teams has a different seed from 1 to 16. The sixteen teams, from the highest seed (i.e., seed 1) through the lowest seed (i.e., seed 16), in that order, are A, B, C, D, E, F, G, H, I, J, K, L, M, N, O and P.

The teams are divided into two groups of eight teams each. The first group consists of all the odd-number seeded teams (i.e., seed 1, seed 3, seed 5...) and the second group consists of the rest of the teams. In each group, each team plays with each of the other teams exactly once. None of the matches in the tournament ended in a draw. From each group, the top two teams (i.e., the teams with the highest number of wins) advance into the semi-finals. If more than one team has the same number of wins, the team with the better goal difference is placed higher. Assume that no two teams end up with the same goal difference.

In the semi-finals, the top team from each group plays against the team which is placed second from the other group. The winners of the semi-finals play the finals and the winner of the finals is said to have won the tournament.

An upset is said to be caused whenever a lower seeded team beats a higher seeded team.

30. If team J won the tournament and the total number of *upsets* in the tournament is the least possible, then what is the maximum possible number of wins of team J?

31. If the number of *upsets* in the matches involving any team is at most three, which is the lowest seeded team that could have won the tournament?

32. If more than half of the number of matches in the tournament ended up as *upsets*, which is the highest seeded team that could have won the tournament?

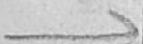
33. If team I and team M played the finals, then what is the least possible number of *upsets* in the tournament?

DIRECTIONS for questions 34 to 38: Answer the questions on the basis of the information given below.

In a class of ten students, all the students, namely A, B, C, D, E, F, G, H, I and J, attended six comprehensive tests, CT1, CT2, CT3, CT4, CT5 and CT6, conducted in that order chronologically. Once the results of all the six tests were out, the class teacher wanted to know how each of the students fared and also the variation in the marks of each student from test to test. It was observed that for each of the ten students, except one, the variation in the marks was in one of the following three patterns:

- (1) a continuous increase from the first test (i.e., CT1) to the last test (i.e., CT6).
- (2) a continuous decrease from the first test to the last test.
- (3) a continuous increase from the first test to the fourth test (i.e., CT4) and a continuous decrease thereafter.

The class teacher wanted to display the results at the office and asked his absent minded assistant to copy the marks from the actual marks list and display the copied list. The assistant copied the marks of one student at a time. For each student, he first selected a pair of CTs, copied the marks of those two CTs, then selected another pair of CTs and copied the marks of those two CTs and then selected the third pair of CTs and copied the marks of those two CTs. While selecting the pairs of CTs, the assistant did not follow any particular pattern. Once copying the marks of the first student in all the six CTs was completed, he started copying the marks of the second, third, fourth and so on upto the tenth student in the same manner that he followed for the first student. However, the pairs of CTs selected while copying the marks of any two students were not necessarily the same. Unfortunately, while copying the marks, the assistant got a bit confused and for some of the students he interchanged the values copied for some of the pairs, i.e., by copying the marks of the student in one of the CTs of that pair with the marks of the student in the other CT of that pair. For each student, he had done this mistake for one, two or possibly all three pairs of tests. He had not done any other type of mistake in the entire process and the final table obtained by him is given below.



Student	Marks in					
	CT1	CT2	CT3	CT4	CT5	CT6
A	68	96	84	76	74	70
B	58	70	76	84	52	48
C	76	62	64	70	60	54
D	84	94	88	90	86	96
E	80	79	81	73	82	83
F	75	78	82	67	72	62
G	87	98	92	91	89	83
H	77	69	75	61	90	65
I	87	91	93	77	71	63
J	76	85	73	61	67	93

34. The marks of which of the following students did not follow any of the given three patterns?

- (1) C
- (2) F
- (3) G
- (4) H
- (5) J

35. At least how many students had a continuous increase in marks from the first test to the last test?

- (1) 0
- (2) 1
- (3) 2
- (4) 3
- (5) 4

36. At most how many students had a continuous decrease in marks from the first test to the last test?

- (1) 2 (2) 3 (3) 4 (4) 5 (5) 6

37. What is the minimum possible difference in the marks scored by D in CT1 and in CT6?

- (1) 6 (2) 8 (3) 10 (4) 12 (5) 14

38. In which of the following tests did F score his maximum marks?

- (1) CT1 (2) CT2 (3) CT3 (4) CT4 (5) CT5

DIRECTIONS for questions 39 to 42: Each question is followed by two statements, A and B. Answer each question using the following instructions:

- Mark (1) if the question can be answered using statement A alone but not by using statement B alone.
Mark (2) if the question can be answered using statement B alone but not by using statement A alone.
Mark (3) if the question can be answered using either of the statements alone.
Mark (4) if the question can be answered by using both the statements together but not by either of the statements alone.
Mark (5) if the question cannot be answered even on the basis of both the statements and additional information is required.

39. A team of three members is to be selected from five members – A, B, C, D and E. If A is not selected, then B must be selected. Is B selected into the team? (D/B)

- A. At most one of C and D can be selected.
B. If E is selected, then A must be selected but neither of C and D can be selected.

40. Mr.Dhanlal has to divide his four-acre field, which is in the shape of a square, among his four sons – A, B, C and D. What part of the field did D get? (D)

- A. The part of the field that each of the four sons got is in the shape of a square.
B. B got $\frac{1}{4}$ th of what D got, which, in turn, is $\frac{1}{5}$ th of what A and C together got.

41. Three boys – X, Y and Z – have a total of 18 chocolates, of which some are ‘Dairy Milks’ and the remaining are ‘Kit Kats’. Each boy has a distinct (at least one) number of ‘Kit Kats’ and a distinct (at least one) number of ‘Dairy Milks’. Each boy has more ‘Kit Kats’ than ‘Dairy Milks’. What is the number of chocolates of each type with Z?

- A. The number of ‘Dairy Milks’ with X is less than that with each of Y and Z but the total number of chocolates with X is more than that with Z.
B. The total number of ‘Dairy Milks’ with the three of them is 6 and Z has 3 ‘Kit Kats’.

42. In an island, there live three types of tribes – Truth-Tellers, who always tell the truth, Liars, who always lie and Alternators, who always tell a truth and a lie, alternately, in any order. A, B and C are three persons who belong to that island. If A says “B and C belong to different tribes. I am an Alternator”, to which tribe does C belong? A/C/N 1 17
5 20

- A. B says “Both A and C are Truth-Tellers. I am not a Truth-Teller”.
B. C says “A is not a Truth-Teller. I am not a Liar”.

DIRECTIONS for questions 43 to 46: Answer the questions on the basis of the information given below.

A total of 5000 applicants, from three different backgrounds – B.Tech, B.Com and B.Sc – applied for jobs in a certain software company. In the table given below, for the applicants from each background, the number of applicants who are experienced and the number of applicants having different types of certifications are given as a percentage of the total number of applicants from that background.

Background	Experienced	dot NET certification holders	Java certification holders	Neither dot NET nor Java certification holders.
B.Tech.	40%		60%	40%
B.Com.	30%	60%		20%
B.Sc.	10% + %	40%		10%
Total	44%	52%		20%

For example, according to the table above, 40% of the applicants from B.Tech background are experienced, while 60% of the applicants from B.Tech background hold a Java certification.

It was observed that some of the applicants with experience did not have any certification, but all those without any experience (i.e., freshers) had either a dot NET or a Java certification or both. Further, 20% of the total applicants are from B.Tech. background. The total number of applicants who have both a dot NET and a Java certification is 1400, of which 200 are from B.Com background.

43. What percentage of the total applicants hold a Java certification?

44. How many Java certification holders are from B.Com. background?

45. How many applicants from B.Sc. background are experienced?

46. What percentage of the applicants from B.Tech background are experienced dot NET certification holders?

DIRECTIONS for questions 47 to 50: Answer the questions on the basis of the information given below.

Eight students – A, B, C, D, E, F, G and H – took a test comprising three sections – QA, DI and VA. The test had four sets of papers – 111, 222, 333 and 444. The following table gives the maximum marks for which each set was conducted.

Maximum marks in each test area

Set	Test Area		
	QA	DI	VA
111	90	100	80
222	100	100	90
333	90	90	90
444	100	80	100

The following table gives the set which each student got, the marks scored by him and his percentile score.

Student	Set	QA		DI		VA		Overall	
		Marks	Percentile score	Marks	Percentile score	Marks	Percentile score	Marks	Percentile score
A	111	70		70			98.5	200	
B	222		97	80	99		97		
C	444	85			97	75			99
D	222	70	98	60			98.7	200	
E	333	65			98	64	95		
F	111		99	60	94	70	99		
G	333		97.5	60		80			98
H	444	80	98.8	70			96		

The following definitions hold for each of the sections and the overall test.

Percentage score of a student in a section/overall test

$$= \frac{\text{marks obtained by the student in that section/overall test}}{\text{maximum marks in that section/overall test}} \times 100$$

Percentile score of a student in a section/overall test

$$= \frac{\text{Number of persons who got a percentage score less than the student in that section/overall test}}{\text{Total number of students who took the test}} \times 100$$

The total number of students who took the test is 10,000.

47. At least how many students got an overall percentile score more than that of D?

- (1) 2 (2) 3 (3) 4 (4) 5 (5) 6

48. Which among the following cannot be the overall percentile score of F?

- (1) 97.5 (2) 98.5 (3) 99.5
 (4) More than one of the three (5) None of the three

Q. 10. Among the following cannot have the highest overall percentage, from among the given options?

(A) C
(B) B

(C) E
(D) None of these

(E) F

Q. 11. Which of the following can be the overall percentage score of E?

(A) 65
(B) 60

(C) 70
(D) None of these

(E) 75

Q. 12. ?

SECTION – III
Number of Questions = 25

DIRECTIONS for questions 51 to 53: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

A grey weekday morning at 7.40 am in Edmonton bus station in north London, and it's teeming with school children. As the bus arrives, a crowd surge forward to squeeze their way on. People get knocked over. The children, screaming and pushing, panic. Small ones, horrified by the melee, hold back. The ones with the sharpest elbows make it. The rest have to go through the ordeal again with the next bus and the next – and get bad marks for being late when, battle-scarred, they finally make it into school. When I recounted this incident to my 12-year-old, hardened by 18 months of secondary school travel, she smiled at my naivety. Being pushed, sworn at and squeezed on to overcrowded trains and buses is already routine to her.

Treat people like animals and, chances are, they will end up behaving like them. Every morning, these kids are getting a crash-course in how aggressive self-assertion is your passport in life. I worry – and I am not alone. One-third of respondents told the British Crime Survey, published last week, that they were worried about antisocial behaviour. Crime may be falling, but something more intangible and just as important is moving centre stage; a pervasive anxiety about a deterioration in the everyday interactions between strangers. Typically, the aggression erupts when someone gets in someone else's way. It's a pathology of individual entitlement. What's crumbling is the civility that is so essential to wellbeing, to trust and to the conviviality of our lives. We have failed to invest the resources, both material and cultural, in the places where we interact with strangers. Antisocial teenagers are simply playing out their own version of the aggression and indifference that has been meted out to them.

Take a big jump and switch from the shared physical spaces of streets to a very different shared public space – the internet – and a related phenomenon is being played out. Aggression, abuse and contempt are now the normal currency of debate among strangers on blogs. Last week two prominent columnists, David Aaronovitch and Linda Grant, added their bewilderment to the growing chorus of those arguing that public debate on the internet is being strangled at birth by the quantity of personal abuse and bullying. The response from bloggers was fascinating. One argued that "the internet is good therapy. People can use it to voice their opinions, anger, fears and worries in anonymity, instead of penting it up [sic] leading to violence or suicides", while another argued that blogging is an "internal monologue .. spilling over into the public domain". Several contributors to the voluminous debate Grant's column spawned on Comment Is Free online admitted revulsion and shock. One asked: "Is human nature as awful as this?"

The thinker who predicted all of this with remarkable prescience was Richard Sennett in his book 'The Fall of Public Man', published 34 years ago. He argued that the distinction between the public and private realms was being eroded as we elevated the self-absorption and narcissism of "knowing oneself" into an end rather than a means by which to know the world. The public sphere – where we encounter strangers – becomes a canvas on which we play out our own emotional preoccupations and neuroses. Sennett sharply warned us that "because every self is, in some measure, a cabinet of horrors, civilized relations between selves can only proceed to the extent that nasty little secrets of desire, greed or envy are kept locked up".

What makes Sennett so pertinent is that this concept of privacy, of concealing thoughts, is exactly what is under assault. In some vain search for authenticity and honesty, all those horrors in the cabinet are now hawked around the blogging sites. Debate has become so gladiatorial that it generates its own mechanisms of exclusion; anyone who doesn't want verbal fisticuffs withdraws. Some participants, intoxicated by absurd interpretations of freedom of speech and individual entitlement, suggest people should be able to say whatever happens to pop into their heads, that there should be no space for reflection before speech. Martin Amis gave some intellectual credibility to this notion last autumn in the controversy over his remarks about Muslims, saying that he couldn't edit his thoughts. Yet deciding which thought to give voice to is precisely what all of us do all the time – and so it should be. What relationship, either public or private, could ever be sustained on any other principle?

A century of psychoanalysis and its derivatives and misapplications has legitimized parading our cabinets of horrors. Sennett describes this as having been a "trap rather than a liberation". The self-referential frame by which all is measured is "what does this person, that event mean to me?", he argues. That prompts frustration and disillusionment and a retreat into our private worlds as we disengage even further from the brutal bear pit that so many aspects of our public life have become. The danger is that we withdraw into bunkers of the like-minded, vacating the territory of solidarity and common purpose. That's a brutally bleak picture, and that is exactly what the children in Edmonton bus station were being taught last week.

51. Why does the author begin by narrating an incident?

- (1) To show that children learn aggressive and selfish behaviour by experiencing them routinely
- (2) To show that children get acclimatized to aggressive behaviour quickly, as evidenced by the author's child *by lack of response*
- (3) To show that children have to learn to face the realities of the world
- (4) To show that children do not just live but thrive in challenging environments
- (5) To demonstrate the nasty experience that one can have in England

52. Sennet is of the opinion that our often lopsided view of self is a result of:

- (1) the steady erosion of our privacy.
- (2) our recognition that our personal lives are actually 'cabinets of horrors'.
- (3) our withdrawal from debates when they get too contentious.
- (4) our erroneous use of the understanding gained from the investigation of unconscious mental processes.
- (5) our increasing propensity to say the first things that pop into our minds.

53. These are in keeping with Sennett's views.

- (A) Airing our private thoughts in public spaces would be our undoing.
- (B) Self-knowledge is merely a means to know the world around us.
- (C) We should keep our baser instincts locked up within us.
- (D) We can maintain relationships with others only by reflecting before we speak.
- (E) People should be able to state their inner-most thoughts openly.

- (1) A and B
- (2) D and E
- (3) B, C and D
- (4) A, B and C
- (5) All the above

DIRECTIONS for questions 54 to 56: In each question, there are four sentences. Each sentence has pairs of words/phrases that are italicized and highlighted. From the italicized and highlighted word(s)/phrase(s), select the **most appropriate** word(s)/phrase(s) to form correct sentences. Then, from the options given, choose the best one.

54. A. It is his intention to *emigrate* [A]/*immigrate* [B] to Australia as he admires the Australian way of life.
B. His novel is *complete* [A]/*replete* [B] with humour that would make a sailor blush.
C. We need more *barefoot* [A]/*barefooted* [B] counsellors to help the rural poor with their emotional difficulties.
D. He *lay* [A]/*laid* [B] emphasis on the fact that a great start in one's career does not necessarily *auger* [A]/*augur* [B] well for harmony in one's domestic situation

(1) BBAAB
(4) ABAAB

(2) ABABB
(5) ABBBB

(3) BBABB

55. A. This town is a *harbour* [A]/*port* [B] of *historical* [A]/*historic* [B] importance since, for centuries, it was the focal point of maritime interaction between India and Ceylon.
B. The judge had expected that the *jurists* [A]/*jurors* [B] would take time to arrive at a verdict, but that was not the case.
C. The acquittal was clearly the result of the brilliant closing argument presented by the *attorney* [A]/*solicitor* [B] for the accused.
D. While the doctor has not seen the laboratory reports, his *diagnosis* [A]/*prognosis* [B] is that this patient will need life-long medical care.

(1) AABAB
(4) BABAB

(2) ABBAAB
(5) BBAAB

(3) ABBAB

56. A. Cellphones, being *mobile* [A]/*moveable* [B], are so convenient that we *sympathise* [A]/*empathise* [B] with anyone who does not use them.
B. Though he works as a money-changer, he cannot readily identify the *money* [A]/*monies* [B] that he handles at work.
C. With inflation reaching unprecedented levels, the common man *comprehends* [A]/*apprehends* [B] that he may not be able to make both ends meet.
D. You need various types of flowers to *compose* [A]/*comprise* [B] an attractive arrangement.

(1) AAABA
(4) BAABB

(2) ABABA
(5) BAABA

(3) BABBA

DIRECTIONS for questions 57 to 59: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

Anybody who dabbles in transatlantic affairs has come across one giant stereotype: Americans admire risk-takers, whereas Europeans (at least in the rich, stable parts of the continent) are instinctively risk-averse, expecting the state to shield them from all sorts of dangers, including their own folly. Move a bit farther east to the excommunist world, especially Russia, and you enter a place where things seem to have gone from one extreme to another: from an all-demanding, all-protective state to a free-for-all where life is full of deadly dangers, about which even the prudent can't do very much. By comparison with most other parts of the world, and with any other era of human history, the United States and western Europe are converging in their attitudes to danger. Most kinds of risk have been successfully removed from everyday life.

What Americans and Europeans alike are now attempting to do is squeeze out the last few drops of risk, with results that are often counter-productive, because risk is simply transferred from one place to another. That is true in an obvious sense when, for example, companies dump toxic waste or use risky technologies in countries whose regulation is relatively lax. But there are also more subtle ways in which efforts to eliminate risk can simply move the danger along. Some good instances come from behavior on the roads, where people may act more recklessly as safety measures (their own and other people's) make them bolder. In one experiment, British psychologist, Ian Walker of Bath University, simply got on his bicycle and monitored the behaviour of 2,300 vehicles that overtook him. When he wore a helmet, drivers were much more likely to zoom past him with little room to spare; when he was bare-headed (and indeed when he wore a female wig) the amount of space that motorists left would increase. An experiment in Munich found that the drivers of taxicabs fitted with anti-lock braking systems were involved in no fewer accidents than those without. That is because the former used those superior brakes not to practice prudence but to drive more aggressively.

Such unintended effects are not confined to Europe. John Adams, a transport expert at University College London, has compiled data from all over the world to show that laws making drivers wear seatbelts do not make roads safer; they move deaths from inside cars to outside them because they encourage bad driving. The number of young children killed on the roads has fallen in recent years, he notes – but mainly because they are rarely allowed out alone, so today's teenagers have less skill at navigating hazardous roads; and as a result, the number of teenagers killed in car accidents has jumped. He lauds the Dutch experiment in "naked streets" where most road signs and markings were removed to force travellers to keep their wits about them.

Where America and Europe may differ is in the main cause of their risk-reducing zeal. America's proverbially litigious culture makes all players in the public arena, be they government agencies, companies or schools, intensely keen to delimit their responsibilities, and within those limits to minimize the risk of liability. To many Europeans, an "ambulance-chasing" legal environment, which sees every mishap as an opportunity for a lawsuit, is an unwelcome pathology that has spread in their direction from the United States. But Europe has pathologies of its own, especially that of the over-ambitious bureaucracy, such as the European Union agencies that regulate food and the environment. In the wider fringes of the EU, there are citizens who understandably trust the Brussels mandarins to monitor their beaches and air more fairly than their own country's bureaucrats ever would. So regulatory zeal becomes a source of legitimacy for EU institutions that badly need it.

Missionary zeal is not peculiar to Brussels. All bureaucracies are keen to survive and, if possible, grow. For survival, it is useful to estimate the level of the risks they are supposed to manage at close to, but not quite, zero. Higher and the institution may be regarded as failing; lower and it may be regarded as unnecessary. And growth can be achieved by bringing more risks within their ambit. Britain's Food Standards Agency, for example, has decided to target not only the traditional problems of contamination by microbes or poisons, but what it calls the "downstream risks" of food: what people choose to eat. The agency is now introducing a food-labelling scheme with what its chairman, Dame Deirdre Hutton, says is the "absolutely intended consequence of getting manufacturers to change their products". This reflects a mentality that refuses to see the overweights as fallible gluttons: now they are victims facing a risk which the government has a solemn duty to abate.

57. In the author's view, Britain's Food Standards Agency has decided to tackle the "downstream risks" of food because

- (1) bureaucracies view the handling of potential hazard as a way of sustaining themselves.
- (2) they see the responsibility of the government to reduce the risks that people face.
- (3) they wanted to check food contamination by microbes or poisons. ✗
- (4) more people in Britain are becoming gluttonous. ✗
- (5) food which is labelled can make food choices easier and less risky. ✗

58. The writer says that the attempt at elimination of risk can be counter-productive because

- (1) risk cannot be eliminated completely.
- (2) companies dump wastes in countries where rules are lax.
- (3) the people and places under threat are merely changed.
- (4) safety measures, instead of protecting the individual tempt him to take risks.
- (5) risk can be understood only if one is exposed to danger.

59. The 'unwelcome pathology' spreading to Europe from America is

- (1) America's risk-taking culture.
- (2) a culture that prompts people to seek legal redress for injury.
- (3) the sadistic mentality of the Americans.
- (4) the viewing of every adversity as an opportunity. cause
- (5) government agencies trying to reduce their liabilities.

DIRECTIONS for questions 60 to 62: In each question, there are five sentences/paragraphs. The sentence/paragraph labelled A is in its correct place. The four that follow are labelled B, C, D and E and need to be arranged in the logical order to form a coherent paragraph or passage. From the given options, choose the most appropriate option.

- 60.** (A) Ever since its origin in antiquity, philosophy has meant enquiry. Its central concern is enquiry into the two most fundamental questions facing humankind: what is the nature of the world, and which of the things that exist and happen in it really matter?
- (B) From this, one can see that philosophy does indeed progress. In classical antiquity itself, it was a giant step forward to begin thinking systematically about the organization of society and forms of political authority and to examine the assumptions of ideas about moral conduct.
- (C) Each question comprises sub-questions. The first asks what exists, what it consists of and how we can know either accurately. The second asks what is valuable, ethically and aesthetically, and how we decide. All the law and prophets – to coin a phrase – is summed up here.
- (D) The philosophical quest was all but suspended in Europe for more than a thousand years of religious hegemony over thought. It revived in the Renaissance, one of whose corollaries, the Reformation, broke the hold of ecclesiastical authority over what would count as permissible enquiry.
- (E) In the process, the ancient philosophers articulated the first canons of logic and theories of knowledge, and advanced the first tentative scientific theories about the structure and properties of matter, the nature of the universe and human psychology, as well as the first rational critiques of superstition.

- (1) CDBE
- (2) CBDE
- (3) CDEB
- (4) CEDB
- (5) CBED

- 61.** (A) A clinical trial has found that honey is more effective at soothing a sore throat than a common active ingredient in children's cough medicine is.
- (B) Honey has been used for centuries to relieve a tickly throat. Scientists now believe that it may be effective because it has constituents that kill microbes and acts as an antioxidant.
- (C) The study compared buckwheat honey with dextromethorphan, an ingredient in a range of branded medicines. Dextromethorphan is a common active ingredient in children's over-the-counter cough medicine. The scientists found that honey was more effective than dextromethorphan at relieving the severity, frequency and bothersome nature of cough.

- (D) The scientists said that, while having access to safe and effective paediatric remedies is essential, those on the U.K. market have demonstrated their efficacy through decades of use and their acceptance by the Medicines and Healthcare Products Regulatory Agency, meaning that parents can continue to rely on these over-the-counter cough and cold remedies.
- (E) This means that it might prevent damage inside cells from chemical byproducts of their activity.

(1) BECD (2) CEBD (3) BCDE (4) CBED (5) CEDB

- 62.** (A) Black holes are one of only a fairly small number of cases in the history of science in which a theory was developed in great detail as a mathematical model before there was any evidence, from observations, that it was correct.
- (B) In 1963, however, Marten Schmidt, an astronomer, measured the red shift of a faint star like object in the direction of the source of radio waves called 3C273. He found that it was too large to be caused by a gravitational field. This suggested that the red shift was instead caused by the expansion of the universe, which, in turn, meant that the object was a very long distance away.
- (C) A number of other, similar “quasi-stellar objects”, or quasars, have been discovered, all with large red shifts. But they are all too far away and therefore too difficult to observe to provide conclusive evidence of black holes.
- (D) To be visible at such a great distance, the object must be very bright, must, in other words, be emitting a huge amount of energy. The only mechanism that people could think of as being able to produce such large quantities of energy seemed to be the gravitational collapse not just of a star but of a whole central region of a galaxy.
- (E) Indeed, this seems to be the main argument of opponents of black holes: how could one believe in objects for which the only evidence was calculations based on the dubious theory of general relativity?

(1) EBDC (2) ECBD (3) CEBD (4) CEDB (5) BDCE

DIRECTIONS for questions 63 to 65: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

The discipline of history is generally not considered to be a science, but something closer to the humanities. At best, history is classified among the social sciences, of which it rates as the least scientific. While the field of government is often termed “political science” and the Nobel prize in economics refers to “economic science,” history departments rarely if ever label themselves “department of historical science”. Most historians do not think of themselves as scientists and receive little training in acknowledged sciences and their methodologies. The sense that history is nothing more than a mass of details is captured in numerous aphorisms: “History is just one damn fact after another,” “History is more or less bunk,” “There is no law of history any more than of a kaleidoscope,” and so on.

One cannot deny that it is more difficult to extract general principles from studying history than from studying planetary orbits. However, the difficulties seem to me not fatal. Similar ones apply to other historical subjects whose place among the natural sciences is nevertheless secure, including astronomy, climatology, ecology, evolutionary biology, geology, and paleontology. People’s image of science is unfortunately often based on physics and a few other fields with similar methodologies. Scientists in those fields tend to be ignorantly disdainful of fields to which those methodologies are inappropriate and which must therefore seek other methodologies – such as my own research areas of ecology and evolutionary biology. But recall that the word “science” means “knowledge” (From the

Latin scire, “to know,” and *scientia*, “knowledge”), to be obtained by whatever methods are most appropriate to the particular field. Hence I have much empathy with students of human history for the difficulties they face.

Historical sciences in the broad sense (including astronomy and the like) share many features that set them apart from non historical sciences such as physics, chemistry, and molecular biology. In physics the chief method for gaining knowledge is the laboratory experiment, by which one manipulates the parameter whose effect is in question, executes parallel control experiments with that parameter held constant, holds other parameters constant throughout, replicates both the experimental manipulation and the control experiment, and obtains quantitative data. But laboratory experimentation can obviously play little or no role in many of the historical sciences.

Historical sciences are concerned with chains of proximate and ultimate causes. In most of physics and chemistry the concepts of “ultimate cause,” “purpose”, and “function” are meaningless, yet they are essential to understanding living systems in general and human activities in particular. For instance, an evolutionary biologist studying Arctic hares whose fur colour turns from brown in summer to white in winter is not satisfied with identifying the mundane proximate causes of fur color in terms of the fur pigments’ molecular structures and biosynthetic pathways. The more important questions involve function (camouflage against predators?) and ultimate cause (natural selection starting with an ancestral hare population with seasonally unchanging fur colour?). Similarly, a European historian is not satisfied with describing the condition of Europe in both 1815 and 1918 as having just achieved peace after a costly pan-European war. Understanding the contrasting chains of events leading up to the two peace treaties is essential to understanding why an even more costly pan-European war broke out again within a few decades of 1918 but not of 1815. But chemists do not assign a purpose or function to a collision of two gas molecules, nor do they seek an ultimate cause for the collision.

Still another difference between historical and nonhistorical sciences involves prediction. In chemistry and physics the acid test of one’s understanding of a system is whether one can successfully predict its future behavior. The properties of historical systems that complicate attempts at prediction can be described in several alternative ways. One can point out that human societies and dinosaurs are extremely complex, being characterized by an enormous number of independent variables that feed back on each other. As a result, small changes at a lower level of organization can lead to emergent changes at a higher level.

Each glacier, nebula, hurricane, human society, and biological species, and even each individual and cell of a sexually reproducing species, is unique, because it is influenced by so many variables and made up of so many variable parts. In contrast, for any of the physicist’s elementary particles and isotopes and of the chemist’s molecules, all individuals of the entity are identical to each other. Hence physicists and chemists can formulate universal deterministic laws at the macroscopic level, but biologists and historians can formulate only statistical trends. With a very high probability of being correct, I can predict that, of the next 1,000 babies born at the University of California Medical Center, where I work, not fewer than 480 or more than 520 will be boys. But I had no means of knowing in advance that my own two children would be boys. Similarly, historians note that tribal societies may have been more likely to develop into chiefdoms if the local population was sufficiently large and dense and if there was potential for surplus food production than if that was not the case. But each such local population has its own unique features, with the result that chiefdoms did emerge in the highlands of Mexico, Guatemala, Peru, and Madagascar, but not in those of New Guinea or Guadalcanal.

63. 'Historians can formulate only statistical trends,' because

- (1) what happens in a set of circumstances changes from time.
- (2) it is made up of many changeable factors each of which is unusual.
- (3) the methodologies in the subject have not developed sufficiently to predict outcomes at macroscopic levels.
- (4) factors lying outside their domain can affect their field.
- (5) a large portion of their predictions is based on guess work.

64. Sciences like physics and chemistry do not have this feature of historical sciences:

- (1) Use of methods like real-life experimentation, observation of nature.
- (2) A stake in the ultimate consequences of the method they employ.
- (3) A responsibility to the society in which they live and which they seek to affect by their actions.
- (4) An interest in the basic reasons underlying observable changes.
- (5) Explanations derived from self-evident propositions or from observed facts.

65. 'However, the difficulties seem to me not fatal' – the author says so because

- (1) there are other procedures different from those applied in popular sciences that can be applied to history.
- (2) there are other historical sciences which find a place among natural sciences.
- (3) the word science actually means knowledge in its Latin origin.
- (4) he empathises with the difficulties faced by students of human history.
- (5) there is no need for a general principle that applies to studies of history.

DIRECTIONS for questions 66 to 68: In each question, there are five sentences or parts of sentences that form a paragraph. Identify the sentence(s) or part(s) of sentence(s) that is/are correct in terms of grammar and usage. Then, choose the **most appropriate** option.

66. A. The moon ever a companion to me in prison

- B. has grown more friendly with closer acquaintance,
- C. reminder of the loveliness of this world,
- D. of the waxing and waning of life, of light following darkness,
- E. death and resurrection following each other in interminable succession.

- (1) C and D
(4) A and E

- (2) A, C and E
(5) B and D

- (3) A, B and D

67. A. We have been exclusive people, proud of our past

- B. and of our heritage and trying to build walls and barriers to preserve it.
- C. Yet inspite of our race-consciousness and the growing rigidity in caste,
- D. we have, like others who take such pride in the purity of their racial stock,
- E. developed into a strange mixture of races.

- (1) C, D and E
(4) C and D

- (2) B and E
(5) D and E

- (3) A, B and C

DIRECTIONS for questions 69 to 71: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

Proponents of the ecological orientation take the position that behavior is determined by the interaction of individual and environmental characteristics. Although all major approaches to understanding human behavior used to design treatment approaches for school-aged children cite internal and external forces as operating together to produce behavior, they differ significantly in emphasis. For example, both psychodynamic and biophysical models are concerned, for the most part, with the definition and understanding of internal forces. Although classical psychodynamic approaches have lost some popularity as bases for interventions, biophysical strategies are used frequently with students. Psychodynamic theorists focus primarily on needs and drives and on the investigation of patterns of behavior that occur at various stages of development. Biophysical theorists, on the other hand, emphasize physiological or temperamental conditions that may lead to certain typical behavior patterns. Biophysical approaches include psychotropic medication administered to students to modify their behavior. Both these approaches may be termed medical model to illustrate their emphasis on internal, individual characteristics as most important in understanding a student's behavior.

Behavioral and sociological models are concerned mainly with response patterns and the reinforcing and punishing conditions in the environment that produce particular sequences of behaviors. This functional analysis of behavior is a commonly used approach to planning interventions for students. Sociologists, on the other hand, are more concerned with the broader environment including institutions, communities, culture, and society in their efforts to understand conditions that produce individual and group behavior. Although this perspective is cited frequently, for example when we note a child's poverty and neighborhood as risk factors for behavioral deviance, few school-based interventions have emerged from this model.

In contrast to these other approaches, ecological theory maintains an equal emphasis of concern for internal and external forces when attempting to understand human behavior and making plans to facilitate change. Ecologists assume there is a unique pattern of explanatory forces for each student and agree that behavior is a product of the interaction between internal forces and environmental circumstances. Thus, ecologists examine ecosystems rather than individuals. Ecosystems are composed of all the interacting systems of living things and their nonliving surroundings. Ecosystems have histories and internal development that make each unique and constantly changing. When a student is successful in a particular situation, ecologists see the ecosystem as congruent or balanced. On the other hand, when such congruence does not exist, the student is likely to be considered deviant (i.e., out of harmony with social norms) or incompetent (i.e., unable to perform to a certain criterion in the unchanged setting). When this is the case, ecologists say the system is not balanced and that particular elements are in conflict with one another. Such conflicts are termed points of discordance; that is, specific places where there is a failure to match between the child and the ecosystem. The student might receive assistance from one system to succeed in another or may find that activities in one interfere with competence in the other. Relationships drawn between a student and his or her important systems create an ecomap that can guide critical aspects of intervention planning. This technique bears some resemblance to the genogram approach advocated by McGoldrick and Gerson but focuses beyond the biological family into other life spaces of the child.

The breadth of ecological theory may lead some to believe that all interventions are ecological, thus confusing ecology with eclecticism. Although almost every known psychological and educational intervention may be a potential tool to assist students, ecological intervention are designed and selected according to some basic assumptions. It may be helpful to remember that only three things can be changed for any student: the student, the student's environment, and important adults' perception of the student. Changing the student is the usual, but difficult, strategy chosen by most educators. Altering the student's environment is the prime target for behavioral practitioners. Finally, changing the expectations and perceptions of the students held by important adults is an adult focused perspective in serving children. With these limited targets and target combinations in mind, several assumptions guide intervention development.

69. The intervention sought to be applied in the case of a biophysical approach would involve

- (1) psycho therapy using methods such as hypnotism.
- (2) treatment involving medication to cure physiological disorders.
- (3) therapy involving medicines used to cure psychological problems.
- (4) therapy undertaken to control a deviant behavior through physical exercises.
- (5) treatment to set right the ecological imbalances, if any, around the subject.

70. What, according to the author, is the shortcoming of a sociological model?

- (1) It is concerned mainly with external forces.
- (2) It focuses on a wider environment including institutions, communities, culture and society.
- (3) It has not evolved many corrective strategies for children.
- (4) It is not a commonly used approach like a behavioral model.
- (5) It concentrates mainly on the economic condition of a child.

71. Which of the following models do not include the perception that external forces have a bearing on children's behavior?

- (1) Behavioral and Sociological models
- (2) Ecological model
- (3) Psychodynamic and Biophysical models
- (4) Bio physical models
- (5) None of the above

DIRECTIONS for questions 72 to 75: The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the one that completes the paragraph in the most appropriate way.

72. The India International Centre (IIC) in New Delhi offers a discussion forum. Its mandate is to host national and international conferences, promote free dialogue on a range of issues and organize programmes in music, film, folk and classical cultures and the arts. Its programmes, inspired by the spirit of liberal humanism, are open to the public and are completely non-commercial in orientation.

- (1) The IIC has become an architectural landmark – not because it is based on modern techniques but because it has not lost its identity as a structure of the 20th century.
- (2) This gives the IIC a broader function related to the public purpose – despite its elite character and its much-coveted membership.
- (3) The IIC must become the meeting point of various currents of intellectual, political and economic thought.

- (4) The IIC must promote understanding and amity between the different communities of the world by undertaking the study of their cultures.
- (5) The management and business representatives of the IIC, perhaps have the least to contribute to intellectual dialogue or cultural interaction.

73. To a man with a hammer, Mark Twain once said, everything looks like a nail. One hammer that has seen lots of use in recent years is the type of mathematical relationship known as a power law distribution. Such distributions have been observed in phenomena as diverse as earthquake magnitudes, the sizes of personal fortunes, and the number of visits made to websites. They have not, however, shown up in diagnostic medicine – at least, not until now.

- (1) This power-law seems truly diagnostic as it explains the difference between the healthy people and those suffering from clinical depression.
- (2) Like many mathematical functions, a power-law plots two variables against each other to form a characteristic curve on a graph.
- (3) Medical researchers say that there is a difference in the way that the healthy and the depressed spread their resting periods over the day.
- (4) We now hear that a power-law can explain the movements of people suffering from clinical depression.
- (5) A recent discovery provides another way of diagnosing major depression.

74. The poor show up the weaknesses and inconsistencies of our democratic system. Unrecognised and underrated, they furnish living proof of the general disregard for indivisible human dignity. That is the reason for the lack of interest in and consideration for the poorest segment of the population, a point noted by the special rapporteur, Leandro Despony.

- (1) Poverty aggravates discrimination since it particularly affects women, the elderly and the disabled.
- (2) Poverty and extreme poverty are not peripheral phenomena confined to the out skirts of wealthy areas; they are universal.
- (3) Indeed, poverty is increasing everywhere; increasing wealth is accompanied by increasing poverty.
- (4) The most important moral imperative is, therefore, to give serious attention to the indivisibility of human rights.
- (5) The conclusions of a study on the representation of poor people show that such representation is impossible.

75. Anthropology is no longer just the science of the long-ago and far-away. Its very perspective is uniquely valuable in investigating the nature and causes of human conflict and in devising means for its reduction. Its all-embracing character gives anthropology a strategic position for determining what factors will create a world community of distinct cultures and hold it together against disruption.

- (1) Anthropology grants the same amnesty to cultural variations that the psychoanalyst gives to incestuous wishes.
- (2) The methods of scientific analysis can be applied to human values with enormous hope of success.
- (3) As the anthropologist puzzles the cross-cultural record, he can hardly fail to be struck by the importance of the time factor.
- (4) It has methods for revealing the principles that undergrid each culture, for deciding to what extent a culture possesses people.
- (5) It cannot make its own full contribution unless public understanding and support add greatly to its resources in man power and funds.

(KEY AND SOLUTIONS FOR AIMCAT0916)

Key

1. 3	8. 3	15. 5	22. 5	29. 4	36. 4	43. 3	50. 2	57. 1	64. 4	71. 5
2. 2	9. 2	16. 3	23. 1	30. 3	37. 1	44. 1	51. 1	58. 4	65. 1	72. 2
3. 5	10. 3	17. 4	24. 3	31. 4	38. 1	45. 4	52. 4	59. 2	66. 5	73. 4
4. 1	11. 4	18. 2	25. 4	32. 1	39. 4	46. 5	53. 3	60. 5	67. 2	74. 5
5. 2	12. 3	19. 5	26. 2	33. 3	40. 3	47. 3	54. 2	61. 4	68. 4	75. 4
6. 4	13. 2	20. 1	27. 5	34. 4	41. 1	48. 1	55. 4	62. 1	69. 3	
7. 1	14. 4	21. 5	28. 2	35. 1	42. 3	49. 2	56. 5	63. 2	70. 3	

Solutions

SECTION – I

Solutions for questions 1 to 7:

1. Let the two natural numbers be xh and yh , where h is their HCF and x and y are relatively prime to each other. Given $xh + yh + hxy = 89$
 $\rightarrow h(x + y + xy) = 89$
As h and $(x + y + xy)$ are both integers, they must be factors of 89.

We have two possibilities

- i) $h = 1, x + y + xy = 89$
 $\Rightarrow (x + 1)(y + 1) = 90$
 $\therefore (x, y)$ can be $(1, 44), (2, 29), (4, 17), (5, 14)$ or $(8, 9)$
- ii) $h = 89, x + y + xy = 1$.
As $x \geq 1, y \geq 1, x + y + xy \geq 3$

Hence we have no possible values of (x, y) in this case.
 \therefore We have a total of 5 possible pairs.

Choice (3)

2. The first, second plus third, and the sum of the rest are shown below.

$$\begin{array}{cccc} 1^{\text{st}} & 2^{\text{nd}} + 3^{\text{rd}} & 4^{\text{th}} + 5^{\text{th}} + \dots \\ 0.9 & 1 & 0.8 \\ \therefore \text{Common ratio} & = \frac{2^{\text{nd}} + 3^{\text{rd}} + 4^{\text{th}} + \dots}{1^{\text{st}} + 2^{\text{nd}} + 3^{\text{rd}} + \dots} & = \frac{1+0.8}{0.9+1+0.8} = \frac{1.8}{2.7} = \frac{2}{3} \end{array}$$

Choice (2)

3. Since, all the tokens are worth an odd number of rupees, the sum of exactly 8 such tokens will always be even.
 \therefore No such way is possible.

Choice (5)

4. Given $f(x) = \min(2 + 3x, 21 - 5x)$.
 $(2 + 3x)$ is an increasing function, while $21 - 5x$ is decreasing.
 $\therefore f(x)$ will be maximum when, the two functions are equal i.e., at $x = \left(\frac{19}{8}\right)$.

$$\therefore \text{Max } [f(x)] = 21 - 5\left(\frac{19}{8}\right) = \frac{73}{8}$$

Choice (1)

5. Let us say the first group contains a balls and the remaining $14 - a$ balls are divided into two groups in b ways. We have the following values of b for various values of a

a	b
1	6
2	5
3	3
4	2

Total number of ways = $6 + 5 + 3 + 2 = 16$

Choice (2)

6. Least exterior angle = $180^\circ - 145^\circ = 35^\circ$
The interior angles of the polygon are distinct and have integral measures (in degrees)
The exterior angles are also distinct and have integral measures (in degrees). Also their sum is 360° . In order for the polygon to have the maximum number of sides, it must have the maximum number of exterior angles having consecutive integral measures (in degrees). If their measures were $35^\circ, 36^\circ, 37^\circ, \dots, 42^\circ, \dots$, the sum of their measures = $35^\circ + 36^\circ + 37^\circ + \dots + 42^\circ + \dots = 308^\circ + \dots$ sum of the angles the angles higher than 42° . $360^\circ - 308^\circ = 52^\circ$. This is achievable only if there is an angle of measure 52° .
 \therefore The exterior angles are $35^\circ, 36^\circ, 37^\circ, \dots, 42^\circ$ and 52° .

Choice (4)

7. There are nine exterior angles and hence there are nine sides.

Choice (1)

Solutions for questions 8 to 11:

8. Let the number be $abcd$
 $a + c = b + d$ i.e. ————— (1)

Using statement A,

$$a + d = b + c \quad \text{————— (2)}$$

$$(1) - (2) \Rightarrow c - d = d - c \Rightarrow c = d$$

$$(1) \Rightarrow a = b$$

$$\frac{a+b}{c+d} = \frac{5}{2} = \frac{a+a}{c+c} = \frac{5}{2}; \frac{a}{c} = \frac{5}{2}$$

Only possibility is $a = 5$ and $c = 2$

\therefore A is sufficient

Using statement B,

$$a + b = c + d + 6 \Rightarrow a - d - 6 = c - b$$

$$(1) \Rightarrow d - a = a - d - 6; a - d = 3$$

Also $a + d = 7$

$\therefore a = 5$ and $d = 2 \therefore B$ is sufficient.

Either of the statements alone is sufficient Choice (3)

9. Selling price $= 200(1 \pm \frac{x}{100}) = 300(1 - \frac{y}{100})$.

(x indicates profit and $-x$ indicates loss).

Using statement A, $x \geq y$.

If profit is made, $200(1 + \frac{x}{100}) = 300(1 - \frac{y}{100})$

i.e. $2x + 3y = 100$.

$2x + 3y \geq 2y + 3y$ i.e. $100 \geq 5y$ i.e. $y \leq 20$

In order for the selling price to be more than Rs. 250,

$300(1 - \frac{y}{100}) > 250$ i.e. $y < 16\frac{2}{3}$. But as $y \leq 20$, y may

or may not be less than $16\frac{2}{3}$ satisfied. Selling price may or may not be more than Rs. 250.

If loss is made, $200\left(1 - \frac{x}{100}\right) = 300\left(1 - \frac{y}{100}\right)$

$3y - 2x = 100$ i.e., $3y = 2x + 100$

$x \geq y \Rightarrow 3y \leq 3x$ i.e., $2x + 100 \leq 3x$ i.e., $x \geq 100$

If $x \geq 100$, selling price will be negative which is not possible. This case is ruled out. A alone is not sufficient.

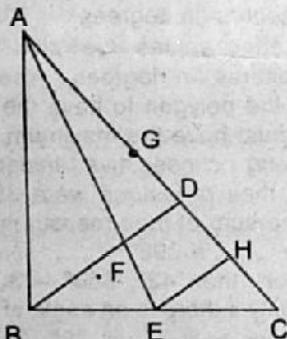
Using statement B, $x \leq y$. If profit is made

$200(1 + \frac{x}{100}) = 300(1 - \frac{y}{100})$. It can be shown as

shown in statement A that this means that $y \geq 20$. y cannot be less than $16\frac{2}{3}$. \therefore Selling price is not more

than Rs. 250. B alone is sufficient. Choice (2)

10.



Suppose H is a point on AC such that $BD \parallel EH$

Then $\frac{AF}{FE} = \frac{AD}{DH}$ and $\frac{CE}{EB} = \frac{CH}{HD}$ i.e. $\frac{AD}{DH} = \frac{3}{2}$ and $\frac{CH}{HD} = \frac{1}{2}$

Let $DH = 2x$. $AD = 3x$ and $CH = x$.

$AC = AD + DH + HC = 6x$

Using statement A, $AB = BC = \sqrt{2}(DH + HC)$

$= (3x)(\sqrt{2})$

$AB^2 + BC^2 = 2[(3x)(\sqrt{2})]^2 = AC^2$

Triangle ABC is right angled. $AB = BC$. It is isosceles

$\angle BAC = \angle BCA = \frac{180^\circ - \angle ABC}{2} = 45^\circ$

A alone is sufficient

Using statement B, G is the circumcentre of triangle ABC. As G lies on one of the sides, triangle ABC must be right angled and G must be lying on the hypotenuse. (if the circumcentre of a triangle lies on one of its sides, that triangle must be right angled and that side must be the hypotenuse). $\angle ABC = 90^\circ$

Triangle ABC is isosceles $\angle BAC = \angle BCA =$

$\frac{180^\circ - \angle ABC}{2} = 45^\circ$

B alone is sufficient

Either of the statements alone is sufficient

Choice (3)

11. Using statement A, $A^2 + B^3 = 793 = 729 + 64$ ____ (1)

If $A^2 = 729$, $B^3 = 64$. In this case, $B = 4$

If $A^2 = 64$, $B^3 = 729$. In this case, $B = 9$

A alone is not sufficient.

Using statement B, $B^3 + 17 = C^2$

Possible values of (B, C) are (4, 9), (8, 23)...

B alone is not sufficient.

Using both statements, $B^3 = 793 - A^2 = C^2 - 17$

i.e. $A^2 + C^2 = 810$ ____ (2)

(1) $\Rightarrow B^3 \leq 793$

B^3 can be 1, 8, 27, 64, 125, 216, 343, 512 or 729.

(1) $\Rightarrow A^2$ has a feasible value only when $B^3 = 64$ or 729.

If $B^3 = 64$, $A^2 = 729$.

(2) $\Rightarrow C^2 = 746$ which is not possible.

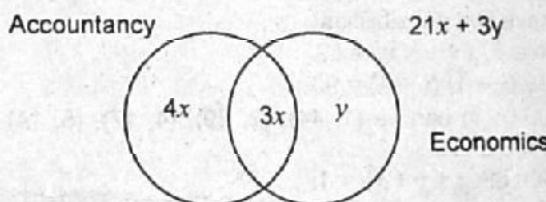
$\therefore B^3 = 64$ i.e. $B = 4$

Both statements taken together are sufficient to answer the question. Choice (4)

Solutions for questions 12 to 18:

12. Out of a total of 7 students taking Accountancy 4 take only Accountancy and 3 take Accountancy and Economics.

Let the number of students taking Economics be y .



Given that students taking none of the two courses

$= 3(7x + y) = 21x + 3y$

Since, the question is asked about percentage, let the total number of students in the institute be 100.

Given that $4x = 10\% \Rightarrow x = 2.5\%$

$\Rightarrow 4x + 3x + y + 21x + 3y = 100 \Rightarrow 28x + 4y = 100$

$\Rightarrow 28(2.5\%) + 4y = 100$

$\therefore y = 7.5\%$

Choice (3)

13. The actual and the hypothetical cost price for A and for B (which is the selling price for A) are tabulated below.

	A	B
Actual	$10x$	$10y$
Hypothetical	$9x$	$11y$

Given $2\frac{(y-x)}{x} = \frac{11y-9x}{9x}$

$\Rightarrow 18y - 18x = 11y - 9x \Rightarrow 7y = 9x \Rightarrow \frac{x}{y} = \frac{7}{9}$

The actual and hypothetical cost price for B and for C (which is the selling price for B) are tabulated below

	B	C
Actual	$11p$	$13q$
Hypothetical	$10p$	$14q$

Given $2\frac{(q-p)}{p} = \frac{14q-10p}{10p}$

$286q - 242p = 154q - 110p$

$132q = 132p$

$$\Rightarrow \frac{11p}{13q} = \frac{11}{13}$$

The ratios of the cost prices for A, B, C are tabulated below.

A	B	C
7	9	11
77	99	117

If A had sold the plot directly to C, his profit percentage would have been $\frac{117 - 77}{77} (100\%) = \frac{4000}{77} \% = 51 \frac{73}{77} \%$
Choice (2)

14. Each man, each woman and each boy works for a total of 8×8 , i.e., 64 days. Let M_i , W_i and B_i denote the work done by the i^{th} man, the i^{th} woman and i^{th} boy. Let the total work be 1 unit.

$$\sum_{i=1}^{8 \times 8} \left[\frac{1}{M_i} + \frac{1}{W_i} + \frac{1}{B_i} \right] = 1$$

$$\sum_{i=1}^{8 \times 8} \left[\frac{1}{M_i} + \frac{1}{W_i} + \frac{1}{B_i} \right] = \frac{1}{64}$$

Hence the fraction of the work completed when the entire group works together for one day = $1/64$ Choice (4)

15. Given $[(121)_{10}]^2 = (14641)_{10}$,
 $\Rightarrow (n^2 + 2n + 1)^2 = (n^4 + 4n^3 + 6n^2 + 4n + 1)$

Clearly the R.H.S. of the above equation is nothing but that the algebraic expansion of the L.H.S.

Hence any valid value for n is possible.

Given that $1 \leq n \leq 50$.

Also, we need to note that for the digit 6 to occur in the number system to the base n , n must be greater than 6.

Hence, $7 \leq n \leq 50$, i.e., exactly 44 values of n are possible.

Choice (5)

$$16. \text{Let } M = \frac{(x+3)^3 (x-1)(x+9)^5}{(x-5)^7}$$

$$= \frac{(x+3)^2 (x+9)^4}{(x-5)^6} \left[\frac{(x+3)(x-1)(x+9)}{(x-5)} \right]$$

$$\text{Let } \frac{(x+3)(x-1)(x+9)}{(x-5)} = N$$

$M \leq 0$, if $N \leq 0$

We can divide the set of real numbers into five intervals depending upon the critical points in the expressions i.e., $x = -3, 1, -9$ and 5

For $x \leq -9$, $N \geq 0$

For $-9 \leq x \leq -3$, $N \leq 0$

So, there are 7 integers in this interval where $N \leq 0$

For $-3 \leq x \leq 1$, $N \geq 0$

For $1 \leq x < 5$, $N \leq 0$ [For $x = 5$, N is not defined]

So, there are 4 integers in this interval where $N \leq 0$

For $x > 5$, $N > 0$

Hence there are a total of $7 + 4$ i.e. 11 integers for which $N \geq 0$ and hence $M \geq 0$ Choice (3)

17. The distance covered by A and B and the time that they take to cover it are tabulated below.

	A	B	Total
Distance	d_1	d_2	140 m
Time	t_1	t_2	20 sec

The average speed is 7 m/s. If it equals the average of the two speeds, either, the two speeds are equal (and equal to 7 m/s) or, the two time periods are equal. i.e. Either $\frac{d_1}{t_1} = \frac{d_2}{t_2} = 7 \text{ m/s}$ or $t_1 = t_2 = 10 \text{ seconds}$

We consider each of the choices:

- (1) If A's speed is 6 m/s, B's speed has to be 8 m/s (so that the average can be 7 m/s) - True
 - (2) If B takes 12 sec, A has to take 8 sec - True
 - (3) If B's speed is 7 m/s, A's speed has to be 7 m/s - True
 - (4) If A's speed is less than 6 m/s, (i.e. is not 7 m/s), $t_1 = t_2 = 10 \text{ sec}$, i.e. B runs for 10 sec (and not more than 12 sec) - False
- Choice (4)

18. The given sets are formed by taking 1, 3, 5, odd numbers starting from the second odd number onwards (i.e., 3 onwards), in the successive sets. So, there are $(2n - 1)$ successive odd numbers in A_n .
 \therefore Total number of odd numbers in all the sets from A_1 to A_n (both inclusive)

$$\sum_{i=1}^n (2i - 1) = 2 \sum_{i=1}^n i - \sum_{i=1}^n 1 = n(n+1) - n = n^2$$

\therefore The number of odd numbers in all the sets from A_1 to A_{20} is = 400 (starting from 3).

\therefore The 400th odd number (starting from 3) is $2(400) + 1 = 801$. This is the last number in A_{20} .

Similarly the last odd number in A_{10} is the 361st odd number starting from 3.
 $= (361) (2) + 1 = 723$

\therefore The first odd number in A_{20} is 725.

\therefore The average of the numbers of A_{20}

$$= \frac{725 + 801}{2} = 763.$$

Choice (2)

Solutions for questions 19 to 21:

19. Let us suppose that D has invested Rs.x, Rs.y and Rs.z in the business run by A, B and C respectively.

If the business run by B make a profit, then the profit (P_1) of D is given by $P_1 = 0.46\%x + 6\%y - 3\%z$

Instead if the business run by B incurs a loss, then the profit (P_2) of D is given by

$$P_2 = 0.46\%x + 4\%z - 5\%y$$

The guaranteed profit of D (P) will be the minimum of P_1 and P_2 .

$\therefore P = \min(P_1, P_2)$

Now 'P' will be maximum if $P_1 = P_2$

$$\text{i.e. } 0.46\%x + 6\%y - 3\%z = 0.46\%x + 4\%z - 5\%y$$

$$\Rightarrow 11\%y = 7\%z$$

$$\Rightarrow y : z = 7 : 11$$

Now, if entire money (say Rs.18) is invested with B and C the profit of D will be $6\%(7) - 3\%(11) = 0.09$

Hence, if D invests a total of Rs.18 with B and C he will get a maximum profit of Rs.0.09 i.e., 0.5%.

Since the profit given by A is 0.46%, any combination of investment with A, B & C will give a profit between 0.46% and 0.5%.

Hence the maximum guaranteed profit will be 0.5% if D invests his entire money with B and C. Choice (5)

20. From the previous question its clear that in order to get maximum profit, D must invest all the money with B and C in the ratio 7 : 11. Hence, only choice (1) is true.

Choice (1)

21. D should invest nothing with A.

Choice (5)

Solutions for questions 22 to 25:

22. Given that $5^r + x^5 = 6250$

A quick trial would be $x = 5$; which satisfies the equation consider

$$E = \left(5^{\frac{x}{10}} - \left(\sqrt[5]{\frac{x}{5}} \right)^5 \right) \left(5^{\frac{x}{10}} + \left(\sqrt[5]{\frac{x}{5}} \right)^5 \right)$$

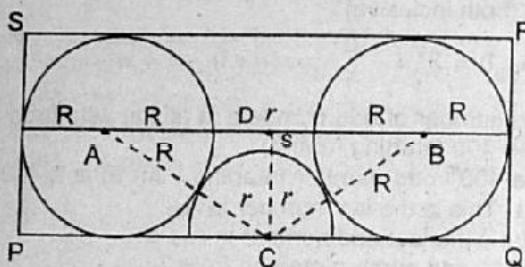
This is of the form; $(a - b)(a + b) = a^2 - b^2$
Hence,

$$E = 5^{\frac{x}{5}} - \left(\frac{x}{5} \right)^5 \quad \text{--- (1)}$$

substitute $x = 5$ in above equation, we get

$$E = 5^{\frac{5}{5}} - \left(\frac{5}{5} \right)^5 = 5^1 - 1^5 = 4. \quad \text{Choice (5)}$$

23.



Consider the figure above. A and B are the centres of the two larger circles, while C is the centre of the smaller semicircle. Let R and r be the radii of the larger circles and the smaller semicircle.

Consider right angled triangle ADC, where $\angle ADC = 90^\circ$
 $AC^2 = AD^2 + DC^2$

$$\Rightarrow (R + r)^2 = \left(R + \frac{r}{2} \right)^2 + R^2$$

$$\Rightarrow R^2 + r^2 + 2Rr = R^2 + \frac{r^2}{4} + Rr + R^2$$

$$\Rightarrow R^2 - \frac{3r^2}{4} - Rr = 0$$

$$\Rightarrow 4R^2 - 4Rr - 3r^2 = 0$$

$$\Rightarrow R = \frac{4r \pm \sqrt{16r^2 + 48r^2}}{8} \Rightarrow R = \frac{4r + 8r}{8} = \frac{3r}{2}$$

Hence, length $= PQ = 4R + r = 7r$

Breadth $= QR = 2R = 3r$

\therefore Required ratio $= 7 : 3 \quad \text{Choice (1)}$

24. A trial and error approach is the best way to tackle such a question. Let us consider the same problem for the natural numbers from 1, to say 3, and follow a certain process to arrive at N_m .

$$12|3 \rightarrow 12 + 3 = 1|5 \rightarrow 6 = N_m.$$

Hence N_m is the sum of all the digits initially written.

If we consider say

$$1|2 3 4 \rightarrow$$

$$23|5 \rightarrow 2|8 \rightarrow 1|0 \rightarrow 1 = N_m.$$

We see that N_m is the remainder when 1234 is divided by 9 (or same as the remainder when $(1 + 2 + 3 + 4)$ is divided by 9). Hence, we see that the actual order of partitioning is irrelevant here. Hence, for 12345...9899100, N_m will be the remainder of $(1 + 2 + 3 + \dots + 98 + 99 + 100)$ when divided by 9.

$$\text{Now, } \left(\frac{1+100}{2} \right) \times 100 = 101 \times 50 = 5050$$

$$\therefore R \left[\frac{5050}{9} \right] = R \left[\frac{5+0+5+0}{9} \right] = 1 \quad \text{Choice (3)}$$

25. Let the total age of the 5 members other than Bunti and Babli be T.

$$\Rightarrow \text{on January 1st 1986, } \frac{T+70+63}{7} = 33$$

$$\Rightarrow T = 231 - 133 = 98$$

N years later, Bunti died, but Mona was born, i.e., the number of members remained 7.

After a few more years, (say x) Babli died and Rohan was born, i.e., the number of member remained 7. Another N years later (i.e., January 1st 2007) Raj was born. Now the total age, on 1st January 2008, of the five members of the family, other than Bunti, Babli, Mona, Rohan and Raj $= 98 + (22 \times 5) = 208$ years.

The age of Mona $= (x + N + 1)$ years

The age of Rohan $= (N + 1)$ years

The age of Raj $= 1$ year

But we also know that from 1st January 1986 to 1st January 2007 was a period of $(N + x + N)$ years

$$\Rightarrow (2N + x) = 21 \text{ years.}$$

\Rightarrow The total age of the family of eight members on 1st January 2008 is

$$208 + (x + N + 1) + (N + 1) + 1 \text{ years}$$

$$= 208 + (2N + x) + 3 \text{ years} = 211 + 21 = 232 \text{ years}$$

$$\therefore \frac{232}{8} = 29 \text{ years} \quad \text{Choice (4)}$$

Difficulty level wise summary- Section I

Level of Difficulty	Questions
Very Easy	-
Easy	2, 4, 12, 22
Medium	3, 5, 14, 15, 16, 23
Difficult	1, 6, 7, 8, 9, 10, 11, 13, 17, 18, 19, 20, 21, 24, 25
Very Difficult	-

SECTION – II

Solutions for questions 26 to 29:

Let the total sales value be $100x$ and sales volume be $100y$. From the given data, the selling price of different versions and the possible models are as follows.

	Music	Flip	FM	WLAN	CAM	Colour
Sales value	30%	14%	9%	28%	10%	9%
Sales value	20%	21%	16%	21%	10%	12%
Selling price	$\frac{3}{2} \left(\frac{x}{y} \right)$	$\frac{2}{3} \left(\frac{x}{y} \right)$	$\frac{9}{16} \left(\frac{x}{y} \right)$	$\frac{4}{3} \left(\frac{x}{y} \right)$	$\left(\frac{x}{y} \right)$	$\frac{3}{4} \left(\frac{x}{y} \right)$
Case (i)	Z620	M2080	A912i	R31b	V2n	K52
Case (ii)	R31b	V2n	A912i	K52	Z620	M2080

26. Case (ii) is possible. The required ratio is $\frac{3}{4} : \frac{9}{16} = 4:3$
Choice (2)

27. Case (i) is possible.

$$\frac{x}{y} - \frac{3}{4} \left(\frac{x}{y} \right) = 1200$$

$$\frac{1}{4} \left(\frac{x}{y} \right) = 1200$$

$$\left(\frac{x}{y} \right) = 4800 \Rightarrow \frac{9}{16} \left(\frac{x}{y} \right) = 2700$$

Choice (5)

28. Given,

$$\frac{3}{2} \left(\frac{x}{y} \right) = 18000 \Rightarrow \frac{x}{y} = 12000$$

$$\frac{4}{3} \left(\frac{x}{y} \right) - \frac{x}{y} = \frac{1}{3} \left(\frac{x}{y} \right) = 4000$$

Choice (2)

29. Among the given statements only (4) is true.

Choice (4)

Solutions for questions 30 to 33:

30. Consider the group, in which team J (seed 10) is included. The group consists of seeds 2, 4, 6, 8, 10, 12, 14 and 16 teams. As the tournament have to have the least number of upsets, J wins against seed 12, 14 and 16. As the upsets has to be minimum, it must be two i.e. J must beat D and F. As a result of this, D and J have 5 wins each J makes into the semis due to better goal difference. In this case J will have five wins in group and one in semis and one in finals. Choice (3)

31. Let us assume in first group, A won all of its matches and C faced three upsets, E faced 2 and G faced one upset. K caused one upset, M caused two upsets and O caused three upsets. In this each of the teams of the group except A has three wins and as any team that moves next round must be in a position to cause at least one upset, assume M reached the semis. Similarly in second group, let us assume B and N reached the semis. In semis, A faces N and B faces M as both the teams have the chance of one upset, let us assume both M and N reached finals. As there are no further chances of upsets M has to be the winner of the tournament. Choice (4)

32. Total matches in the tournament = $28 + 28 + 2 + 1 = 59$
If A wins the tournament, it wins at most 9 matches.
If all the other matches are upsets, then more than half of the matches are upsets.
 \therefore A can win the tournament under the given conditions.

Choice (1)

33. I and M can be the top two teams of their group. Assume the following case: I beats A, C [2 upsets], K, M and O. M beats A, C, E, G [4 upsets] and O and all other matches end up as upsets. Now, I and M have 5 wins each and each of the other teams has at most 5 wins.

In the other group, no match ends up in an upset.

\therefore In semi-finals I and M beats B and D causing 2 upsets and meets in final.

\therefore A total of 8 upsets. Choice (3)

Solutions for questions 34 to 38:

Of the three patterns given, let us analyse the first one. For a person having continuous increase, after the arrangement, the highest must be in CT6 and least in CT1. If the highest number is in any other position, we have to check whether it can be interchanged with the corresponding number i.e., for

example if the highest number is in the column of CT1, then the least marks must be in the column of CT6, otherwise continuous increase is not possible. If the highest is in the column of CT2, then the 2nd least must be in the column of CT6. If the highest is in the column of CT3, then the 3rd least must be in the column of CT6. Same is the case with the highest in the columns of CT4 and CT5. Similarly, if the 2nd highest is in the column of CT1, the least must be in the column of CT5. If the 2nd highest is in the column of CT2, the 2nd least must be in the column of CT5. Same is the case with other CTs. Let us check this on any two students.

B:	CT1	CT2	CT3	CT4	CT5	CT6
	58	70	76	84	52	48

B cannot have continuous increase in marks, the reason is in that case, his highest marks (i.e. 84) must be under CT6, but in such a scenario, 48 must be his marks in CT4. As 48 is least, he cannot have a continuous increase in marks.

A:	CT1	CT2	CT3	CT4	CT5	CT6
	68	96	84	76	74	70

A can have continuous increase if marks of CT4 and CT6 were interchanged and also marks of CT3 and CT5 were interchanged. Similarly we can check for continuous decrease and even the other pattern also.

34. H's marks did not follow any of the patterns.

Choice (4)

35. None of the students need not have an increase.

Choice (1)

36. B can have a decrease if (CT1 and CT4) and (CT2 and CT3) are interchanged. C had a decrease and his marks in (CT2 and CT4) are interchanged. D can have a decrease if his marks in (CT1 and CT6) and (CT3 and CT4) are interchanged. F had a decrease and his marks in (CT1 and CT3) and (CT4 and CT5) are interchanged.

I had a decrease and his marks in (CT1 and CT3) are interchanged. At most 5 persons had a decrease.

Choice (4)

37. The difference will be minimum if there is a continuous increase from CT1 to CT4 and decrease from CT4 to CT6. The least difference will be 10. i.e. 84, 86, 88, 96, 94, 90

Choice (1)

38. F scored his maximum marks in CT1. Choice (1)

Solutions for questions 39 to 42:

39. From statement A, at least one of C and D must be rejected.

At least two of A, B and E must be selected.

At least one of A and B must be selected in the team, but that can be A or B.

\therefore Statement A alone is not sufficient.

From statement B, if E is selected, then A must be selected but none of C and D is selected.

The teams can be ABE, or ACD or BCD.....

\therefore B alone is not sufficient. From A and B, as at most one of C, D and E can be selected, B must always be selected.

\therefore Statements A and B together are sufficient.

Choice (4)

40. From statement A, the only possibility is each of them must get the field with same area.

A	B
C	D

So, from statement B,

From the given relations, we can find the value of D.
B alone is sufficient.

Choice (3)

41. Consider the following table

	X	Y	Z
Kitkat	a	b	c
Dairy milk	d	e	f
Total			

Given, $a > d, b > e, c > f$

Given, $a + b + c + d + e + f = 18$

$a = 1, c = 2, d = 5$ and $f = 3$

∴ Statement A alone is sufficient

From B,

$d + e + f = 6$ and $c = 3, f = 1$ or 2

Statement B alone is not sufficient to answer the question.

Choice (1)

42. From the given statement, A cannot be a truthteller, he must be a liar or an alternator. But in any case B and C must belong to the same tribe. Using statement A alone, B cannot be a truthteller or liar.

∴ He must be an alternator and even C must be an alternator.

Using statement B alone,

C's first statement must be true. Now C must be a truth teller or alternator. But if C is an alternator, his second statement will be also true, which is a contradiction.

∴ C must be an alternator.

Either of the statements alone is sufficient.

Choice (3)

Solutions for questions 43 to 46:

Given, the proportion of B.Tech students is 20% or 0.2

∴ The proportion of B.Com and B.Sc students put together is 80% or 0.8

Let the proportion of B.Com students be k .

The proportion of B.Sc students is $(0.8 - k)$.

Solutions for questions 47 to 50:

The following table gives the percentage marks of the given scores.

Student	Set	QA			DI			VA			Overall		
		M.	PG	PL	M	PG	PL	M	PG	PL	M	PG	PL
A	1	70	77.7		70	70		60	75	98.5	200	74	
B	2			97	80	80	99			97			
C	4	85	85				97	75	75	98.5			99
D	2	70	70	98	60	60	94	70	77.7	98.7	200	69	
E	3	65	72.5				98	64	64	95			
F	1			99	60	60	94	70	87.5	99			
G	3			97.5	60	60.6		80	88.8				98
H	4	80	80	98.8	70	87.5				96			

PG – Percentage

PL – Percentile

Let us consider the last column.

The total number of students of neither dotnet nor Java certification holders (i.e. 20% of total) constitutes 40% of B.Tech, 20% of B.Com and 10% of B.Sc.
40% of B.Tech + 20% of B.Com + 10% of B.Sc = 20% of Total

$$\therefore (0.4)(0.2) + k(0.2) + (0.8 - k)0.1 = 0.2$$

$$\Rightarrow k(0.1) = 0.04 \Rightarrow k = 0.4.$$

∴ The proportion of total applicants from B.Sc. background is 0.4.

∴ We have the following values:

Background	Exp	dot NET	Java	Neither dot NET nor Java	Both dot NET and Java
B.Tech. (1000)	400	A	600	400	B
B.Com. (2000)	600	1200	C	400	200
B.Sc. (2000)	D	800	E	200	F
Total (5000)	2200	2600	G	1000	1400

$$\therefore A = 2600 - 1200 - 800 = 600.$$

$$\Rightarrow B = 600 + 600 + 400 - 1000 = 600.$$

$$C = 2000 - 1200 + 200 - 400 = 600.$$

$$G = 5000 - 2600 + 1400 - 1000 = 2800.$$

$$\therefore D = 2200 - 400 - 600 = 1200.$$

$$E = 2800 - 600 - 600 = 1600.$$

$$F = 1400 - 600 - 200 = 600.$$

$$43. \text{ Required percentage} = \frac{G}{5000} \times 100 = \frac{2800}{50} = 56\%$$

Choice (3)

$$44. C = 600.$$

Choice (1)

$$45. D = 1200.$$

Choice (4)

46. There are 600 B.Tech graduates who are freshers. Among the 600 B.Tech graduates who have dot net certification all of them also have Java certification and are freshers.

∴ There are no experienced Dot Net certification holders among B.Tech graduates.

Choice (5)

47. As D got overall percentage as 69, the number of persons who will surely get more than 69% is the required answer.
 A got more percentage than D.
 As B got 97 percentile in QA and it is the least among the given, he can get less than D.
 C got 160 marks in two sections and at least 60% in DI (97 percentile)
 \Rightarrow Total minimum score = $160 + 48 = 208$, which is more than 70%. Similarly we can find for others.
 ∴ A, C, F and H got more percentile than D.
 Choice (3)
48. The least and the highest marks of F in QA are 72 and 100.
 \Rightarrow His total marks are between 202 and 220.
 \Rightarrow His percentage is between 74.8 and 81.5
 The maximum possible score of G, who got 98 percentile is $63 + 60 + 80 = 203$ i.e., 72.5, which is less than that of F.
 ∴ F got more than 98 percentile.
 Similarly, we can find the percentage scores of C, who got 99, where F can get more than or less than that of C. Hence F can even get more than 99 percentile. But he cannot get a percentile less than 98.
 Choice (1)
49. From the above solutions, A, C, F and H got more percentile than D.
 As A got 74 percentile, he cannot be the topper.
 Hence one of C, F and H could be the toppers. E cannot be the topper.
 Choice (2)
50. Total score of E = $65 + (60\% \text{ to } 80\%) \text{ of } 90 + 64 = 183$ to 201. \Rightarrow His percentage score is between 67.77 and 74.44.
 Choice (2)

Difficulty level wise summary- Section II	
Level of Difficulty	Questions
Very Easy	-
Easy	-
Medium	26, 27, 28, 29, 32, 38, 39, 40 43, 44, 45, 46, 47, 48, 50
Difficult	30, 31, 33, 35, 36, 37, 41, 42
Very Difficult	34, 49

SECTION – III

Solutions for questions 51 to 53:

Number of words and Explanatory notes for RC:

Passage: No. of words – 858

51. Choice 1 is the answer as the passage bears out. The idea is also summed up in the first sentence of para 2.
 Choice (1)
52. The first few lines of the last para clearly indicate Sennett's view that our emphasis on (and 'misapplications' of) psychoanalysis causes us to consider self to be the only thing that matters.
 Choice (4)
53. Statement A is not Sennett's opinion as he does not say it would be our undoing. Statement E contradicts Sennett's views. B, C and D are his views (refer to the last 2 paras).
 Choice (3)

Solutions for questions 54 to 56:

54. 'Emigrate' is to leave a place to settle elsewhere, whereas 'immigrate' is to come in from a foreign country. His intention is 'to go' – hence 'emigrate' – A. 'Complete means having all parts, 'replete' means be full of. The novel is 'full of' or 'replete with' humour – B. 'Barefoot' and 'barefooted' both have the same meaning (without anything on the feet) in the literal sense. But metaphorically 'barefoot' means with the basic or minimum requirements, which is the meaning intended here – A. The past tense 'laid' (to impose especially as a duty) is appropriate here – B. 'Augur' is the meaning intended here – B. 'Auger' is a tool for boring. Hence ABABB.

Choice (2)

55. A town can be a 'port' but not a 'harbour' – though the two words are used interchangeably, one meaning of port is 'a town with a harbour'. You cannot say a town is a harbour – it has a harbour. Hence B. 'Historical' is an adjective meaning of or relating to history. 'Historic' means famous or important in history. Since importance is used, it can only be historical – A. 'Juror' is a member of a jury. 'Jurist' means an expert in law. The context clearly points to jurors – B. An 'attorney' is a lawyer appointed to act for another in legal matters. A 'solicitor' is a member of the legal profession qualified to advise in legal matters such as drawing a will. In the context of the accused, attorney is right – A. A 'diagnosis' is identification of the disease based on symptoms, reports etc. A 'prognosis' is a prediction. Since the sentence says the reports are yet to come, prognosis is the right word here – B. Hence BABAB. Choice (4)

56. The cell phone is not 'mobile' (able to move), it is 'moveable' (what can be moved) – B. 'Sympathy' is being sorry for some body while 'empathy' is to understand the feelings of another. Here sympathise is the right word – A. The plural for money, when referring to currency, is 'monies' (Money being uncountable is generally used in singular but here it refers to the different currencies) – A. 'Comprehend' is to understand, 'apprehend' is to fear. Here the latter makes sense – B. 'Compose' is to write, make or form. 'Comprise' is what something is made up of. Compose is right here – A. Hence BAABA. Choice (5)

Solutions for questions 57 to 59:

Number of words and Explanatory notes for RC:

Passage: No. of words – 788

57. Refer to the last para – Britain's Food Standard Agency is cited as an example for the tendency of bureaucracies to perpetuate themselves and if possible grow. So they bring more risks within their ambit.
 Choice (1)
58. Refer to para 2, end and para 3. Choice (4)
59. The litigious culture of America makes people delimit their responsibility. This is the 'unwelcome pathology' referred to in para 9.
 Choice (2)

Solutions for questions 60 to 62:

60. C has to follow A because it explains the two questions mentioned in A. 'From this....' in B refers to the way the sub-questions function, hence it should follow C, which, in turn, is followed by E because E explains how this

systematic thinking contributed to the formulation of logic in the ancient world. As D gives scope for another idea, it should come at the end. Hence, the logical order is CBED.

Choice (5)

61. Since 'the study...' in C refers to 'a clinical trial....' in A, C should follow A. As B provides a reason, i.e. honey has been used... to believe that honey can cure cough, it should follow C. 'This means...' in E refers to the fact that honey 'has constituents that kill...' in B, hence BE form a pair. As D presents a suggestion, it should conclude the para. Thus, the correct order is CBED.

Choice (4)

62. 'This....' in E refers to the fact that a theory regarding black holes...developed....before there was any evidence from observation.' in A, therefore it should follow A. 'However....' in B follows E adding what might be additional evidence. 'To....visible at such a great distance....' in D refers to the object at a long distance in B, hence BD form a pair. They are followed by C, which confirms what is said in earlier statements. Thus, the right order is EBDC.

Choice (1)

Solutions for questions 63 to 65:

Number of words and Explanatory notes for RC:

Passage: No. of words – 891

63. Refer to the last para where the words in quote appear. The first half of the para supports choice 2, especially the first sentence where the words 'unique' and 'variable parts' are significant.

Choice (2)

64. Refer to para 4 which says physics and chemistry are not interested in ultimate cause, purpose and function.

Choice (4)

65. The words occur at the beginning of para 2 and are justified in the lines that follow. There are methods for history even if they are different, and they do not impede understanding (which is what the author means by 'fatal')

Choice (1)

Solutions for questions 66 to 68:

66. Statement A has an error – 'ever a companion to me in prison' is a parenthetical expression and has to be preceded and followed by a comma. Statement C should begin with the indefinite article 'a' – a reminder. Statement E should begin with 'of' since all the preceding phrases have begun with 'of'. B and D are correct.

Choice (5)

67. Statement A should have the article 'an' before 'exclusive' people. In statement C the preposition should be 'of caste' not 'in caste'. Statement D has 'there' instead of 'their'. Statements B and E are correct.

Choice (2)

68. Statement A has the wrong preposition – the speech is delivered 'to' Pretoria's Indians not 'for'. Statement C has the idiom wrong – it should be 'to find his tongue' not speech. Statement D has the wrong conjunction – it should be 'and' not 'but' as no contrast is present. Statements B and E are correct.

Choice (4)

Solutions for questions 69 to 71:

Number of words and Explanatory notes for RC:

Passage: No. of words – 675

69. 'Biophysical approaches ----- modify their behavior' (para 1, end). Choice (3)
70. 'Few school-based interventions have emerged from this model' (para 2, end). This shows that (3) is the correct choice. Choice (3)
71. In the first paragraph, it is mentioned that though the emphasis may be different, all the models focus on the internal and external forces, so (5) is the correct choice.

Choice (5)

Solutions for questions 72 to 75:

72. The first option talks about the architectural aspect of the buildings and this is not referred to in the passage. Hence it is not appropriate. In the 2nd option the words 'a broader function related to the public purpose' connects it to 'non-commercial' in the last sentence in the passage. Option 3 and 4 speak of the various functions the IIC must perform and this does not connect directly with the passage though it has a remote bearing. The fifth option is irrelevant. Choice (2)
73. The passage speaks of power-law distribution and its usefulness in various fields. It also mentions that it has not so far been used in the field of medicine. Option 1 and 2 state how power-law distribution works in medical diagnosis. Option 3 talks of medical research findings but it does not directly link with the last sentence of the passage. Option 4 provides this link by the words 'we now hear'. Option 5 does not refer to the power-law at all.

Choice (4)

74. Options 1, 2 and 3 speak of poverty existing among the weaker sections of society and in peripheral areas: in fact everywhere. These lines do not conclude the passage-well. In option 5 the words 'such representation' connects with the penultimate sentence of the passage (a rapporteur is one who is given the task of presenting a particular report) and hence is the most appropriate. Though option 4 also seems appropriate the word 'therefore' refers to a further point, not mentioned in the passage. Hence it is not suitable.

Choice (5)

75. The passage speaks of anthropology as a science which can unravel factors that unite people to create a world community of distinct cultures. This idea finds further expression in the fourth option which speaks of methods for deciding the extent of a culture that possesses people. The word 'undergrid' corresponds to 'hold it together' in the penultimate sentence.

Choice (4)

Difficulty level wise summary- Section III	
Level of Difficulty	Questions
Very Easy	-
Easy	61, 73
Medium	52, 58, 59, 63, 65, 66, 67, 69
Difficult	70, 72
Difficult	51, 53, 54, 55, 57, 60, 62, 64
Difficult	68, 74
Very Difficult	56, 71, 75