Question Paper with Solutions

CAT 2007

CAT 2007 Actual Paper

Instructions:

1. The Test Paper contains 75 questions. The duration of the test is 150 minutes.
2. The paper is divided into three sections. Section-I: 25 Q:, Section-II: 25 Q:, Section-III: 25 Q.
3. Wrong answers carry negative marks. There is only one correct answer for each question.

Section – I

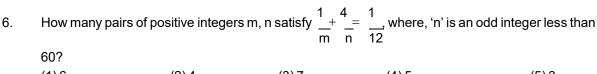1. Consider the set S = {2, 3, 4, ……, 2n + 1}, where 'n' is a positive integer larger than 2007. Define X as the average of the odd integers in S and Y as the average of the even integers in S. What is the value of X – Y?

   (1) 0   (2) 1   (3) $\dfrac{1}{2}n$ (4) $\dfrac{n+1}{2n}$ (5) 2008

2. Ten years ago, the ages of the members of a joint family of eight people added up to 231 years. Three years later, one member died at the age of 60 years and a child was born during the same year. After another three years, one more member died, again at 60, and a child was born during the same year. The current average age of this eight-member joint family is nearest to

   (1) 23 years   (2) 22 years   (3) 21 years   (4) 25 years   (5) 24 years

3. A function $f(x)$ satisfies $f(1) = 3600$ and $f(1) + f(2) + ... + f(n) = n^2 f(n)$, for all positive integers n > 1. What is the value of $f(9)$?

   (1) 80   (2) 240   (3) 200   (4) 100   (5) 120

4. Suppose you have a currency, named Miso, in three denominations: 1 Miso, 10 Misos and 50 Misos. In how many ways can you pay a bill of 107 Misos?

   (1) 17   (2) 16   (3) 18   (4) 15   (5) 19

5. A confused bank teller transposed the rupees and paise when he cashed a cheque for Shailaja. giving her rupees instead of paise and paise instead of rupees. After buying a toffee for 50 paise, Shailaja noticed that she was left with exactly three times as much as the amount on the cheque. Which of the following is a valid statement about the cheque amount?

   (1) Over Rupees 13 but less than Rupees 14
   (2) Over Rupees 7 but less than Rupees 8
   (3) Over Rupees 22 but less than Rupees 23
   (4) Over Rupees 18 but less than Rupees 19
   (5) Over Rupees 4 but less than Rupees 5

6. How many pairs of positive integers m, n satisfy $\frac{1}{m} + \frac{4}{n} = \frac{1}{12}$, where, 'n' is an odd integer less than 60?

(1) 6　　　　　　　(2) 4　　　　　　　(3) 7　　　　　　　(4) 5　　　　　　　(5) 3

Directions for Questions 7 to 10: Each question is followed by two statements A and B. Indicate your response based on the following directives.

Mark (1) if the questions can be answered using A alone but not using B alone.
Mark (2) if the question can be answered using B alone but not using A alone.
Mark (3) if the question can be answered using A and B together, but not using either A or B alone.
Mark (4) if the question cannot be answered even using A and B together.

7. The average weight of a class of 100 students is 45 kg. The class consists of two sections, I and II, each with 50 students. The average weight, W_I, of Section I is smaller than the average weight W_{II}, of the Section II. If the heaviest student say Deepak, of section II is moved to Section I, and the lightest student, say Poonam, of Section I is moved to Section II, then the average weights of the two sections are switched, i.e., the average weight of Section I becomes W_{II} and that of Section II becomes W_I. What is the weight of Poonam?

   A: $W_{II} - W_I = 1.0$.
   B: Moving Deepak from Section II to I (without any move I to II) makes the average weights of the two sections equal.

8. ABC Corporation is required to maintain at least 400 Kilolitres of water at all times in its factory, in order to meet safety and regulatory requirements. ABC is considering the suitability of a spherical tank with uniform wall thickness for the purpose. The outer diameter of the tank is 10 meters. Is the tank capacity adequate to met ABC's requirements?

   A: The inner diameter of the tank is at least 8 meters.
   B: The tank weights 30,000 kg when empty, and is made of a material with density of 3 gm/cc.

9. Consider integers x, y, z. What is the minimum possible value of $x^2 + y^2 + z^2$?
   A: x + y + z = 89.
   B: Among x, y, z two are equal.

10. Rahim plans to draw a square JKLM with point O on the side JK but is not successful. Why is Rahim unable to draw the square?
    A: The length of OM is twice that of OL.B:
    The length of OM is 4 cm.

Directions for Questions 11 and 12: Answer the following questions based on the information given below:

Cities A and B are in different time zones. A is located 3000 km east of B. The table below describes the schedule of an airline operating non-stop flights between A and B. All the times indicated are local and on the same day.

Departure		Arrival	
City	Time	City	Time
B	8:00 am	A	3:00 pm
A	4:00 pm	B	8:00 pm

Assume that planes cruise at the same speed in both directions. However, the effective speed is influenced by a steady wind blowing from east to west at 50 km per hour.

11.   What is the time difference between A and B?
   (1) 1 hour and 30 minutes   (2) 2 hours   (3) 2 hours and 30 minutes
   (4) 1 hour   (5) Cannot be determined

12.   What is the plane's cruising speed in km per hour?
   (1) 700   (2) 550   (3) 600
   (4) 500   (5) Cannot be determined.

Directions for Questions 13 and 14: Answer the following questions based on the information given below:

Shabnam is considering three alternatives to invest her surplus cash for a week. She wishes to guarantee maximum returns on her investment. She has three options, each of which can be utilized fully or partially in conjunction with others.

Option A :   Invest in a public sector bank. It promises a return of +0.10%.
Option B : Invest in mutual funds of ABC Ltd. A rise in the stock market will result in a return of + 5% while a fall will entail a return of –3%.
Option C: Invest in mutual funds of CBA Ltd. A rise in the stock market will result in a return of –2.5%, while a fall will entail a return of +2%.

13.   The maximum guaranteed return to Shabnam is
   (1) 0.25%   (2) 0.10%   (3) 0.20%   (4) 0.15%   (5) 0.30%

14.   What strategy will maximize the guaranteed return to Shabnam?
   (1) 100% in option A
   (2) 36% in option B and 64% in option C
   (3) 64% in option B and 36% in option C
   (4) 1/3 in each of the three options
   (5) 30% in option A, 32% in option B and 38% in option C

Directions for Questions 15 and 16: Answer the following questions based on the information given below:

Let S be the set of all pairs (i, j) where, $1 \le i < j \le n$ and $n \ge 4$. Any two distinct members of S are called "friends" if they have one constituent of the pairs in common and "enemies" otherwise. For example, if n = 4, then S = {(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)}. Here, (1, 2) and (1, 3) are friends, (1, 2) and (2, 3) are also friends, but (1, 4) and (2, 3) are enemies.

15. For general 'n', how many enemies will each member of S have?

   (1) $n - 3$

   (2) $\frac{1}{2}\left(n^2 - 3n - 2\right)$

   (3) $2n - 7$

   (4) $\frac{1}{2}\left(n^2 - 5n + 6\right)$

   (5) $\frac{1}{2}\left(n^2 - 7n + 14\right)$

16. For general 'n', consider any two members of S that are friends. How many other members of S will be common friends of both these members?

   (1) $\frac{1}{2}\left(n^2 - 5n + 8\right)$

   (2) $2n - 6$

   (3) $\frac{1}{2}n(n - 3)$

   (4) $n - 2$

   (5) $\frac{1}{2}\left(n^2 - 7n + 16\right)$

17. In a tournament, there are n teams $T_1, T_2, ..., T_n$, with n > 5. Each team consists of 'k' players, k > 3. The following pairs of teams have one player in common:

   T_1 & T_2, T_2 & T_3, ..., T_{n-1} & T_n, and T_n & T_1

   No other pair of teams has any player in common. How many players are participating in the tournament, considering all the 'n' teams together?
   (1) $n(k - 1)$ (2) $k(n - 1)$ (3) $n(k - 2)$
   (4) $k(n - 2)$ (5) $(n - 1)(k - 1)$

18. Consider four-digit numbers for which the first two digits are equal and the last two digits are also equal. How many such numbers are perfect squares?
   (1) 3   (2) 2   (3) 4   (4) 0   (5) 1

Directions for Questions 19 and 20: Answer the following questions based on the information given below:

Mr. David manufactures and sells a single product at a fixed price in a niche market. The selling price of each unit is Rs. 30. On the other hand, the cost, in rupees, of producing 'x' units is $240 + bx + cx^2$, where 'b' and 'c' are some constants. Mr. David noticed that doubling the daily production from 20 to 40 units increases the daily production cost by $66\frac{2}{3}\%$. However, an increase in daily production from 40 to 60 units results in an increase of only 50% in the daily production cost. Assume that demand is unlimited and that Mr. David can sell as much as he can produce. His objective is to maximize the profit.

19.   How many units should Mr. David produce daily?
       (1) 130   (2) 100   (3) 70
       (4) 150   (5) Cannot be determined

20.   What is the maximum daily profit, in rupees, that Mr. David can realize from his business?
       (1) 620   (2) 920   (3) 840
       (4) 760   (5) Cannot be determined

21.   The price of Darjeeling tea (in rupees per kilogram) is $100 + 0.10n$, on the nth day of 2007 (n = 1, 2, ..., 100), and then remains constant. On the other hand, the price of Ooty tea (in rupees per kilogram) is $89 + 0.15n$, on the nth day of 2007 (n = 1, 2, ..., 365). On which date in 2007 will the prices of these two varieties of tea be equal?
       (1) May 21   (2) April 11   (3) May 20
       (4) April 10   (5) June 30

22.   Two circles with centres P and Q cut each other at two distinct points A and B. The circles have the same radii and neither P nor Q falls within the intersection of the circles. What is the smallest range that includes all possible values of the angle AQP in degrees?
       (1) Between 0 and 90   (2) Between 0 and 30
       (3) Between 0 and 60   (4) Between 0 and 75
       (5) Between 0 and 45

23.   A quadratic function $f(x)$ attains a maximum of 3 at x = 1. The value of the function at x = 0 is 1. What is the value $f(x)$ at x = 10?
       (1) −119   (2) −159   (3) −110   (4) −180   (5) −105

Directions for Questions 24 and 25: Answer the following questions based on the information given below:

Let $a_1 = p$ and $b_1 = q$, where p and q are positive quantities. Define

$a_n = pb_{n-1}$, $\qquad\qquad b_n = qb_{n-1}$, for even $n > 1$,

and $\qquad\qquad\qquad a_n = pa_{n-1}$, $b_n = qa_{n-1}$, for odd $n > 1$.

24. Which of the following best describes $a_n + b_n$ for even 'n'?

(1) $q(pq)^{\frac{1}{2}n-1}(p+q)$

(2) $qp^{\frac{1}{2}n-1}(p+q)$

(3) $q^{\frac{1}{2}n}(p+q)$

(4) $q^{\frac{1}{2}n}(p+q)2^{\frac{1}{n}}$

(5) $q(pq)^{\frac{1}{2}n-1}(p+q)2^{\frac{1}{n}}$

25. If $p = \dfrac{1}{3}$ and $q = \dfrac{2}{3}$, then what is the smallest odd 'n' such that $a_n + b_n < 0.01$?

(1) 7   (2) 13   (3) 11   (4) 9   (5) 15

Section – II

Directions for Questions 26 to 29: Answer the following questions based on the information given below:
A health-drink company's R&D department is trying to make various diet formulations, which can be used for certain specific purposes. It is considering a choice of 5 alternative ingredients (O, P, Q, R, and S), which can be used in different proportions in the formulations. The table below gives the composition of these ingredients. The cost per unit of each of these ingredients is O: 150, P: 50. Q: 200, R: 500, S: 100.

Ingredient	Composition			
	Carbohydrate%	Protein%	Fat%	Minerals%
O	50	30	10	10
P	80	20	0	0
Q	10	30	50	10
R	5	50	40	5
S	45	50	0	5

26. For a recuperating patient, the doctor recommended a diet containing 10% minerals and at least 30% protein. In how many different ways can we prepare this diet by mixing at least two ingredients?
    (1) One   (2) Two   (3) Three   (4) Four   (5) None

27. Which among the following is the formulation having the lowest cost per unit for a diet having 10% fat and at least 30% protein? (The diet has to be formed by mixing two ingredients).
    (1) P and Q   (2) P and S   (3) P and R   (4) Q and S   (5) R and S

28. In what proportion P, Q and S should be mixed to make a diet having at least 60% carbohydrate at the lowest cost per unit?
    (1) 2:1:3   (2) 4:1:2   (3) 2:1:4   (4) 3:1:2   (5) 4:1:1

29. The company is planning to launch a balanced diet required for growth needs of adolescent children. This diet must contain at least 30% each of carbohydrate and protein, no more than 25% fat and at least 5% minerals. Which one of the following combinations of equally mixed ingredients is feasible?
    (1) O and P   (2) R and S   (3) P and S
    (4) Q and R   (5) O and S

Directions for Questions 30 to 33: 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 by using the statement A alone but not by using the statement B alone.
Mark (2) if the question can be answered by using the statement B alone but not by using the statement A alone.
Mark (3) if the question can be answered by 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 on the basis of the two statements.

30. In a particular school, sixty students were athletes. Ten among them were also among the top academic performers. How many top academic performers were in the school?
    A. Sixty per cent of the top academic performers were not athletes.
    B. All the top academic performers were not necessarily athletes.

31. Five students Atul, Bala, Chetan, Dev and Ernesto were the only ones who participated in a quiz contest. They were ranked based on their scores in the contest. Dev got a higher rank as compared to Ernesto, while Bala got a higher rank as compared to Chetan. Chetan's rank was lower than the median. Who among the five got the highest rank?
    A. Atul was the last rank holder.
    B. Bala was not among the top two rank holders.

32. Thirty per cent of the employees of a call centre are males. Ten per cent of the female employees have an engineering background. What is the percentage of male employees with engineering background?
    A. Twenty five per cent of the employees have engineering background.
    B. Number of male employees having an engineering background is 20% more than the number of female employees having an engineering background.

33. In a football match, at the half-time, Mahindra and Mahindra Club was trailing by three goals. Did it win the match?
    A. In the second-half Mahindra and Mahindra Club scored four goals.
    B. The opponent scored four goals in the match.

Directions for Questions 34 to 37: Answer the following questions based on the information given below:
The following table shows the break-up of actual costs incurred by a company in last five years (year 2002 to year 2006) to produce a particular product:

	Year 2002	Year 2003	Year 2004	Year 2005	Year 2006
Volume of production and sale (units)	1000	900	1100	1200	1200
Costs (Rs.)					
Material	50,000	45,100	55,200	59,900	60,000
Labour	20,000	18,000	22,100	24,150	24,000
Consumables	2,000	2,200	1,800	1,600	1,400
Rent of building	1,000	1,000	1,100	1,100	1,200
Rates and taxes	400	400	400	400	400
Repair and maintenance expenses	800	820	780	790	800
Operating cost of machines	30,000	27,000	33,500	36,020	36,000
Selling and marketing expenses	5,750	5,800	5,800	5,750	5,800

The production capacity of the company is 2000 units. The selling price for the year 2006 was Rs. 125 per unit. Some costs change almost in direct proportion to the change in volume of production, while others do not follow any obvious pattern of change with respect to the volume of production and hence are considered fixed. Using the information provided for the year 2006 as the basis for projecting the figures for the year 2007, answer the following questions:

34. What is the approximate cost per unit in rupees, if the company produces and sells 1400 units in the year 2007?
    (1) 104   (2) 107   (3) 110   (4) 115   (5) 116

35. What is the minimum number of units that the company needs to produce and sell to avoid any loss?
    (1) 313   (2) 350   (3) 384   (4) 747   (5) 928

36. If the company reduces the price by 5%, it can produce and sell as many units as it desires. How many units the company should produce to maximize its profit?
    (1) 1400   (2) 1600   (3) 1800   (4) 1900   (5) 2000

37. Given that the company cannot sell more than 1700 units, and it will have to reduce the price by Rs.5 for all units, if it wants to sell more than 1400 units, what is the maximum profit, in rupees, that the company can earn?
    (1) 25,400   (2) 24,400   (3) 31,400   (4) 32,900   (5) 32,000

Directions for Questions 38 to 41: Answer the following questions based on the information given below:
The proportion of male students and the proportion of vegetarian students in a school are given below.
The school has a total of 800 students, 80% of whom are in the Secondary Section and rest are equally
divided between Class 11 and 12.

	Male (M)	Vegetarian (V)
Class 12	0.6	
Class 11	0.55	0.5
Secondary Section		0.55
Total	0.475	0.53

38.   What is the percentage of male students in the secondary section?
       (1) 40   (2) 45   (3) 50   (4) 55   (5) 60

39.   In Class 12, twenty five per cent of the vegetarians are male. What is the difference between the
       number of female vegetarians and male non-vegetarians?
       (1) less than 8   (2) 10   (3) 12   (4) 14   (5) 16

40.   What is the percentage of vegetarian students in Class 12?
       (1) 40   (2) 45   (3) 50   (4) 55   (5) 60

41.   In the Secondary Section, 50% of the students are vegetarian males. Which of the following
       statements is correct?
       (1) Except vegetarian males, all other groups have same number of students.
       (2) Except non-vegetarian males, all other groups have same number of students.
       (3) Except vegetarian females, all other groups have same number of students.
       (4) Except non-vegetarian females, all other groups have same number of students.
       (5) All of the above groups have the same number of students.

Directions for Questions 42 to 45: Answer the following questions based on the information given below:
The Table below shows the comparative costs, in US Dollars, of major surgeries in USA and a select few
Asian countries.

Procedure	Comparative Costs in USA and some Asian countries (in US Dollar)				
	USA	India	Thailand	Singapore	Malaysia
Heart Bypasss	130000	10000	11000	18500	9000
Heart Valve Replacement	160000	9000	10000	12500	9000
Angioplasty	57000	11000	13000	13000	11000
Hip Replacement	43000	9000	12000	12000	10000
Hysterectomy	20000	3000	4500	6000	3000
Knee Replacement	40000	8500	10000	13000	8000
Spinal Fusion	62000	5500	7000	9000	6000

The equivalent of one US Dollar in the local currencies is given below:

	1 US Dollar equivalent	
India	40.928	Rupees
Malaysia	3.51	Ringits
Thailand	32.89	Bahts
Singapore	1.53	S Dollars

A consulting firm found that the quality of the health services were not the same in all the countries above. A poor quality of a surgery may have significant repercussions in future, resulting in more cost in correcting mistakes. The cost of poor quality of surgery is given in the table below:

Procedure	Comparative cost of poor quality in USA and some Asian countries (in US Dollars '000)				
	USA	India	Thailand	Singapore	Malaysia
Heart Bypasss	0	3	3	2	4
Heart Valve Replacement	0	5	4	5	5
Angioplasty	0	5	5	4	6
Hip Replacement	0	7	5	5	8
Hysterectomy	0	5	6	5	4
Knee Replacement	0	9	6	4	4
Spinal Fusion	0	5	6	5	6

42. A US citizen is hurt in an accident and requires an angioplasty, hip replacement and a knee replacement. Cost of foreign travel and stay is not a consideration since the government will take care of it. Which country will result in the cheapest package, taking cost of poor quality into account?
(1) India   (2) Thailand   (3) Malaysia   (4) Singapore   (5) USA

43. Taking the cost of poor quality into account, which country/countries will be the most expensive for knee replacement?
(1) India   (2) Thailand   (3) Malaysia
(4) Singapore   (5) India and Singapore

44. Approximately, what difference in amount in Bahts will it make to a Thai citizen if she were to get a hysterectomy done in India instead of in her native country, taking into account the cost of poor quality? (It costs 7500 Bahts for one-way travel between Thailand and India).
(1) 23500   (2) 40500   (3) 57500   (4) 67500   (5) 75000

45. The rupee value increases to Rs.35 for a US Dollar, and all other things including quality, remain the same. What is the approximate difference in cost, in US Dollars, between Singapore and India for a Spinal Fusion, taking this change into account?
(1) 700   (2) 2500   (3) 4500   (4) 8000   (5) No difference

Directions for Questions 46 to 50: Answer the following questions based on the information given below:
A low-cost airline company connects ten Indian cities, A to J. The table below gives the distance between a pair of airports and the corresponding price charged by the company. Travel is permitted only from a departure airport to an arrival airport. The customers do not travel by a route where they have to stop at more than two intermediate airports.

Sector No	Airport of Departure	Airport of Arrival	Distance between the Airports (km)	Price (Rs.)
1	A	B	560	670
2	A	C	790	1350
3	A	D	850	1250
4	A	E	1245	1600
5	A	F	1345	1700
6	A	G	1350	2450
7	A	H	1950	1850
8	B	C	1650	2000
9	B	H	1750	1900
10	B	I	2100	2450
11	B	J	2300	2275
12	C	D	460	450
13	C	F	410	430
14	C	G	910	1100
15	D	E	540	590
16	D	F	625	700
17	D	G	640	750
18	D	H	950	1250
19	D	J	1650	2450
20	E	F	1250	1700
21	E	G	970	1150
22	E	H	850	875
23	F	G	900	1050
24	F	I	875	950
25	F	J	970	1150
26	G	I	510	550
27	G	J	830	890
28	H	I	790	970
29	H	J	400	425
30	I	J	460	540

46. What is the lowest price, in rupees, a passenger has to pay for travelling by the shortest route from A to J?

(1) 2275   (2) 2850   (3) 2890   (4) 2930   (5) 3340

47. The company plans to introduce a direct flight between A and J. The market research results indicate that all its existing passengers travelling between A and J will use this direct flight if it is priced 5% below the minimum price that they pay at present. What should the company charge approximately, in rupees, for this direct flight?

(1) 1991   (2) 2161   (3) 2707   (4) 2745   (5) 2783

48. If the airports C, D and H are closed down owing to security reasons, then what would be the minimum price, in rupees, to be paid by a passenger travelling from A to J?

(1) 2275   (2) 2615   (3) 2850   (4) 2945   (5) 3190

49. If the prices include a margin of 10% over the total cost that the company incurs, then what is the minimum cost per kilometer that the company incurs in flying from A to J?

(1) 0.77   (2) 0.88   (3) 0.99   (4) 1.06   (5) 1.08

50. If the prices include a margin of 15% over the total cost that the company incurs, then which among the following is the distance to be covered in flying from A to J that minimizes the total cost per kilometer for the company?

(1) 2170   (2) 2180   (3) 2315   (4) 2350   (5) 2390

Section – III

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.

Human Biology does nothing to structure human society: age may enfeeble us all, but cultures vary considerably in the prestige and power they accord to the elderly. Giving birth is a necessary condition for being a mother, but it is not sufficient. We expect mothers to behave in maternal ways and to display appropriately maternal sentiments. We prescribe a clutch of norms or rules that govern the *role* of a mother. That the social role is independent of the biological base can be demonstrated by going back three sentences. (giving birth is certainly not sufficient to be a mother but, as adoption and fostering show, it is not even necessary!

The fine detail of what is expected of a mother or a father or a dutiful son differs from culture to culture, but everywhere behaviour is coordinated by the *reciprocal* nature of roles. Husbands and wives, parents and children, employers and employees, waiters and customers, teachers and pupils, warlords and followers: each makes sense only in its relation to the other. The term 'role' is an appropriate one. because the metaphor of an actor in a play neatly expresses the rule-governed nature or scripted nature of much of social life and the sense that society is a joint production. Social life occurs only because people play their parts (and that is as true for war and conflicts as for peace and love) and those parts make sense only in the context of the overall show. The drama metaphor also reminds us of the artistic licence available to the players. We can play a part straight or, as the following from J.P. Sartre conveys, we can ham it up.

Let us consider this waiter in the café. His movement is quick and forward, a little too precise, a little too rapid. He comes towards the patrons with a step a little too quick. He bends forward a little too eagerly: his voice, his eyes express an interest a little too solicitous for the order of the customer. Finally there he returns, trying to imitate in his walk the inflexible stiffness of some kind of automation while carrying his tray with the recklessness of a tightropewalker…..All his behaviour seems to us a game….But what is he playing? We need not watch long before we can explain it: he is playing at being a waiter in a café.

The American sociologist Frying Goffman built an influential body of social analysis on elaborations of the metaphor of social life as drama. Perhaps his most telling point was that it is only through acting out a part that we express character. It is not enough to be evil or virtuous: we have to be seen to be evil or virtuous.

There is distinction between the roles we play and some underlying self. Here we might note that some roles are more absorbing than others. We would not be surprised by the waitress who plays the part in such a way as to signal to us that she is much more than her occupation. We would be surprised and offended by the father who played his part 'tongue in cheek'. Some roles are broader and more far-reaching than others. Describing someone as a clergyman or faith healer would say far more about that person than describing someone as a bus driver.

51. What is the thematic highlight of the passage?
    (1) In the absence of strong biological linkages, reciprocal roles provide the mechanism for coordinating human behaviour.
    (2) In the absence of reciprocal roles, biological linkages provide the mechanism for coordinating human behaviour.
    (3) Human behaviour is independent of biological linkages and reciprocal roles.
    (4) Human behaviour depends on biological linkages and reciprocal roles.
    (5) Reciprocal roles determine normative human behaviour in society.

52. Which of the following would have been true if biological linkages structured human society?
    (1) The role of mother would have been defined through her reciprocal relationship with her children.
    (2) We would not have been offended by the father playing his role 'tongue in cheek'.
    (3) Women would have adopted and fostered children rather than giving birth to them.
    (4) Even if warlords were physically weaker than their followers, they would still dominate them.
    (5) Waiters would have stronger motivation to serve their customers.

53. It has been claimed in the passage that "some roles are more absorbing than others". According to the passage, which of the following seem(s) appropriate reason(s) for such a claim?
    A. Some roles carry great expectations from the society preventing manifestation of the true self.
    B. Society ascribes so much importance to some roles that the conception of self may get aligned with the roles being performed.
    C. Some roles require development of skill and expertise leaving little time for manifestation of self.
    (1) A only   (2) B only   (3) C only   (4) A & B   (5) B & C

Directions for Questions 54 to 56: 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.**

54. A. When I returned to home, I began to read
    B. everything I could get my hand on about Israel.
    C. That same year Israel's Jewish Agency sent
    D. a *Shaliach* a sort of recruiter to Minneapolis.
    E. I became one of his most active devotees.
    (1) C & E   (2) C only   (3) E only   (4) B, C & E   (5) C, D & E

55. A. So once an economy is actually in a recession,
    B. the authorities can, in principle, move the economy
    C. out of slump - assuming hypothetically
    D. that they know how to - by a temporary stimuli.
    E. In the longer term, however, such polices have no affect on the overall behaviour of the economy.
    (1) A, B & E   (2) B, C & E   (3) C & D   (4) E only   (5) B only

56. A. It is sometimes told that democratic
     B. government originated in the city-states
     C. of ancient Greece. Democratic ideals have been handed to us from that time.
     D. In truth, however, this is an unhelpful assertion.
     E. The Greeks gave us the word, hence did not provide us with a model.
     (1) A, B & D   (2) B, C & D   (3) B & D   (4) B only   (5) D only

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.

Every civilized society lives and thrives on a silent but profound agreement as to what is to be accepted as the valid mould of experience. Civilization is a complex system of dams, dykes. and canals warding off, directing, and articulating the influx of the surrounding fluid element: a fertile fenland, elaborately drained and protected from the high tides of chaotic, unexercised, and inarticulate experience. In such a culture, stable and sure of itself within the frontiers of 'naturalized' experience, the arts wield their creative power not so much in width as in depth. They do not create new experience, but deepen and purify the old. Their works do not differ from one another like a new horizon from a new horizon, but like a madonna from a madonna.

The periods of art which are most vigorous in creative passion seem to occur when the established pattern of experience loosens its rigidity without as yet losing its force. Such a period was the Renaissance, and Shakespeare its poetic consummation. Then it was as though the discipline of the old order gave depth to the excitement of the breaking away, the depth of job and tragedy, of incomparable conquests and irredeemable losses. Adventurers of experience set out as though in lifeboats to rescue and bring back to the shore treasures of knowing and feeling which the old order had left floating on the high seas. The works of the early Renaissance and the poetry of Shakespeare vibrate with the compassion for live experience in danger of dying from exposure and neglect. In this compassion was the creative genius of the age. Yet, it was a genius of courage, not of desperate audacity. For, however elusively, it still knew of harbours and anchors, of homes to which to return, and of barns in which to store the harvest. The exploring spirit of art was in the depths of its consciousness still aware of a scheme of things into which to fit its exploits and creations.

But the more this scheme of things loses its stability, the more boundless and uncharted appears the ocean of potential exploration. In the blank confusion of infinite potentialities flotsam of significance gets attached to jetsam of experience: for everything is sea, everything is at sea-

…The sea is all about us;
The sea is the land's edge also, the granite
Into which it reaches, the beaches where it tosses
Its hints of earlier and other creation…

– and Rilke tells a story in which, as in T.S. Eliot's poem, it is again the sea and the distance of 'other creation' that becomes the image of the poet's reality. A rowing boat sets out on a difficult passage. The oarsmen labour in exact rhythm. There is no sign yet of the destination. Suddenly a man. seemingly idle, breaks out into song. And if the labour of the oarsmen meaninglessly defeats the real resistance of the real waves, it is the idle single who magically conquers the despair of apparent aimlessness. While the people next to him try to come to grips with the element that is next to them, his voice seems to bind the boat to the farthest distance so that the farthest distance draws it towards itself. 'I don't know why and how,' is Rilke's conclusion, 'but suddenly I understood the situation of the poet, his place and function in this age. It does not matter if one denies him every place — except this one. There one must tolerate him.'

57. In the passage, the expression "like a madonna from a madonna" alludes to
    (1) The difference arising as a consequence of artistic license.
    (2) The difference between two artistic interpretations.
    (3) The difference between 'life' and 'interpretation of life'.
    (4) The difference between 'width' and 'depth' of creative power.
    (5) The difference between the legendary character and the modern day singer.

58. The sea and 'other creation' leads Rilke to
    (1) Define the place of the poet in his culture.
    (2) Reflect on the role of the oarsman and the singer.
    (3) Muse on artistic labour and its aimlessness.
    (4) Understand the elements that one has to deal with.
    (5) Delve into natural experience and real waves.

59. According to the passage, the term "adventurers of experience" refers to
    (1) Poets and artists who are driven by courage.
    (2) Poets and artists who create their own genre.
    (3) Poets and artists of the Renaissance.
    (4) Poets and artists who revitalize and enrich the past for us.
    (5) Poets and artists who delve in flotsam and jetsam in sea.

Directions for Questions 60 to 62: Each of the following questions has a paragraph from which the last sentence has been deleted. From the given options, choose the sentence that completes the paragraph in the **most appropriate** way.

60. Characters are also part of deep structure. Characters tie events in a story together and provide a thread of continuity and meaning. Stories can be about individuals, groups, projects, or whole organizations, so from an organizational studies perspective, the focal actor(s) determine the level and unit of analysis used in a study. Stories of mergers and acquisitions, for example, are commonplace. In these stories whole organizations are personified as actors. But these macro-level stories usually are not told from the perspective of the macro-level participants, because whole organizations cannot narrate their experiences in the first person.

(1) More generally, data concerning the identities and relationships of the characters in the story are required, if one is to understand role structure and social networks in which that process is embedded.

(2) Personification of a whole organization abstracts away from the particular actors and from traditional notions of level of analysis.

(3) The personification of a whole organization is important because stories differ depending on who is enacting various events.

(4) Every story is told from a particular point of view, with a particular narrative voice, which is not regarded as part of the deep structure.

(5) The personification of a whole organization is a textual device we use to make macro-level theories more comprehensible.

61. Nevertheless, photographs still retain some of the magical allure that the earliest daguerreotypes inspired. As objects, our photographs have changed; they have become physically flimsier as they have become more technologically sophisticated. Daguerre produced pictures on copper plates: today many of our photographs never become tangible things, but instead remain filed away on computers and cameras, part of the digital ether that envelops the modern world. At the same time, our patience for the creation of images has also eroded. Children today are used to being tracked from birth by digital cameras and video recorders and they expect to see the results of their poses and performances instantly. The space between life as it is being lived and life as it is being displayed shrinks to a mere second.

(1) Yet, despite these technical developments, photographs still remain powerful because they are reminders of the people and things we care about.

(2) Images, after all, are surrogates carried into battle by a soldier or by a traveller on holiday.

(3) Photographs, be they digital or traditional, exist to remind us of the absent, the beloved, and the dead.

(4) In the new era of the digital image, the images also have a greater potential for fostering falsehood and trickery, perpetuating fictions that seem so real we cannot tell the difference.

(5) Anyway, human nature being what it is, little time has passed after photography's invention became means of living life through images.

62. Mma Ramotswe had a detective agency in Africa, at the foot of Kgale Hill. These were its assets: a tiny white van, two desks, two chairs, a telephone, and an old typewriter. Then there was a teapot, in which Mma Ramotswe - the only private lady detective in Botswana - brewed redbush tea. And three mugs - one for herself, one for her secretary, and one for the client. What else does a detective agency really need? Detective agencies rely on human intuition and intelligence, both of which Mma Ramotswe had in abundance.

(1) But there was also the view, which again would appear on no inventory.

(2) No inventory would ever include those, of course.

(3) She had an intelligent secretary too.

(4) She was a good detective and a good woman.

(5) What she lacked in possessions was more than made up by a natural shrewdness.

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.

To discover the relation between rules, paradigms, and normal science, consider first how the historian isolates the particular loci of commitment that have been described as accepted rules. Close historical investigation of a given specialty at a given time discloses a set of recurrent and quasi-standard illustrations of various theories in their conceptual, observational, and instrumental applications. These are the community's paradigms, revealed in its textbooks, lectures, and laboratory exercises. By studying them and by practicing with them, the members of the corresponding community learn their trade. The historian, of course, will discover in addition a penumbral area occupied by achievements whose status is still in doubt, but the core of solved problems and techniques will usually be clear. Despite occasional ambiguities, the paradigms of a mature scientific community can be determined with relative ease.

That demands a second step and one of a somewhat different kind. When undertaking it, the historian must compare the community's paradigms with each other and with its current research reports. In doing so, his object is to discover what isolable elements, explicit or implicit, the members of that community may have abstracted from their more global paradigms and deploy it as rules in their research. Anyone who has attempted to describe or analyze the evolution of a particular scientific tradition will necessarily have sought accepted principles and rules of this sort. Almost certainly, he will have met with at least partial success. But, if his experience has been at all like my own, he will have found the search for rules both more difficult and less satisfying than the search for paradigms. Some of the generalizations he employs to describe the community's shared beliefs will present more problems. Others, however, will seem a shade too strong. Phrased in just that way, or in any other way he can imagine, they would almost certainly have been rejected by some members of the group he studies. Nevertheless, if the coherence of the research tradition is to be understood in terms of rules, some specification of common ground in the corresponding area is needed. As a result, the search for a body of rules competent to constitute a given normal research tradition becomes a source of continual and deep frustration.

Recognizing that frustration, however, makes it possible to diagnose its source. Scientists can agree that a Newton, Lavoisier, Maxwell, or Einstein has produced an apparently permanent solution to a group of outstanding problems and still disagree, sometimes without being aware of it, about the particular abstract characteristics that make those solutions permanent. They can, that is, agree in their identification of a paradigm without agreeing on, or even attempting to produce, a full interpretation or rationalization of it. Lack of a standard interpretation or of an agreed reduction to rules will not prevent a paradigm from guiding research. Normal science can be determined in part by the direct inspection of paradigms, a process that is often aided by but does not depend upon the formulation of rules and assumption. Indeed, the existence of a paradigm need not even imply that any full set of rules exists.

63. What is the author attempting to illustrate through this passage?
    (1) Relationships between rules, paradigms, and normal science
    (2) How a historian would isolate a particular 'loci of commitment'
    (3) How a set of shared beliefs evolves into a paradigm
    (4) Ways of understanding a scientific tradition
    (5) The frustrations of attempting to define a paradigm of a tradition

64. The term 'loci of commitment' as used in the passage would most likely correspond with which of the following?
    (1) Loyalty between a group of scientists in a research laboratory
    (2) Loyalty between groups of scientists across research laboratories
    (3) Loyalty to a certain paradigm of scientific inquiry
    (4) Loyalty to global patterns of scientific inquiry
    (5) Loyalty to evolving trends of scientific inquiry

65. The author of this passage is likely to agree with which of the following?
    (1) Paradigms almost entirely define a scientific tradition.
    (2) A group of scientists investigating a phenomenon would benefit by defining a set of rules.
    (3) Acceptance by the giants of a tradition is a sine qua non for a paradigm to emerge.
    (4) Choice of isolation mechanism determines the type of paradigm that may emerge from a tradition.
    (5) Paradigms are a general representation of rules and beliefs of a scientific tradition.

Directions for Questions 66 to 68: 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.

66. The cricket council that *was* [A] / *were* [B] elected last March *is* [A] *are* [B] at sixes and sevens over new rules.
    The critics **censored** [A] / **censured** [B] the new movie because of its social unacceptability.
    Amit's explanation for missing the meeting was *credulous* [A] / *credible* [B].
    She coughed *discreetly* [A] / *discretely* [B] to announce her presence.
    (1) BBAAA   (2) AAABA   (3) BBBBA   (4) AABBA   (5) BBBAA

67. The *further* [A] / *farther* [B] he pushed himself, the more disillusioned he grew.
    For the crowds it was more of a *historical* [A] / *historic* [B] event; for their leader, it was just another day.
    The old man has a healthy *distrust* [A] / *mistrust* [B] for all new technology.
    This film is based on a *real* [A] / *true* [B] story.
    One suspects that the *compliment* [A] / *complement* [B] was backhanded.
    (1) BABAB   (2) ABBBA   (3) BAABA   (4) BBAAB   (5) ABABA

68. **Regrettably** [A] / **Regretfully** [B] I have to decline your invitation.
I am drawn to the poetic, **sensual** [A] / **sensuous** [B] quality of her paintings.
He was **besides** [A] / **beside** [B] himself with rage when I told him what I had done.
After brushing against a **stationary** [A] / **stationery** [B] truck my car turned turtle.
As the water began to rise **over** [A] / **above** [B] the danger mark, the signs of an imminent flood were clear.

(1) BAABA   (2) BBBAB   (3) AAABA   (4) BBAAB   (5) BABAB

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.

The difficulties historians face in establishing cause-and-effect relations in the history of human societies are broadly similar to the difficulties facing astronomers, climatologists, ecologists, evolutionary biologists; geologists, and palaeontologists. To varying degrees each of these fields is plagued by the impossibility of performing replicated, controlled experimental interventions, the complexity arising from enormous numbers of variables, the resulting uniqueness of each system, the consequent impossibility of formulating universal laws, and the difficulties of predicting emergent properties and future behaviour. Prediction in history, as in other historical sciences, is most feasible on large spatial scales and over long times, when the unique features of millions of small-scale brief events become averaged out. Just as I could predict the sex ratio of the next 1,000 newborns but not the sexes of my own two children. the historian can recognize factors that made inevitable the broad outcome of the collision between American and Eurasian societies after 13,000 years of separate developments, but not the outcome of the 1960 U.S. presidential election. The details of which candidate said what during a single televised debate in October 1960 could have given the electoral victory to Nixon instead of to Kennedy, but no details of who said what could have blocked the European conquest of Native Americans.

How can students of human history profit from the experience of scientists in other historical sciences? A methodology that has proved useful involves the comparative method and so-called natural experiments. While neither astronomers studying galaxy formation nor human historians can manipulate their systems in controlled laboratory experiments, they both can take advantage of natural experiments, by comparing systems differing in the presence or absence (or in the strong or weak effect) of some putative causative factor. For example, epidemiologists, forbidden to feed large amounts of salt to people experimentally, have still been able to identify effects of high salt intake by comparing groups of humans who already differ greatly in their salt intake: and cultural anthropologists, unable to provide human groups experimentally with varying resource abundances for many centuries, still study long-term effects of resource abundance on human societies by comparing recent Polynesian populations living on islands differing naturally in resource abundance.

The student of human history can draw on many more natural experiments than just comparisons among the five inhabited continents. Comparisons can also utilize large islands that have developed complex societies in a considerable degree of isolation (such as Japan, Madagascar. Native American Hispaniola, New Guinea, Hawaii, and many others), as well as societies on hundreds of smaller islands and regional

societies within each of the continents. Natural experiments in any field, whether in ecology or human history, are inherently open to potential methodological criticisms. Those include confounding effects of natural variation in additional variables besides the one of interest, as well as problems in inferring chains of causation from observed correlations between variables. Such methodological problems have been discussed in great detail for some of the historical sciences. In particular, epidemiology, the science of drawing inferences about human diseases by comparing groups of people (often by retrospective historical studies), has for a long time successfully employed formalized procedures for dealing with problems similar to those facing historians of human societies.

In short, I acknowledge that it is much more difficult to understand human history than to understand problems in fields of science where history is unimportant and where fewer individual variables operate. Nevertheless, successful methodologies for analyzing historical problems have been worked out in several fields. As a result, the histories of dinosaurs, nebulae, and glaciers are generally acknowledged to belong to fields of science rather than to the humanities.

69. Why do islands with considerable degree of isolation provide valuable insights into human history?
    (1) Isolated islands may evolve differently and this difference is of interest to us.
    (2) Isolated islands increase the number of observations available to historians.
    (3) Isolated islands, differing in their endowments and size may evolve differently and this difference can be attributed to their endowments and size.
    (4) Isolated islands. differing in their endowments and size, provide a good comparison to large islands such as Eurasia, Africa, Americas and Australia.
    (5) Isolated islands, in so far as they are inhabited, arouse curiosity about how human beings evolved there.

70. According to the author, why is prediction difficult in history?
    (1) Historical explanations are usually broad so that no prediction is possible.
    (2) Historical outcomes depend upon a large number of factors and hence prediction is difficult for each case.
    (3) Historical sciences, by their very nature, are not interested in a multitude of minor factors, which might be important in a specific historical outcome.
    (4) Historians are interested in evolution of human history and hence are only interested in long-term predictions.
    (5) Historical sciences suffer from the inability to conduct controlled experiments and therefore have explanations based on a few long-term factors.

71. According to the author, which of the following statements would be true?
    (1) Students of history are missing significant opportunities by not conducting any natural experiments.
    (2) Complex societies inhabiting large islands provide great opportunities for natural experiments.
    (3) Students of history are missing significant opportunities by not studying an adequate variety of natural experiments.

(4) A unique problem faced by historians is their inability to establish cause and effect relationships.

(5) Cultural anthropologists have overcome the problem of confounding variables through natural experiments.

Directions for Questions 72 to 75: 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/passage. From the given options, choose the **most appropriate** one.

72. A. In America, highly educated women, who are in stronger position in the labour market than less qualified ones, have higher rates of marriage than other groups.
     B. Some work supports the Becker thesis, and some appears to contradict it.
     C. And, as with crime, it is equally inconclusive.
     D. But regardless of the conclusion of any particular piece of work, it is hard to establish convincing connections between family changes and economic factors using conventional approaches.
     E. Indeed, just as with crime, an enormous academic literature exists on the validity of the pure economic approach to the evolution of family structures.

     (1) BCDE   (2) DBEC   (3) BDCE   (4) ECBD   (5) EBCD

73. A. Personal experience of mothering and motherhood are largely framed in relation to two discernible or "official" discourses: the "medical discourse and natural childbirth discourse". Both of these tend to focus on the "optimistic stories" of birth and mothering and underpin stereotypes of the "good mother".
     B. At the same time, the need for medical expert guidance is also a feature for contemporary reproduction and motherhood. But constructions of good mothering have not always been so conceived - and in different contexts may exist in parallel to other equally dominant discourses.
     C. Similarly, historical work has shown how what are now taken-for-granted aspects of reproduction and mothering practices result from contemporary "pseudoscientific directives" and "managed constructs". These changes have led to a reframing of modern discourses that pattern pregnancy and motherhood leading to an acceptance of the need for greater expert management.
     D. The contrasting, overlapping, and ambiguous strands within these frameworks focus to varying degrees on a woman's biological tie to her child and predisposition to instinctively know and be able to care for her child.
     E. In addition, a third, "unofficial popular discourse" comprising "old wives" tales and based on maternal experiences of childbirth has also been noted. These discourses have also been acknowledged in work exploring the experiences of those who apparently do not "conform" to conventional stereotypes of the "good mother".

     (1) EDBC   (2) BCED   (3) DBCE   (4) EDCB   (5) BCDE

74. A. Indonesia has experienced dramatic shifts in its formal governance arrangements since the fall of President Soeharto and the close of his centralized, authoritarian "New Order" regime in 1997.
     B. The political system has taken its place in the nearly 10 years since *Reformasi* began. It has featured the active contest for political office among a proliferation of parties at central, provincial and district levels; direct elections for the presidency (since 2004); and radical changes in centre-local government relations towards administrative, fiscal, and political decentralization.
     C. The mass media, once tidily under Soeharto's thumb, has experienced significant liberalization, as has the legal basis for non-governmental organizations, including many dedicated to such controversial issues as corruption control and human rights.
     D. Such developments are seen optimistically by a number of donors and some external analysts, who interpret them as signs of Indonesia's political normalization.
     E. A different group of analysts paint a picture in which the institutional forms have changed, bitt power relations have not. Vedi Hadiz argues that Indonesia's "democratic transition" has been anything but linear.
     (1) BDEC   (2) CBDE   (3) CEBD   (4) DEBC   (5) BCDE

75. A. I had six thousand acres of land, and had thus got much spare land besides the coffee plantation. Part of the farm was native forest, and about one thousand acres were squatters' land, what [the Kikuyu] called their *shambas.*
     B. The squatters' land was more intensely alive than the rest of the farm, and was changing with the seasons the year round. The maize grew up higher than your head as you walked on the narrow hard-trampled footpaths in between the tall green rustling regiments.
     C. The squatters are Natives, who with their families hold a few acres on a white man's farm, and in return have to work for him a certain number of days in the year. My squatters, I think, saw the relationship in a different light, for many of them were born on the farm, and their fathers before them, and they very likely regarded me as a sort of superior squatter on their estates.
     D. The Kikuyu also grew the sweet potatoes that have a vine like leaf and spread over the ground like a dense entangled mat, and many varieties of big yellow and green speckled pumpkins.
     E. The beans ripened in the fields, were gathered and thrashed by the women, and the maize stalks and coffee pods were collected and burned, so that in certain seasons thin blue columns of smoke rose here and there all over the farm.
     (1) CBDE   (2) BCDE   (3) CBED   (4) DBCE   (5) EDBC

Answers and Explanations

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

	Question number	Total questions	Total attempted	Total correct	Total wrong	Net Score	Time Taken
QA	1 to 25	25					
LRDI	26 to 50	25					
EU + RC	51 to 75	25					
Total		75					

1. 2 Sum of the odd integers in the set S

$$= \frac{n}{2}\left(2 \times 3 + (n-1) \times 2\right)$$

$$= \frac{n}{2}(2n+4) = n \times (n+2)$$

Therefore, the average of the odd integers in set S
= n + 2
Sum of the even integers in the set S

$$= \frac{n}{2}\left(2 \times 2 + (n-1) \times 2\right)$$

$$= \frac{n}{2}(2n+2) = n \times (n+1)$$

Therefore, the average of the even integers in the set S = n + 1
Hence, X − Y = (n + 2) − (n + 1) = 1

2. 5 The total age of all the eight people in the family = 231
As per the information given in the question, the total age of all the people in the family = 231 + 3 × 8 − 60 + 0 = 195
Similarly, the total age of the people in the family four years ago = 195 + 3 × 8 − 60 + 0 = 159.
Therefore, the current average age of all the people in the family = $\frac{159 + 32}{8}$ = 24 years.

3. 1 f(1) + f(2) + f(3) + …. + f(n) = n^2f(n) , f(1) = 3600.
For n = 2,

$$\cdots \cdots \cdots \cdots \quad 2^2{}_{(2)} \Rightarrow \cdots \cdots = \frac{f(1)}{(2^2 - 1)}$$

For n = 3,

$$3600\left[1 + \frac{1}{\left(2^2 - 1\right)}\right] + f(3) = 3^2\,f(3)$$

$$\Rightarrow f(3) = 3600 \times \left(\frac{2^2}{2^2 - 1}\right) \times \left(\frac{1}{3^2 - 1}\right)$$

Similarly,

$$f(9) = 3600 \times \frac{2^2 \times 3^2 \times 4^2 \ldots \times 8^2}{\left(2^2 - 1\right)\left(3^2 - 1\right)\left(4^2 - 1\right)\ldots\left(9^2 - 1\right)}$$

Therefore, f(9) = 80

4. 3 Let the number of currency 1 Miso, 10 Misos and 50 Misos be x, y and z respectively.
$\Rightarrow$ x + 10y + 50z = 107
Now the possible values of z could be 0, 1 and 2.
For z = 0: x + 10y = 107
Number of integral pairs of values of x and y that

satisfy the equation x + 10y = 107 will be 11. These values of x and y in that order are
(7, 10); (17, 9); (27, 8)…
(107, 0).
For z = 1: x + 10y = 57
Number of integral pairs of values of x and y that satisfy the equation x + 10y = 57 will be 6. These values of x and y in that order are (7, 5); (17, 4); (27, 3);
(37, 2); (47, 1) and (57, 0).
For z = 2: x + 10y = 7
There is only one integer value of x and y that satisfies the equation x + 10y = 7 in that order is (7, 0).
Therefore, total number of ways in which you can pay a bill of 107 Misos = 11 + 6 + 1 = 18

5. 4 Suppose the cheque for Shailaja is of Rs. X and Y paise
As per the question,
3 × (100X + Y) = (100Y + X) − 50
$\Rightarrow$ 299X = 97Y − 50

$$\Rightarrow Y = \frac{299X + 50}{97}$$

Now the value of Y should be a integer.
Checking by options only for X = 18, Y is a integer and the value of Y = 56

6. 5 $\frac{1}{m} + \frac{4}{n} = \frac{1}{12}, n < 60$

$$\Rightarrow \frac{1}{m} = \frac{1}{12} - \frac{4}{n} = \frac{n - 48}{12n}$$

$$\Rightarrow m = \frac{12n}{n - 48}$$

Positive integral values of m for odd integral values of n are for n = 49, 51 and 57.
Therefore, there are 3 integral pairs of values of m and n that satisfy the given equation.

7. 3 **Using A:** W_{II} = 45.5 and W_I = 44.5
Using B: Weight of Deepak = 70kg (Only after using statement A)
This is sufficient to find weight of Poonam using the data given in the question statement. Hence option (3) is correct choice.

8. 2 **Using A:** Inner radius of the tank is atleast 4 m. So volume $= \frac{4}{3}\pi r^3$ where 4 < r < 10
This volume can be greater as well as smaller than 400 for different r.
Using B: The given data gives the volume of the material of tank, which can be expressed as $\frac{4}{3}\pi\left(10^3 - r^3\right)$, which will give the value of r which is unique and sufficient to judge if the capacity is adequate. Hence option (2) is correct choice.

9. 1 **Using A:** x = 30, y = 30 and z = 29 will give the minimum value.
Using B: Nothing specific can be said about the relation between x, y and z.
Hence option (1) is correct choice.

10. 1 **Using A:** $\dfrac{OM}{OL} = \dfrac{2}{1}$

But if O lies on JK, maximum possible value of $\dfrac{OM}{OL}$ is

$\dfrac{\sqrt{2}}{1}$ (when O lies on K)

So, Rahim is unable to draw such a square

Using B: Nothing specific can be said about the dimensions of the figure.
Hence option (1) is correct choice.

For questions 11 and 12:
Let the cruising speed of the plane and the time difference between A and B be y km/hr and x hours respectively.
Distance between A and B = 3000 kilometers. For, the plane moving from city A to City B: 3000 = (7 – x) × (y – 50). This is satisfied for x = 1 and y = 550. These are the only values given in the options that satisfy the above equation.

11. 4 **12. 2**

For questions 13 and 14:
To maximise Shabnam's return we need to evaluate all the given options in the question number 7. Assume Shabnam had one rupee to invest. Let the return be denoted by 'r'.
Consider the option (30% in option A, 32% in option B and 38% in option C): If the stock market rises, then
r = 0.1 × 0.3 + 5 × 0.32 – 2.5 × 0.38 = 0.653
If the stock market falls, then
r = 0.1 × 0.3 – 3 × 0.32 + 2 × 0.38 = – 0.197
Consider option (100% in option A): This will give a return of 0.1%.
Consider option (36% in option B and 64% in option C):
If the stock market rises, then
r = 5 × 0.36 – 2.5 × 0.64 = 0.2
If the stock market falls, then
r = – 3 × 0.36 + 2 × 0.64 = 0.2
Consider option (64% in option B and 36% in option C):
If the stock market rises, then
r = 5 × 0.64 – 2.5 × 0.36 = 2.1
If the stock market falls, then
r = – 3 × 0.64 + 2 × 0.36 = –1.2
Consider option (1/3 in each of the 3 options): If the stock market rises, then
r = 0.1 × 0.33 + 5 × 0.33 – 2.5 × 0.33 = 0.858
If the stock market falls, then
r = 0.1 × 0.33 – 3 × 0.33 + 2 × 0.33 = –0.297
We can see that only in option **(36% in option B and 64% in option C)**, Shabnam gets an assured return of 0.2% irrespective of the behaviour of the stock market. So right option for questions number 13 is **(0.20%)** and question number 14 is **(36% in option B and 64% in option C)**.

13. 3 **14. 2**

For questions 15 and 16:

15. 4 The number of members in the set $S = {}^{n}C_{2}$, where n is greater than = 4
Each member of S has two distinct numbers.
Let us say (1, 2) is one of the members of S.
To find the number of enemies each member of S will have be equal to

$${}^{n-2}C_{2} = \dfrac{n^2 - 5n + 6}{2}$$

16. 4 Considering any two members of S, that are friends there will be 1 number of the pairs that will be common. The common element of these pairs will have n – 3 pairs, with the remaining n – 3 elements. There will be one more member made up of the remaining two constituent elements which are not same. In total there are n – 3 + 1 = n – 2 other members of S that are common friends of the chosen two pairs or numbers.

Alternative Method for questions 15 and 16:
For n = 6, the number of elements in the set S = {(1, 2), (1, 3), (1, 4), (1, 5), (1, 6), (2, 3), (2, 4), (2, 5), (2, 6), (3, 4), (3, 5), (3, 6), (4, 5), (4, 6) and (5, 6)
Lets consider the member (1, 2).

15. 4 Number of enemies for this member is 6, i.e. (3, 4), (3, 5), (3, 6), (4, 5) (4, 6) and (5, 6).
Checking by options, this is only satisfied by

$$\dfrac{n^2 - 5n + 6}{2}$$

Hence $\dfrac{n^2 - 5n + 6}{2}$ is the correct choice.

16. 4 For n = 6 lets consider the members (1, 2) and (1, 3)
Friends of the member (1, 2) in the set S are (1, 4), (1, 5), (1, 6), (2, 3), (2, 4), (2, 5), (2, 6).
Friends of the member (1, 3) in the set S (1, 4), (1, 5), (1, 6), (2, 3), (3, 4), (3, 5), (3, 6).
The number of members of S that are common friends to the above member are 4, i.e. (1, 4), (1, 5), (1, 6), (2, 3).
So the answer is n – 2.

17. 1 In each team, T_{j} there are two players, one it shares with T_{j-1} and other with T_{j-1}. Other (k – 2) players team T_{j} shares with no other team. So, total players which play for only one team.
= (k – 2)n
One player is common in T_{1} and T_{2}, one in T_{2} and T_{3} and so on.
Number of such players = number of pairs = n
So, total players = (k – 2)n + n = n(k – 1)

18. 5   Let the four-digit number be denoted by aabb = 11 × (100a + b).

Now since aabb is a perfect square, 100a + b should be a multiple of 11.

The only pairs of values of a and b that satisfy the above mentioned condition is a = 7 and b = 4. Clearly 7744 is a perfect square.

19. 2   Using the given data –

$$\frac{\left(240 + 40b + 40^2c\right) - \left(240 + 20b + 20^2c\right)}{240 + 20b + 20^2c} = \frac{2}{3}$$

and

$$\frac{\left(240 + 60b + 60^2c\right) - \left(240 + 40b + 40^2c\right)}{240 + 40b + 40^2c} = \frac{1}{2}$$

Solving the above equations, $c = \dfrac{1}{10}$ and $b = 10$

So cost for producing x units = $240 + 10x + \dfrac{x^2}{10}$

Profit earned from x units

$= 30x - \left(240 + 10x + \dfrac{x^2}{10}\right) = 20x - \dfrac{x^2}{10} - 240$

$= 760 - \dfrac{1}{10}(x - 100)^2$

For maximum profit, x – 100 = 0
$\Rightarrow$ x = 100.

20. 4   Maximum profit = Rs. 760

21. 3   Price of Darjeeling tea (in rupees per kilo gram) is 100 + 0.10n
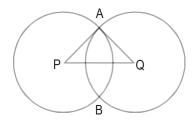
Price of Ooty tea (in rupees per kilo gram) is 89 + 0.15n

Price of the Darjeeling tea on the 100th day = 100 + 0.1 × 100 = 110 $\Rightarrow$ 89 + 0.15n = 110 $\Rightarrow$ n = 140
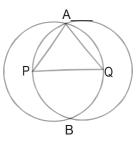
Number of days in the months of January, February, March and April in the year 2007 = 31 + 28 + 31 + 30 = 120.

Therefore, the price of both the tea will be equal on 20th May.

22. 3

If P and Q lie on the intersections of the circles as shown in the figure given below.

In this case triangle APQ is equilateral. So the maximum possible measure of the angle AQP is 60°. The answer is between 0 and 60.

23. 2   Let $f(x) = ax^2 + bx + c$

At x = 1, f(1) = a + b + c = 3
At x = 0, f(0) = c = 1
The maximum of the function f(x) is attained at

$x = -\dfrac{b}{2a} = 1 = \dfrac{a-2}{2a}$

$\Rightarrow$ a = –2 and b = 4

$\therefore\ f(x) = -2x^2 + 4x + 1$ Therefore,
f(10) = –159

For questions 24 and 25:
Using the given expressions —

$a_1 = p \qquad b_1 = q$

$a_2 = pq \qquad b_2 = q^2$

$a_3 = p^2q \qquad b_3 = pq^2$

$a_4 = p^2q^2 \quad b_4 = pq^3$

$a_5 = p^3q^2 \quad b_5 = p^2q^3$

$a_6 = p^3q^3 \quad b_6 = p^2q^4$

and so on

24. 1 $a_n + b_n\ (n \text{ is even}) = p^{\frac{n}{2}}q^{\frac{n}{2}} + p^{\frac{n}{2}-1}q^{\frac{n}{2}+1}$

$= q(pq)^{\frac{n-1}{2}}(p + q)$

25. 4 $a_n + b_n$ (n is odd) $= p^{\frac{n+1}{2}} q^{\frac{n-1}{2}} + p^{\frac{n-1}{2}} q^{\frac{n+1}{2}}$

$= (p+q)(pq)^{\frac{n-1}{2}}$

Substituting $p = \dfrac{1}{3}$ and $q = \dfrac{2}{3}$

$a_n + b_n = \left(\dfrac{2}{9}\right)^{\frac{n-1}{2}}$

Substituting n = 7, $a_n + b_n > 0.01$

Substituting n = 9, $a_n + b_n < 0.01$

Hence smallest value of n is 9

26. 1 The diet should contain 10% minerals and only two ingredient contain 10% minerals namely O and Q. Hence, only by mixing O and Q, a diet with 10% minerals can be formed.
Hence, there is only one way.

27. 4 None of the choices among (1), (2) and (3) can be used to form the diet with 10% fat and atleast 30% protein. For Q and S to form the diet with 10% fat and at least 30% protein, let us suppose that they are mixed in x : y ration. Then,

$\dfrac{x(50) + y(0)}{x+y} = 10$

$\Rightarrow$ x : y = 1 : 4

Cost per unit $= \dfrac{1(200) + 4(100)}{5} = $ Rs.120

Similarly, for R and S, cost per unit = Rs. 200
∴ Cost per unit is lowest for Q and S.

28. 5 To make a diet with P, Q and S having atleast 60% carbohydrates, the proportion of P should be the maximum and the other two should be minimum to get the lowest per unit cost. Options (2) and (5) satisfies this but the lowest cost per unit can be achieved when P, Q and S are mixed in the proportion 4 : 1 : 1.

29. 5 As the ingredients are mixed in equal amounts, so we can take the average of the constituent percentage of the elements used.
Only option (5) satisfies all the conditions.

30. 1 From statement A, it is clear that 40% of top academic performers are athletes and that is equal to 10. So total number of academic performers can be calculated. Statement B does not provide any relevant information. So the answer is (1).

31. 4 Statement A and B alone are not sufficient but if both are combined, then we can form the following sequence:

1	2	3	4	5
D	E	B	C	A

So the answer is (4).

32. 3 Statement A alone is sufficient because 10% of the female employees have engineering background, 70% of the employees are females, so 7% of the employees are female and having engineering background. Hence, 18% of the employees are male and having engineering background. From statement B, we know the number of male employees having engineering background. So, the percentage of male employees having engineering background can be calculated. So, the answer is (3)

33. 5 Statement A alone is not sufficient because it is not giving any information about the opponent. Statement B alone is also not sufficient because it is not giving any information regarding the performance of Mahindra & Mahindra in the second half. Even if both the statements are used together, we will get two cases:

M & M	0	1
Opponent	3	4

So in one case, match is drawn and in the other case, it is won by Mahindra & Mahindra.
Hence, the answer is (5)

For questions 34 to 37:
Looking at the values in the table one can easily conclude that the costs which are directly proportional to the change in volume of proportion are 'Material', 'Labour' and 'Operating cost of machines'. Rest of the costs are all fixed costs. If 'x' is the number of units produced in 2007, then the total cost of production would be
C = 9600 (Fixed cost) + 100x (Variable cost),
Variable cost = 100x because as the number of units for 2006 is 1200 and variable cost for that is 120000 i.e. 100 times the number of units.

34. 2 Total cost = 9600 + 100 × 1400 = 149600

Cost per unit $= \dfrac{149600}{1400} = 107$ (approx.)

35. 3 To avoid any loss the total selling price should be equal to the total cost price. If 'x' units are produced and selling price of each unit is 125 Rs.
Therefore, 125x = 9600 + 100x
25x = 9600

$\Rightarrow$ x = 384

Hence, 384 units should be produced.

36. 5 Here, fixed cost is Rs.9600 and the variable cost is Rs.100x, where x is number of units produced. Hence, profit is maximum if x is maximum. Therefore, 2000 units will give maximum profit.

37. 1 If the company sells a maximum of 1400 units, the selling price is fixed at Rs. 125 per unit. If more than 1400 units are sold, the selling price is reduced to Rs. 120 per unit. The company cannot sell more than 1700 units.
To earn maximum profit at a unit selling price ofRs. 125, the company must sell 1400 units. The maximum profit earned, denoted by P_0, is calculated as below:

Profit = (Selling Price) – (Cost Price)
P_0 = 125 × 1400 – (9600 + 100 × 1400) = Rs. 25400

Now if the company sells an x number of units (x > 1400) then the profit earned will be:
P_x = 120 × x – (9600 + 100 × x) = 20 × x – 9600

The minimum value of x for which P_x will be more than P_0 must satisfy the following inequality:

20 × x – 9600 > 25400
$\Rightarrow$ x > 1750
As only a maximum of 1700 units can be sold, P_x will never be more than P_0. Hence the maximum profit that can be earned is Rs. 25400 only.
Hence (1) is correct.

For questions 38 to 41:
From the given information the following table can be formed:

	M	F	V	NV	Total
Class 12	48	32	32	48	**80**
Class 11	44	36	40	40	**80**
Secondary Section	288	352	352	288	**640**
Total	**380**	**420**	**424**		**800**

38. 2 From the above table
Percentage of male students in the secondary section

$= \dfrac{288}{640} \times 100 = 45\%$

39. 5 From the above table

Male vegetarians $= \dfrac{25}{100} \times 32 = 8$

Female vegetarians = 32 – 8 = 24
Male non-vegetarians = 48 – 8 = 40
So, their difference is 40 – 24 = 16.

40. 1 Percentage of vegetarian students in Class 12

$= \dfrac{32}{80} \times 100 = 40\%$

41.* From the main table

	M	F	V	Male Veg	Female Veg	Total
Class 12	48	32	32			80
Class 11	44	36	40			80
Secondary Section	288	352	352	320	320	640
Total	380	420	424			800

*This question is wrong because the number of Male vegetarian cannot be greater than 288.

42. 3 The cost of angioplasty, hip replacement and a knee replacement (in US Dollars '000) in the given countries is as follows.

	India	Thailand	Malaysia	Singapore	USA
Angioplasty	11 + 5 = 16	13 + 5 = 18	11 + 6 = 17	13 + 4 = 17	57
Hip replacement	9 + 7 = 16	12 + 5 = 17	10 + 8 = 18	12 + 5 = 17	43
Knee replacement	8.5 + 9 = 17.5	10 + 6 = 16	8 + 4 = 12	13 + 4 = 17	40
Total cost	49.5	51	47	51	140

The cheapest is in Malaysia.

43. 1

	India	Thailand	Malaysia	Singapore
Knee replacement	8.5 + 9 = 17.5	10 + 6 = 16	8 + 4 = 12	13 + 4 = 17

Clearly, India has the highest cost for knee replacement surgery.

44. 4 In India, total cost in US$ = 3000 + 5000 + $\dfrac{1500}{32.89}$

(transportation cost)
= 8456.06
In Thailand, total cost in US$ = 4500 + 6000 = 10,500
Difference in amount is 10,500 – 8456.06 = US$ 2044
$\approx$ 67,500 Bahts

45. 2 In India, total cost for spirial fusion in US$ =

$\dfrac{5500 \times 40.928}{35} = 6431.5$

In Singapore, total cost for spirial fusion in US$ = 9000
Difference (in US$) is 9000 – 6431.5 = 2568.5 $\approx$ 2500

46. 4 For the shortest route, we have to consider the path A-C-F-J.

The table given below shows the distance and the corresponding price.

Path	Distance	Price
A-C	790	1350
C-F	410	430
F-J	970	1150
Total	2170	2930

Hence, the price for travelling by the shortest route is Rs. 2930.

47. 2 For the lowest price we have to consider the path A-H-J.

The table given below shows the distance and the corresponding price.

Path	Distance	Price
A-H	1950	1850
H-J	400	425
Total	2350	2275

If the company charges 5% below the minimum price of Rs. 2275 then it should charge 0.95 × 2275 = Rs. 2161

48. 3 If the airports C, D and H are closed, then the passenger must follow the path A-F-J for minimum price.

The table given below shows the distance and the corresponding price.

Path	Distance	Price
A-F	1345	1700
F-J	970	1150
Total	2315	2850

So the corresponding minimum price paid by a passenger is Rs. 2850.

49. 2 For minimum cost per km, we have to consider the path A-H-J

From solution of question 47, we know that the distance of path A-H-J is 2350 km and the price is Rs. 2275.

The price includes a margin of 10%.

So the minimum cost per km

$$= 2275 \times \frac{10}{11} \times \frac{1}{2350} = 0.88$$

50. 4 For minimum cost per km, again we have to consider the path A-H-J as illustrated in the solution of question 49.

The distance of path A-H-J is 2350 km.

51. 5 'Reciprocal roles determine normative human behaviour in society'.

This is the main idea of the passage that is carried throughout. Note that 'role of biology' is negated and 'reciprocal roles' are affirmed in paragraph 1 and 2.

52. 2 'We would not have been offended by the father playing his role 'tongue in cheek''.

All the other options would have been false if biological linkages would have structured human society.

53. 4 The last para where the author mentions the examples of a waitress and a clergyman and a driver refers to the alignment of self with the rules being performed and society preventing manifestation of the true self.

54. 1 C and E

In (A) 'to' is redundant.

In (B) 'hands on about Israel'.

In (D) a Shaliach, a sort of recruiter to Minneapolis.

55. 5 B only

In (A) 'into' should be used in place of 'in'

In (C) the article is missing before the word 'slump'

In (D) the singular form 'stimulus' should be used in place of 'stimuli'

In (E) 'effect' should be used in place of 'affect'

56. 3 B and D

In (A) 'said' should be used instead of 'told'

In (C) 'handed down to' should be used in place of 'handed to'

In (E) a subject is required after 'hence'. Another way of correcting (E) is to replace 'hence' by 'but'.

57. 2 'The difference between two artistic interpretations' Refer the last three lines of the 1st para where the author talks about the gap between the two artistic interpretations within the depth of the creative power and doesn't mention width.

58. 1 'Define the place of the poet in his culture'.

The lines starting with "But suddenly I understood ....." define the position of the poet in his culture.

59. 4 Refer to the 5th line of the 2nd para. Here the term "adventures of experience" refers to the poet & artists who over vitalize and enrich the past for us.

60. 5 "The personification of a whole organization is a textual device …" is the choice which continues the theme in the last two lines of the paragraph in the best possible way. The latter half of the paragraph is talking about personification of whole organizations and this is the choice which completes the paragraph satisfactorily. The choice justifies why whole organizations are personified even though they cannot speak as characters.

61. 1 'Yet despite these technical developments…… …care about'.

In the first line of the paragraph the author speaks about the magical allure still retained by photographs. Then he goes on to describe the negative effects of technological advancements on the same. Thus, in line with the first idea (1) describes how photographs are still holding out against these negative effects.

62. 2 'No inventory would ever include those, ofcourse'. The para starts with listing out 'the inventory'. The option which says 'what she lacked...............natural shrewdness' is beyond the scope of the argument. All the options can be easily eliminated. 'Those' in the option 'No inventory would ever include those, ofcourse', refers to human intuition and intelligence of Mma Ramotswe.

63. 4 'ways of understanding a scientific tradition '.
The idea is implicitly throughout the passage.

64. 3 'Loyalty to a certain paradigm of scientific inquiry'.
This is an analogy question where we can draw comparison from the line that says "loci of commitment that have been described as accepted rules." Options 1 and 2 talk about a biochemical structure rather than conformity. It is 'loyalty to something' and not 'loyalty among people' talked about in the passage. Option 4 talks about adherence to an accepted norm which goes out of the scope of the argument. Option 5 talks about evolving trends which is not mentioned in the paragraph. Therefore option (3) is the best choice.

65. 5 From the theme and tone of the passage it can be inferred that paradigms are predominant as compared to rules. It is difficult to define rules. Paradigms in part determine normal science and also need not depend on the formulation of rules and assumptions. Hence the author would agree with the choice "Paradigms are a general representation of rules and beliefs of a scientific tradition."

66. 4 AABBA
Cricket Council is a collective noun so it takes a singular verb. The reference is made to a group as a whole and not to an individual.
Censure implies harsh criticism.
Censor means to put a ban on something objectionable.
Credible means capable of being believed.
Credulous means tending to believe without evidence.
Discretely means distinct whereas discreetly means to carefully avoid social embarrassment or distress; tactful.

67. 5 ABABA
Farther is used specifically for physical distance.
Further is not used in the physical context and is used to indicate something of a greater degree or extent.
Historical is something pertaining to history while historic is something significant.
Distrust means having a sense of fear anticipation of discomfort of danger whereas mistrust is believing that a particular party has a hidden agenda.
True means not false or not fictional while real means existing or occurring in the physical world.
Compliment means a remark or an act expressing respect or admiration
Complement means a person or thing that completes something

68. 2 BBBAB
Regretfully would refer to the subject 'I'
Sensual is more related to sense organs (bodily)
Sensuous is aesthetically appealing to the senses.
Beside oneself means overwhelmed
For example: Beside oneself with grief
Stationary means something that is at rest
Stationery means any writing material
'Over' refers to a more symbolic sense whereas 'above' confirms with the idea of crossing the physical mark.

69. 3 Option (3) is the most logical explanation. Refer to lines "those include … correlations between variables"

70. 2 'Historical outcomes depend.....................................each case'.
Refer to the 1st para where it says "Prediction in history… became averaged out". This is further supported by the example.

71. 3 Note the tone with which the third paragraph starts it emphasizes that students can do much more!

72. 4 ECBD
EC is a mandatory pair which is linked by 'crime'. This pair is contained in options (2) and (4). D cannot follow A as 'particular piece of work' is mentioned in B. Thus D should follow B.

73. 1 EDBC
E must follow A as it talks about the third discourse. BC is a mandatory pair as C continues the thought that there is a need for greater expert management.

74. 5 BCDE
B and C explain the positive developments after 'the fall of President Soeharto and the close of his centralized,.......................In 1997'. DE is a mandatory pair as D speaks about the opinion of analysts and E speaks about another group of analysts.

75. 3 CBED
A talk about squatters' land. C describes who the squatters were. B follows C as it gives the description of squatters' land.
E carries on the idea of what happens in the squatters' land (ripening, gathering, thrashing, collecting etc.) and finally D gives additional information about what is grown in these fields which is indicated by the word 'also'.