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FREE iCAT 1

Instructions - Please read carefully before proceeding

1. The test has three sections that examine various abilities. In all there are 75 questions. You need to demonstrate competence in all three sections. Bear this in mind while distributing your time over three sections.
2. Time duration for this test is two hours and 30 minutes
3. Directions for answering the questions are provided before each question type. Read the directions carefully. There is only one correct answer to every question.
4. Each question carries 4 marks. Negative marking for wrong answers is 1/3 of the marks allotted to that question.
5. Do not use calculators, log tables, dictionaries, or any printed or online reference material while taking this test. You may use rough paper for this test.
6. In a real CAT test, any time you take off in the middle of the test is time wasted. Plan your day so that you avoid interruptions during the test. To maximize the usefulness of this test it is strongly advised that you complete it in one sitting.
7. You may take a printout of the answer sheet provided to answer the questions.
8. You can take the test **online** at **testfunda.com** after a free registration. After you submit your scores, you will have access to **detailed solutions**, and **detailed analysis reports**. You will also have access to the **Ask-a-Doubt facility**.

SECTION I
Number of Questions = 25
Note: Questions 1 to 25 carry four marks each.

Directions for Questions 1 to 5: Answer the following questions based on the information given below.

Vijay has just started saving enough money and he wants to learn how to invest it in the best possible manner. His friend Amit has agreed to help him. Amit tells Vijay that he invests his money in four broad categories: fixed deposits, equities, equity mutual funds and debt mutual funds. Amit saves Rs. 40,000 every year and deposits all of it across these four categories on 1st April of every year. He started investing in 2004 with equal amounts in the four categories, but since then, the break-up of his deposits across these four categories has differed. However, he ensures that 50% of his yearly savings go into equities and equity mutual funds and the remaining 50% in the other 2 categories. Also, Amit maintains a data table recording the total amount he has in each of these four categories as on 1st April of every year (table given below). It is also known that the interest rates on fixed deposits have been decreasing: they were 10%, 9% and 8% per annum in the years 2004-05, 2005-06, and 2006-07 respectively. Amit also remembers that the percentage returns on equities in 2006-07 were five times the percentage returns on debt mutual funds in the same year and the percentage returns on equity mutual funds in 2004-05 and 2005-06 were half of the percentage returns on equities in 2005-06 and 2006-07 respectively. Amit does not remember too many details besides that.

Year	**2004**	**2005**	**2006**	**2007**
Investment Category				
Fixed Deposits	10,000	19,000	28,210	37,466.8
Debt Mutual Funds	10,000	23,300	38,596	55,455.6
Equity Mutual Funds	10,000	23,000	40,750	70,050
Equities	10,000	22,000	38,800	65,200

1. What were the percentage returns on equity mutual funds in the year 2005-06?
(1) 20%
(2) 25%
(3) 27.5%
(4) 30%
(5) None of these

2. What was the amount deposited in equity mutual funds on 1st April, 2007?
(1) 7000
(2) 8000
(3) 12000
(4) 13000
(5) None of these

3. What were the percentage returns on equities in the year 2004-05?
(1) 25%
(2) 30%
(3) 35%
(4) 40%
(5) None of these

4. What were the percentage returns on debt mutual funds in the year 2005-06?
(1) 10%
(2) 11%
(3) 12%
(4) 13%
(5) None of these

5. If the total amount deposited across all four categories every year is Rs. 40,000, what is the highest total percentage returns in any given year?
(1) 18.3%
(2) 21.8%
(3) 25.4%
(4) 28.6%
(5) 33.7%

Directions for Questions 6 to 9: Answer the questions on the basis of the information given below.

Four doctors Dr. Shekhar, Dr. Parag, Dr. Mohini and Dr. Geeta visit four different polyclinics A, B, C and D from Monday to Thursday every week. Each doctor visits only one polyclinic every day.

The first table gives the number of times from Monday to Thursday that each doctor visits each polyclinic. The second table gives the number of doctors out of these, who are present in each polyclinic on each of these days.

	A	B	C	D
Dr. Shekhar	1	1	2	0
Dr. Parag	1	0	1	2
Dr. Mohini	2	1	0	1
Dr. Geeta	0	1	2	1

	A	B	C	D
Monday	2	1	1	0
Tuesday	1	1	1	1
Wednesday	1	0	2	1
Thursday	0	1	1	2

6. If Dr. Geeta visits C on Monday and Dr. Mohini visits B on Thursday, which polyclinic does Dr. Shekhar visit on Monday?
(1) A
(2) B
(3) C
(4) A or B
(5) A or C

7. Dr. Parag visits C on Tuesday. Which polyclinic does Dr. Shekhar visit on Wednesday?
(1) B
(2) D
(3) C
(4) B or C
(5) C or D

8. Dr. Mohini visits D on Wednesday. Therefore, Dr. Parag has to visit _____ on Monday.
(1) A
(2) C
(3) D
(4) A or C
(5) C or D

9. Dr. Shekhar visits A on Wednesday. Which of the following statements is/are definitely true?

I. Dr. Parag visits D on Thursday.
II. Dr. Mohini visits A on consecutive days.
III. Dr. Geeta visits C on consecutive days.

(1) Only I
(2) I and II
(3) I and III
(4) I, II and III
(5) II and III

Directions for Questions 10 to 13: Answer the following questions based on the information given below.

PHL (Premier Hockey League) was launched in India in 2005. The league was an attempt to raise the popularity of Hockey in India. These were some of the rules:

- League comprised of five teams, each playing against the other team exactly twice.
- Each win earns the team three points and two points (in case the team wins in extra time).
- A loss earns zero points and one point (in case they lose in extra time).
- Thus there was no provision of draws.
- The team with the highest points wins the inaugural edition of PHL.
- In case of tie, the team with the highest Goal Difference [GD] wins the league.

The matches were divided into various phases; in each phase four matches were played starting from Thursday to Sunday. Thus, not more than one match was played on a given day. The table below is the points table (incomplete) as on 10 February 2005.

Following is the schedule for the last phase starting from 10th Feb 2005 onwards:

- Bangalore Hi-Fliers vs. Chennai Veerans
- Sher-e-Jalandhar vs. Chennai Veerans
- Maratha Warriors vs. Bangalore Hi-Fliers
- Sher-e-Jalandhar vs. Hyderabad Sultans

At the end of last phase, both Hyderabad Sultans and Sher-e-Jalandhar had equal points. Total points earned by Chennai Veerans and Bangalore Hi-fliers were 8 and 9 points respectively.

P: Played; W: Won; L: Lost; GF: Goals for; GA: Goals against; GD: Goal Difference; Pts.: Points

Team	P	W	L	GF	GA	GD	Pts
Hyderabad Sultans	7		2	21	16		16
Sher-e-Jalandhar		4		15	4	11	11
Maratha Warriors	7		4	12	13	-1	
Bangalore Hi-Fliers		3		10	15	-5	8
Chennai Veerans	6					-10	4

10. With how many points did the Maratha Warriors end the league?
(1) 13
(2) 12
(3) 14
(4) 11
(5) None of these

11. Who won the inaugural edition of PHL?
(1) Hyderabad Sultans
(2) Chennai Veerans
(3) Maratha Warriors
(4) Sher-e-Jalandhar
(5) None of these

12. On which date did the PHL start?
(1) 13 Jan
(2) 12 Jan
(3) 20 Jan
(4) 19 Jan
(5) 10 Feb

13. If Goals for (GF) determines the strength of the forward line of a team and Goals against (GA) determines the strength of the defense line, which of the following teams has the most balanced combination of forward and defense lines?
(1) Hyderabad Sultans
(2) Chennai Veterans
(3) Maratha Warriors
(4) Sher-e-Jalandhar
(5) Cannot be determined

Directions for Questions 14 to 17: Answer the following questions based on the information given below.

In a group of 9 persons, each one of them were asked to write the sum of the ages of the other eight persons.

The numbers given by those 9 persons formed the following set:

A = {312, 313, 314, 315, 316, 317, 318, 319}

14. What is the sum of the ages of all the 9 people?
(1) 380
(2) 360
(3) 355
(4) 385
(5) None of these

15. What is the age of the youngest person?
(1) 36
(2) 41
(3) 21
(4) 51
(5) None of these

16. What is the age of the eldest person in the group?
(1) 58
(2) 43
(3) 48
(4) 56
(5) None of these

17. If it is given that eight people in the group have different ages, then what is the age of ninth person?
(1) 36
(2) 41
(3) 39
(4) 37
(5) None of these

Directions for Questions 18 to 21: 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.

18. Are a, b and c in A.P.?
A. $a + d$, $b + 2d$ and $c + 3d$ are in A.P.
B. $b/2$, b and $a + c$ are in G.P.
(1) 1
(2) 2
(3) 3
(4) 4
(5) 5

19. What is the last digit of the number $(417)^y \times (49)^x$?
A. x is a seven digit number which is in the form of $(8k + 1)$ and y is a number whose sum of the digits is 33.
B. x and y are multiples of 128.
(1) 1
(2) 2
(3) 3
(4) 4
(5) 5

20. Is $x < 100$, given that x is an integer?
A. $x = 1 + 2 + 3 + ... + N$, where N is an integer > 5
B. x is divisible by 8.
(1) 1
(2) 2
(3) 3
(4) 4
(5) 5

21. From which vertex is the longest altitude of a triangle ABC drawn?

A. AB = AC

B. m ∠ABC > 45°

(1) 1

(2) 2

(3) 3

(4) 4

(5) 5

Directions for Questions 22 to 23: Answer the following questions based on the information given below.

Powergroup Enterprises produces five kinds of products 'Cadila', 'Lincon', 'Powler', 'Indiva' and 'Pano'. In order to produce these products different sets of processes are required.

The following information is known about the company processes:

- Product Cadila involves ABCGH process in that order.
- Product Lincon involves HIAE process in that order.
- Product Powler involves CDGFE process in that order.
- Product Pano involve BDGAF process in that order.
- Product Indiva involves DEAIG process in that order.
- CPD (Cost per day) for a product is represented as (Total cost of all processes)/(Total number of days for all processes).

The table below gives the details of the time taken for each process and the 'Cost Per Day' for each process.

Process	Time in days	Cost Per Day (in rupees)
A	14	150
B	7	50
C	21	200
D	7	50
E	4	25
F	4	150
G	7	50
H	4	25
I	14	300

22. Which product has the least cost?

(1) Cadila
(2) Lincon
(3) Powler
(4) Pano
(5) Indiva

23. Powergroup is in the process of changing the production cycle of 'Pano'. What will be the minimum cost of producing Pano, if it has to follow a production cycle consisting of five processes and the first and last processes cannot be replaced? (Also, no process should be repeated.)

(1) 1600
(2) 1550
(3) 1500
(4) 1700
(5) None of these

24. Which is the most expensive product according to CPD?

(1) Cadila
(2) Lincon
(3) Powler
(4) Pano
(5) Indiva

25. If the product Indiva is sold at 20% profit after giving 10% discount, what is the mark-up price of Indiva? (Total cost will also include expenses of Rs. 50 towards the marketing and advertising which was the only expense incurred apart from the cost for the processes.)

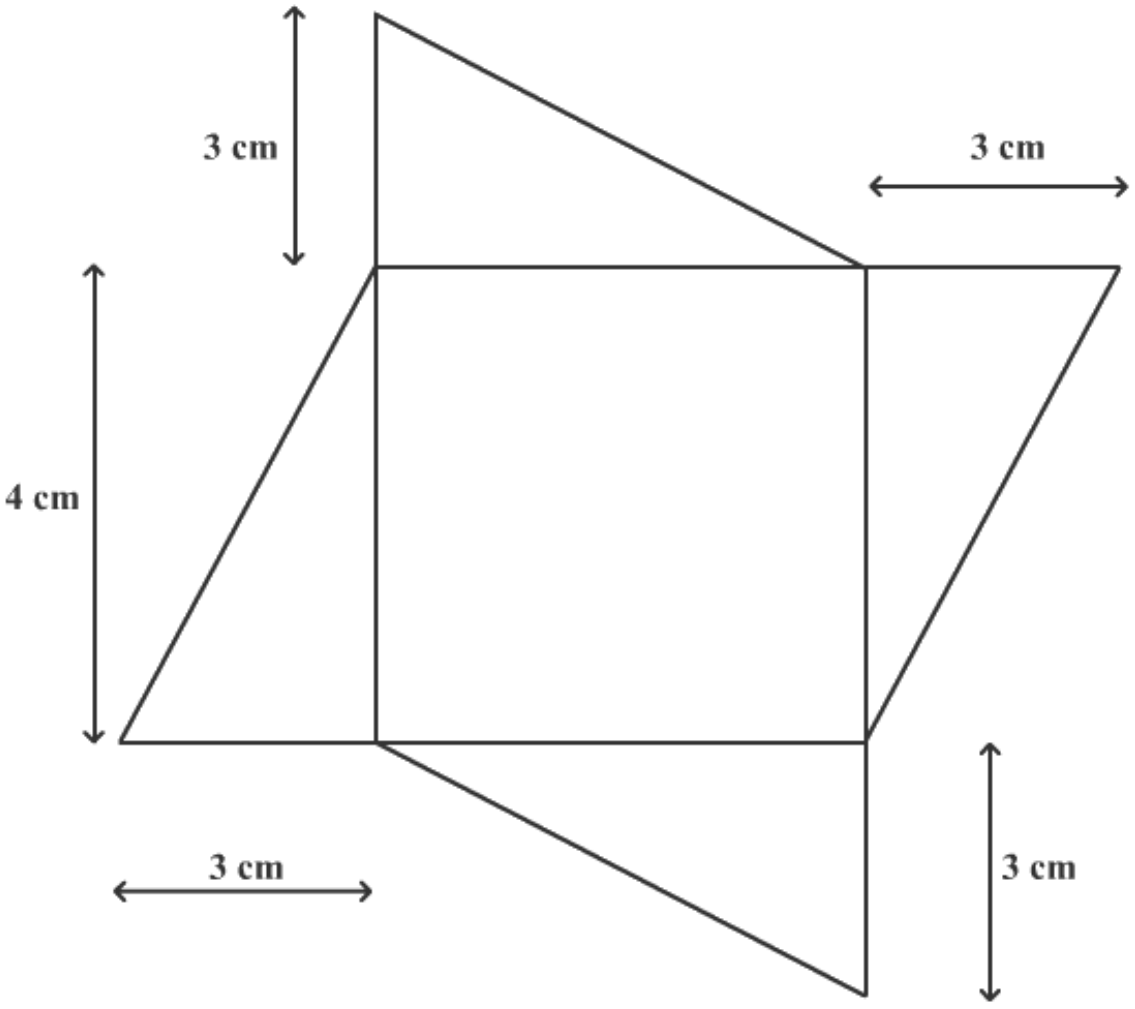
(1) Rs. 9,816
(2) Rs. 9,438
(3) Rs. 9,533
(4) Rs. 9,930
(5) Rs. 9,467

SECTION II
Number of Questions = 25
Questions 26 to 50 carry 4 marks each.

26. If the quadratic equation $ax^2 + bx + c = 0$ has equal roots and $a = 2c$, what is the sum of the reciprocals of the roots of the equation?

(1) ± 2
(2) -2
(3) $\pm 2\sqrt{2}$
(4) 2
(5) 1

27. A metal rod has a uniform cross section as shown in the diagram, consisting of a square surmounted by 4 identical right angled triangles. The rod is 20 cm long. It is immersed in a cylindrical vessel. The diameter of cross section of the cylindrical vessel is 14 cm. The vessel initially has 25 cm of water. By how much (in cm) will the water level rise?



(1) 4 to 5
(2) 5 to 6
(3) 6 to 7
(4) 7 to 8
(5) None of these

28. Find the value of $x = \left(\frac{7}{9}\right) \times \left(\frac{26}{28}\right) \times \left(\frac{63}{65}\right) \times \left(\frac{124}{126}\right) \times \ldots$ upto 10 terms.

(1) $\frac{133}{198}$
(2) $\frac{266}{301}$
(3) $\frac{19}{21}$
(4) $\frac{13}{15}$
(5) $\frac{399}{420}$

29. A certain lottery gives 30 tickets to different people. The tickets are numbered from one to thirty. There are seven numbers on each ticket. The set of numbers is represented by $S_i = \{i, 4^i - 1, 8^i + 1, 4i - 2, 4i + 2, 6i - 3, 7i + 8\}$, where '$i$' is the ticket number. All tickets which have at least two prime numbers on them will be identified as winning tickets. How many winning tickets are given out?

(1) 4
(2) 5
(3) 6
(4) 7
(5) 8

30. There is a square plot ABCD of side 20 m. Four cats Ampi, Bampi, Champi and Dampi are standing on the vertices A, B, C and D respectively. These cats start running simultaneously around the periphery of the square in an anti-clockwise direction. If speeds of Ampi, Bampi, Champi and Dampi are 8 m/s, 6 m/s, 4 m/s and 2 m/s respectively, then what is the difference between the distance covered by Ampi when she meets Champi for the second time and the distance covered by Bampi when she meets Dampi for the first time?

(1) 120 metres
(2) 80 metres
(3) 180 metres
(4) 240 metres
(5) None of these

31. Given that:

$M = 0.a_1a_1a_1a_1a_1\ldots$

$N = 0.a_1a_2a_1a_2a_1a_2\ldots$

$O = 0.a_1a_2a_3a_1a_2a_3\ldots$

$P = 0.a_1a_2a_3a_4a_1a_2a_3a_4\ldots$

Where a_1, a_2, a_3, a_4 are digits between 1 and 8.

What is the value of Z for which the expression $Z = 9(M + N + O + P)$ is definitely an integer?

(1) 1111
(2) 12321
(3) 123321
(4) 1234321
(5) 1221

32. A six digit number is divisible by 3, 7, 13 and 37. What is the ratio of the sum of the digits of the number to the sum of its first four digits?

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

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

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

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

(5) Cannot be uniquely determined

33. What is the coefficient of x^{15} in $(1 - x)(1 - 2x)(1 - 2^2x)(1 - 2^3x)\ldots(1 - 2^{15}x)$?

(1) $2^{105} - 2^{121}$
(2) $2^{121} - 2^{105}$
(3) $2^{120} - 2^{104}$
(4) $2^{120} - 2^{102}$
(5) $2^{121} - 2^{110}$

34. For which of the following ranges of values of x is $343^{x(x+1)} > \frac{1}{49^{(x-4)}}$?

(1) $1 \le x \le 2$
(2) $0 < x < 2$
(3) $x < -2$
(4) $x \le -2$
(5) $1 < x < 3$

35. What is the 26th digit to the right of the decimal point in the expansion of $\left(1+\sqrt{2}\right)^{100}$?

(1) 6
(2) 7
(3) 8
(4) 9
(5) 0

36. If [x] represents the least integer ≥ x, then the expression $3^1 \times 3^2 \times 3^3 \times 3^4 \times 3^5 \times \ldots \times 3^n$ when represented in base 6 will have how many digits?

(1) $\left[\frac{n \times (n+1)}{2} \times \frac{\log 3}{\log 6}\right] + 1$
(2) $\frac{[n \times (n+1)]}{4}$
(3) $\left[\frac{n \times (n+1)}{2} \times \frac{\log 3}{\log 6}\right]$
(4) $\left[\frac{n \times (n+1)}{2} \times \frac{\log 3}{\log 6}\right] - 1$
(5) Cannot be determined

37. A man asks a stranger in a train to guess his name. He tells the stranger the following things:

i. His name is 8 letters long.
ii. He tells all the letters of which 7 are different.
iii. He also tells the letter which is repeated.
iv. There are four possible spellings of his name using the same letters, all of which are acceptable.
v. The last two letters of his name are different, and neither of these letters are to be repeated in his name.

The stranger then tries to guess the name. In how many ways can he make a wrong guess?

(1) 714
(2) 720
(3) 10800
(4) 10796
(5) 256

38. A circle is drawn passing through all three vertices of a triangle with sides 16 cm, 30 cm and 34 cm. What is its radius?

(1) 15 cm
(2) 16 cm

(3) 17 cm
(4) 18 cm
(5) 19 cm

39. Consider the four points $A(0,0)$, $B(5\sqrt{3},5)$, $C(5\sqrt{3}+5,5-5\sqrt{3})$ and $D(5,-5\sqrt{3})$. Which of these statements is true?
(1) A circle can be drawn through the points A, B and C.
(2) A circle can be drawn through the points A, B and D.
(3) A circle can be drawn through all four points A, B, C and D.
(4) Option (1) and (2)
(5) Option (1), (2) and (3)

40. Pravin and Shital have 3 daughters - Eena, Meena, and Deeka. Meena is older than Eena and younger than Deeka. The difference between the ages of Eena and Meena is the same as the difference between the ages of Meena and Deeka. 10 years ago, Meena's age was twice that of Eena's age. 2 years from now, 3 times the age of Eena will be the same as 2 times the age of Deeka. 3 years ago, Shital's age was thrice that of Deeka's age. The sum of the present ages of all the family members is 178 years. What was Pravin's age at the time of Meena's birth?
(1) 34 years
(2) 46 years
(3) 42 years
(4) 38 years
(5) None of these

41. $f(n)=\frac{n+1}{2}$, and $g(n)=\left(\frac{n}{2}\right)-1$,
where n is a natural number.

Which of the following statements is/are true?

(A) $f(n)\times\frac{1}{g(n+3)}=1$

(B) $f(n-3)-g(n)=0$

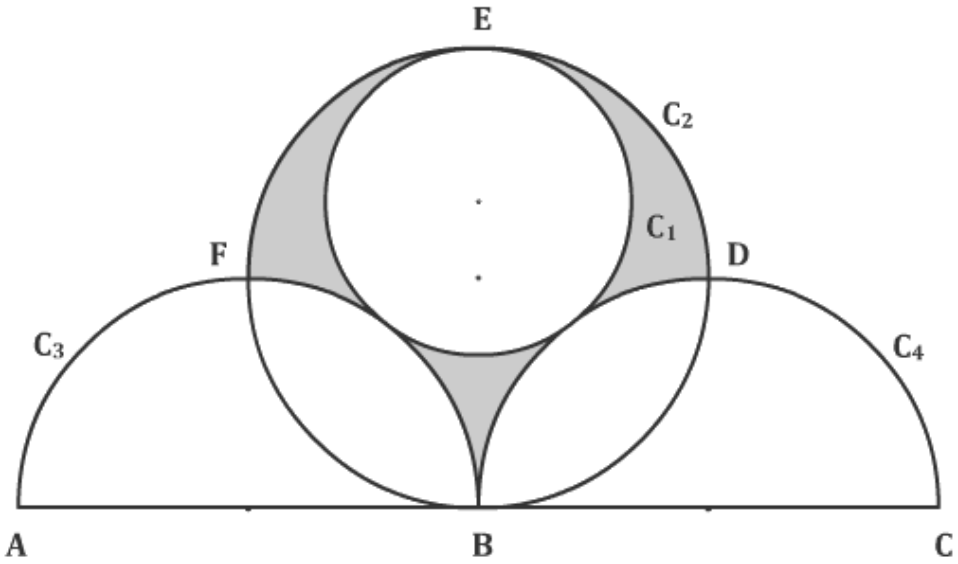
(C) $[f(n)]^2=g(n)$ for at least one value of n

(1) (A) only
(2) (B) only
(3) (A), (B) and (C)
(4) (A) and (B)
(5) (A) and (C)

42. If $f(r^n - 1) = (r - 1)(1 + r + r^2 + \ldots + r^{n-1})$ for real r and any integer n, which of the following is false?

(1) $f(x)$ is an odd function
(2) $f(x)$ is zero for only one value of x
(3) The graph of $f(x)$ with respect to x is inclined at 45° to X-axis
(4) $|f(x)| = f(|x|)$
(5) None of these

43. The circles C_2, C_3 and C_4 have diameter equal to '$2a$' units and a small circle C_1 is drawn in a big circle such that it touches all three circles as shown. What will be the area of the shaded region?



(1) $\left(2 - \frac{5\pi}{9}\right) a^2$
(2) $\left(4 - \frac{5\pi}{9}\right) a^2$
(3) $\left(2 - \frac{4\pi}{9}\right) a^2$
(4) $\left(4 - \frac{4\pi}{9}\right) a^2$
(5) None of these

44. A man has a coin. He tosses it a number of times. He takes 4 steps forward if the result of a toss is heads and 3 steps backwards if the result of the toss is tails. Each step of his measures a constant 0.5 metres. If, after 10 tosses, he is 9.5 metres from his starting point, what is/are a possible value/s of the number of tosses that came up tails?

(1) 3 only
(2) 7 only
(3) 3 or 7
(4) 4
(5) None of these

45. If $f(x) + f(2x) + f(3x) = 0$, which of these is equal to $f(4x) + f(2x) - f(3x)$?

(1) $f(6x)$
(2) $f(6x + 3)$
(3) $f(9x)$
(4) $f(9x - 3)$
(5) None of these

46. A small child observes the movement of the minute hand on a large street clock. He sees that the minute hand reaches to the edge of the clock. He wants to find the distance the tip of the minute hand moves in half an hour, and calls this quantity *D*. Suddenly, he sees the following inscription at the bottom of the clock tower:

The tip of the minute hand of this clock moves at a rate of $\frac{\pi}{25}$ m/min.

After seeing this, he calculates *D* and walks home. What is the value (in metres) of *D*?

(1) $\frac{3\pi}{4}$
(2) $\frac{4\pi}{5}$
(3) $\frac{5\pi}{6}$
(4) $\frac{5\pi}{4}$
(5) $\frac{6\pi}{5}$

47. There are *n* vertically mounted glass panes between two enemies A and B. The distance between the glass panes nearest from A and B is the same as the distance between any two successive glass panes. A has a Beretta gun which can fire bullets at a speed of 500 m/sec whereas B has an Ingram gun which can fire bullets at a speed of 600 m/sec. It is known that each glass pane reduces the speed of a Beretta bullet by 20 m/sec and that of an Ingram bullet by 40 m/sec. If both A and B fire at each other simultaneously and bullets hit both of them at the same moment, find the number of glass panes (n) between A and B.

(1) 25
(2) 15
(3) 10
(4) 5
(5) 20

48. Consider a straight road. A runner called Aniket, who runs at a constant speed, can run from the start of the road to the finish in 2.5 hours. On one occasion, two of his friends, Bhagyesh and Chandu, start running (with constant speeds) towards Aniket from the other end of the road as soon as Aniket starts running from the starting point. He meets Bhagyesh after 1 hour of running and Chandu after 2 hours of running. What is the ratio of the speeds of Aniket, Bhagyesh and Chandu?
(1) 1:2:3
(2) 4:6:1
(3) 4:1:6
(4) 3:4:1
(5) None of these

49. How many three digit numbers exist such that their value is decreased by 99% when their digits are reversed?
(1) 9
(2) 10
(3) 19
(4) 20
(5) 100

50. When 6 is affixed at the end of a five-digit number and the resultant number is quadrupled, the result is 6 followed by the original five-digit number. Find the original 5-digit number.
(1) 15584
(2) 15484
(3) 15284
(4) 15384
(5) 15184

SECTION III

Number of Questions =25
Note: Questions 51 to 75 carry four marks each.

Directions for Questions 51 to 63: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

Professionalism is a dull, ugly word; but it means dull, ugly things, a perversion of the higher activities of man, of art, literature, religion, philosophy; and a perversion to which we are all apt to be blind. We know that in these activities specialization is a condition of excellence. As Keats said to Shelley, in art it is necessary to serve both God and Mammon; and as Samuel Butler said, "That is not easy, but then nothing that is really worth doing ever is easy." The poet may be born, not made; but no man can start writing poetry as if it had never been written before. In every art there is a medium, and the poet, like all other artists, learns from the poets of the past how to use his medium. Often he does this unconsciously by reading them for delight. He first becomes a poet because he loves the poetry of others. And the painter becomes a painter because he loves the pictures of others. Each of them is apt to begin –

As if his whole vocation
Were endless imitation.

So the artist insists to himself upon the value of hard work. He is impatient of all the talk about inspiration; for he knows that, though nothing can be done without it, it comes only with command of the medium. And this command, like all craftsmanship, is traditional, handed down from one generation to another. Any kind of expression in this imperfect world is as difficult as virtue itself. In virtue the natural man rises above his animal functions, above living so that he may continue to live; he triumphs over those animal functions which hold him down to the earth as incessantly as the attraction of gravity itself. But, like the airman, he can triumph only by material means, and by means gradually perfected in the practice of others. Yet there is always this difference, that in mechanics anyone can learn to make use of an invention; but in the higher activities, invention, if it becomes mechanical, destroys the activity itself, even in the original inventor. The medium is always a medium, not merely a material; and if it becomes merely a material to be manipulated, it ceases to be a medium.

Now professionalism is the result of a false analogy between mechanical invention and the higher activities. It happens whenever the medium is regarded merely as material to be manipulated, when the artist thinks that he can learn to fly by mastering some other artist's machine, when his art is to him a matter of invention gradually perfected and necessarily progressing through the advance of knowledge and skill. One often finds this false analogy in books about the history of the arts, especially of painting and music. It is assumed, for

instance, that Italian painting progressed mechanically from Giotto to Titian, that Titian had a greater power of expression than Giotto because he had command of a number of inventions in anatomy and perspective and the like that were unknown to Giotto. So we have histories of the development of the symphony, in which Haydn, Mozart, Beethoven are treated as if they were mechanical inventors each profiting by the discoveries of his predecessors. Beethoven was the greatest of the three because he had the luck to be born last, and Beethoven's earliest symphonies are necessarily better than Mozart's latest because they were composed later. But in such histories there always comes a point at which artists cease to profit by the inventions of their predecessors. After Michelangelo, perhaps after Beethoven, is the decadence. Then suddenly there is talk of inspiration, or the lack of it. Mere imitators appear, and the historian who reviles them does not see that they have only practised, and refuted, his theory of art. They also have had the luck to be born later; but it has been bad luck, not good, for them, because to them their art has been all a matter of mechanical invention, of professionalism.

The worst of it is that the greatest artists are apt themselves to fall in love with their own inventions, not to see that they are mechanical inventions because they themselves have discovered them. Michelangelo in his "Last Judgment" is very professional; Titian was professional through all his middle age; Tintoret was professional whenever he was bored with his work, which happened often; Shakespeare, whenever he was lazy, which was not seldom. Beethoven, we now begin to see, could be very earnestly professional; and as for Milton - consider this end of the last speech of Manoah, in Samson Agonistes, where we expect a simple cadence -

The virgins also shall on feastful days
Visit his tomb with flowers, only bewailing
His lot unfortunate in nuptial choice,
From whence captivity and loss of eyes.

Milton was tempted into the jargon of these last two lines, which are like a bad translation of a Greek play, by professionalism. He was trying to make his poetry as much unlike ordinary speech as he could; he was for the moment a slave to a tradition, and none the less a slave because it was the tradition of his own past.

51. According to the passage, how is expression like virtue?

(1) Expression, like virtue, can exist only in an imperfect world.
(2) Expression, like virtue, is a kind of transcendence.
(3) Expression, like virtue, is a triumph over animal functions.
(4) Expression, like virtue, is triumph only by material means and by means perfected by others.
(5) Expression, like virtue, is traditional, handed down from one generation to another.

52. According to the passage, which of the following would best encapsulate the 'theory of art' held by the 'historian who reviles' the imitators?
(1) Decadence in art is always caused by professionalism.
(2) All new developments in art are escapes from professionalism.
(3) The art of the 'imitators' lacks professionalism.
(4) Professionalism is a device for creating works of art.
(5) Mechanical invention and works of art are not comparable.

53. The author quotes the end of the last speech of Manoah, in Samson Agonistes:
(1) As an example of decadence in art owing to the artist not being able to find the right expression because of professionalism.
(2) As an example of decadence in art owing to the artist not being able to rise above traditions set by predecessors.
(3) As an example of decadence in art owing to the artist trying to make his art as close to ordinary expression as he could.
(4) As an example of decadence in art owing to the artist trying to rise above traditions set by himself.
(5) As an example of decadence in art owing to the artist not being able to distinguish between the material and medium.

54. The writer is likely to disagree with which of the following?
(1) A poet is born and not made.
(2) A poet and a pilot are comparable at least in the initial stages.
(3) Mozart's earliest symphonies were better than Beethoven's latest.
(4) Michelangelo was thoroughly professional in his 'Last Judgment'.
(5) Practice is as important in art as is inspiration.

Directions for Questions 55 to 58: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

According to modern science's version of Genesis- less colourful than the biblical story, but no less wonderful - Earth was born, together with the Sun and the other planets, in a whirlwind of gas and dust, some 4.5 billion years ago, a little more than nine billion years after the Big Bang. A half - billion years later, our planet had recovered sufficiently from the pangs of its violent birth to become physically capable of harbouring life. After less than another half - billion years, it did indeed harbour life, in particular an entity, called the last universal common ancestor (LUCA), that gave rise through evolution to all known living creatures, including microbes of various kinds, plants, fungi, animals, and humans.

Primitive organisms arose from non-living matter in what were probably hot, sulfurous, metal-laden, volcanic waters. This unsavoury brew was likely "spiced" with abundant small

organic molecules such as amino acids, sugars, nitrogenous bases, and other typical components of biological constituents. One of the most astonishing discoveries of the last decades, revealed by exploration of space, nearby celestial objects, and especially meteorites that fell to Earth, is that many of the chemical building blocks of life form spontaneously throughout the universe. Organic chemistry, so named because it was believed to be a prerogative of living organisms, has turned out to be the most widespread and banal chemistry: the chemistry of carbon. How this 'cosmic chemistry' gave rise to the first living cells is not known in detail, but the process may be summed up in two words. The first is chemistry, the essence of life. Living beings continually manufacture their own constituents from small inorganic and organic building blocks, with the help of catalysts called enzymes and of energy derived from sunlight, mineral sources, or foodstuffs made by other organisms. Something similar happened in the origin of life, but along pathways, by the action of catalysts, and with sources of energy that remain to be identified.

Enormous research efforts have already been devoted to this problem. Much has been learnt, but no solution is in sight. All that can be said is that the processes involved must, being chemical, have been highly deterministic and reproducible, that is, bound to occur under prevailing conditions. If chemistry admitted even a small element of chance, there could be no chemical laboratories, no chemical factories. The second key word is replicability, the ability of certain information - bearing molecules to induce the making of (complementary) copies of themselves by the machineries responsible for the synthesis of their kind. This function, fulfilled mostly by DNA today, was probably first carried out by RNA, a close relative of DNA.

In the beginning, replication concerned only RNA molecules. Soon, RNA molecules became involved in the synthesis of proteins according to RNA - supplied blueprints, so that replication extended to proteins, by way of RNA (eventually DNA). In turn, replication came to affect, by way of proteins, increasingly complex objects, up to cells and multi-cellular organisms.

Replication allowed the endless reproduction of the same entities, generation after generation, which is the basis of genetic continuity. Furthermore, because of the inevitable failures in the fidelity of the process, replication necessarily led also to variation (in replicable form), hence to competition among variant lineages for available resources. The necessary outcome, as first divined by Charles Darwin, was the selection of those lineages most apt to survive and, especially, produce progeny under existing conditions. This process became added to chemistry as soon as replicability appeared, operating first on molecules and, subsequently, on increasingly complex assemblages, until the present day. With replication, chance made its appearance, by way of the variations, or mutations, that were offered to the screening action of natural selection. According to all we know, these variations are strictly accidental, totally devoid of any intentionality or foresight - hence the widespread notion that the history of life was ruled by contingency. But this view ignores the possibility that the array of choices offered by chance to natural selection may be sufficiently extensive to allow

an optimal or near - optimal solution to emerge, in which case the process is actually close to obligatory and reproducible under the prevailing conditions.

Indeed, there are strong reasons to believe that optimizing selection may have occurred in the origin and evolution of life more often than is generally assumed. This implies that life, to the extent that it is the product of deterministic chemistry and of optimizing selection, is likely to arise, in a form similar to life as we know it, wherever conditions mimic those that surrounded its birth on Earth, thus justifying today's interest in extraterrestrial life.

But this optimizing selection during evolution is nothing like proof of intelligent design. Irrespective of the arguments put forward in support of ID, which have been abundantly refuted, let it simply be stated that a theory based on an a priori declaration that things are not naturally explainable is not a scientific theory. By definition, the science is based on the idea that the object of study is naturally explainable. Why look for an explanation otherwise? What is truly wonderful is how much of nature, including the fundamental features of life, has already proven to be explainable.

55. It can be inferred from the passage that scientists looking for traces of life formed on earth can expect to find the traces of LUCA (last universal common ancestor), which are approximately:

(1) 0.5 billion years old.
(2) 9 billion years old.
(3) 14.5 billion years old.
(4) 3.7 billion years old.
(5) 4.5 billion years old.

56. Which of the following fulfils all the conditions of "replicability" mentioned in the 5th paragraph of the passage?

A. Two virtually identical screenplays differing only in a few words are assumed to be created independently by two separate authors.
B. Two virtually identical screenplays differing only in a few words are assumed to be created independently by the same author.
C. Two virtually identical screenplays differing only in a few words are assumed to be a slightly altered version of a third.
D. Two virtually identical screenplays differing only in a few words are assumed to be an imperfect replica of the other.

(1) A only
(2) B and D
(3) A and B
(4) C only
(5) C and D

57. Which of the following discoveries would strengthen the origin-of-life research explained in this passage?

(1) An experiment by the origin-of-life research scientists simulating "hot, sulfurous, metal-laden, volcanic waters" yields amino acids, sugars, nitrogenous bases, and other typical components of biological constituents.

(2) The origin-of-life research scientists discover DNA which is the main repository of hereditary information.

(3) The origin-of-life research scientists gather proof that even bacteria and other microorganisms arise from parents resembling themselves.

(4) The origin-of-life research scientists discover RNA with the ability to replicate without the help of proteins and the ability to catalyze every step of protein synthesis.

(5) The origin-of-life research scientists accept the origin of life on earth as a proof of intelligent design.

58. According to the passage, process of origin-of-life can be summed in which of the following?

(1) Primitive organisms arose from hot, sulfurous, metal-laden, volcanic waters "spiced" with organic molecules such as amino acids, sugars, nitrogenous bases, and other typical components of biological constituents.

(2) Many of the chemical building blocks of life form spontaneously throughout the universe; certain information- bearing molecules induce the making of copies of themselves.

(3) Organic chemistry was the prerogative of living organisms- living beings manufacture their own constituents from inorganic and organic building blocks, with the help of catalysts and of energy derived from sunlight and other sources.

(4) A series of chemical processes which are highly deterministic and reproducible created organic building blocks.

(5) Self replicating RNA molecules became involved in the synthesis of proteins (thus became DNA) and by subsequent replication produced complex objects from cells to multi- cellular organisms.

Directions for Questions 59 to 63: The passage given below is followed by a set of questions. Choose the most appropriate answer to each question.

There are two basic types of nuclear weapons. The first are weapons which produce their explosive energy through nuclear fission reactions alone. These are known colloquially as atomic bombs, or A-bombs. In fission weapons, a mass of fissile material (enriched uranium or plutonium) is assembled into a supercritical mass - the amount of material needed to start an exponentially growing nuclear chain reaction - either by shooting one piece of sub-critical material into another (the "gun" method), or by compressing a sub-critical sphere of material

using chemical explosives to many times its original density (the "implosion" method). The latter approach is considered more sophisticated than the former, and only the latter approach can be used if plutonium is the fissile material.

A major challenge in all nuclear weapon designs is to ensure that a significant fraction of the fuel is consumed before the weapon destroys itself. The amount of energy released by fission bombs can range between the equivalent of less than a ton of TNT upwards to around 500,000 tons (500 kilotons) of TNT.

The second basic type of nuclear weapon produces a large amount of its energy through nuclear fusion reactions, and can be over a thousand times more powerful than fission bombs as fusion reactions release much more energy per unit of mass than fission reactions. These are known as hydrogen bombs, H-bombs, or thermonuclear bombs. Only six countries - United States, Russia, United Kingdom, People's Republic of China, France and India - have detonated hydrogen bombs.

Hydrogen bombs work by using the energy of a fission bomb in order to compress and heat fusion fuel. In the Teller-Ulam design, which accounts for all multi-megaton yield hydrogen bombs, this is accomplished by placing a fission bomb and fusion fuel (tritium, deuterium, or lithium deuteride) in proximity within a special, radiation-reflecting container. When the fission bomb is detonated, gamma and X-rays emitted at the speed of light first compress the fusion fuel, then heat it to thermonuclear temperatures. The ensuing fusion reaction creates enormous numbers of high-speed neutrons, which then can induce fission in materials which normally are not prone to it such as depleted uranium. Each of these components is known as a "stage," with the fission bomb as the "primary" and the fusion capsule as the "secondary." In large hydrogen bombs, about half of the yield, and much of the resulting nuclear fallout, comes from the final fissioning of depleted uranium. By chaining together numerous stages with increasing amounts of fusion fuel, thermonuclear weapons can be made to an almost arbitrary yield; the largest ever detonated (the Tsar Bomba of the USSR) released an energy equivalent to over 50 million tons (megatons) of TNT. Most hydrogen bombs are considerably smaller than this, though, due to constraints in fitting them into the space and weight requirements of missile warheads.

There are many other types of nuclear weapons as well. For example, a boosted fission weapon is a fission bomb which increases its explosive yield through a small amount of fusion reactions, but it is not a hydrogen bomb. In the boosted bomb, the neutrons produced by the fusion reactions serve primarily to increase the efficiency of the fission bomb. Some weapons are designed for special purposes; a neutron bomb is a nuclear weapon that yields a relatively small explosion but a relatively large amount of radiation; such a device could theoretically be used to cause massive casualties while leaving infrastructure mostly intact and creating a minimal amount of fallout. The detonation of a nuclear weapon is accompanied by a blast of neutron radiation. Surrounding a nuclear weapon with suitable materials (such as cobalt or

gold) creates a weapon known as a salted bomb. This device can produce exceptionally large quantities of radioactive contamination. Most variety in nuclear weapon design is in different yields of nuclear weapons for different types of purposes, and in manipulating design elements to attempt to make weapons extremely small.

59. According to the passage, a comparison of different types of nuclear bombs:
(1) Shows that all are equally destructive.
(2) Shows that all are equally dangerous to life because of the radioactive contamination they cause.
(3) Shows that thermonuclear weapons can be made to cause immeasurable damage.
(4) Shows that the fuel used in them is completely spent in chain reactions before the weapon destroys itself.
(5) All of the above

60. If a nuclear weapon is detonated by the 'implosion method', it can be inferred that:
A. It is a fusion bomb.
B. It uses either tritium or deuterium or lithium deuteride for its fuel.
C. It uses depleted uranium for its fuel.
D. It uses either enriched uranium or plutonium for its fuel.
(1) A only
(2) B only
(3) B and C
(4) D only
(5) None of these

61. According to the passage all following are true EXCEPT:
(1) Some nuclear weapons produce their explosive energy only through fission reactions.
(2) The implosion method is considered more sophisticated than the other methods of detonating a nuclear weapon.
(3) Some nuclear weapons use fission reaction only as a trigger or as a "stage."
(4) All thermonuclear weapons of yields measured in multiple megatons are based on the Teller-Ulam design.
(5) Depleted uranium is not normally a fissile material.

62. The passage supports the inference that:
A. All nuclear weapons are ultimately based on fission reactions of either fissile or non-fissile fuels.
B. Missile war heads are generally thermonuclear weapons.
C. At the time this article was written only six countries have detonated nuclear weapons.

D. The largest ever made nuclear weapon had energy of over 50 megatons.

(1) A only
(2) A and B
(3) B and C
(4) C and D
(5) All of the above

63. Choose the option that matches the two columns correctly based on what is stated or implied in the passage:

A	Boosted Bomb	F	The Tsar Bomba of USSR
B	A-Bomb	G	Has Plutonium or Uranium for its fuel
C	Salted Bomb	H	Specially designed to cause casualties
D	H-Bomb	I	Fission bomb with a small amount of fusion
E	Neutron Bomb	J	Specially designed to cause large radioactive contamination

(1) A-G, B-J, C-F, D-H, E-I
(2) A-I, B-G, C-H, D-F, E-I
(3) A-I, B-G, C-J, D-F, E-H
(4) A-J, B-H, C-F, D-I, E-G
(5) A-H, B-I, C-G, D-J, E-F

Directions for Questions 64 to 66: Each of the following questions 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.

64. Existentialism is a reaction against traditional philosophies, such as rationalism and empiricism that seek to discover an ultimate order in metaphysical principles or in the structure of the observed world, and thereby seek to discover universal meaning. Existentialism originated with the nineteenth- century philosophers Soren Kierkegaard and Friedrich Nietzsche. _____

(1) It is up to humans to create an ethos of personal responsibility outside any branded belief system.
(2) In existentialist views, personal articulation of being is the only way to rise above humanity's absurd condition of much suffering and inevitable death.
(3) In the 1940s and 1950s, French existentialists such as Jean - Paul Sartre, Albert Camus, and Simone de Beauvoir, wrote scholarly and fictional works that popularized existential themes.

(4) Existentialism generally postulates that the absence of a transcendent means that the individual is entirely free, and therefore, ultimately responsible.
(5) It became prevalent in Continental philosophy, and literary writers such as Fyodor Dostoevsky also contributed to the movement.

65. Personal contacts between Indians and Americans have increased greatly. There are now more than 80,000 Indian students studying in the US and many have stayed to establish successful companies. The Indian diaspora in the US constitutes roughly three million people, many of whom actively participate in politics. For example, Louisiana's governor is of Indian origin, and has been mentioned as a possible running mate for John McCain. In addition, India's economy has begun to grow by 8% annually, making it more attractive for foreign investment. _____

(1) Even if the nuclear agreement fails, the improvement in US - India relations is likely to continue.
(2) At the end of his presidency mired in low popularity ratings, Bush leaves behind a better legacy in Asia.
(3) Trade between India and America is increasing, and reached $26 billion - 11% of India's total trade.
(4) Some attribute this to the fact that India and the US are the world's two largest democracies.
(5) Nevertheless, strategic anxiety lurks below the surface, particularly in India.

66. So, are Europeans and Americans simply more compassionate than Asians? Given the West's record of horrendous warfare and often brutal imperialism, this seems unlikely. Moreover, the way ordinary Chinese rallied to help victims of the earthquake in Sichuan has been quite remarkable, as have been the spontaneous efforts of people in Burma to assist their fellow citizens, even as the military did very little. Buddhism stresses compassion and mercy as much as Christianity does. _____

(1) Nevertheless, there may be cultural differences in understanding how compassion should be applied.
(2) Indifference to suffering is not inherent to any Asian culture.
(3) You are obliged to take care of your family, your friends, or even your fellow countrymen.
(4) One possible line of criticism of this kind of thinking is simply to claim the superiority of Western values.
(5) The two recent natural disasters in Burma and China have put this idea to a severe test.

Directions for Questions 67 to 69: Each of the questions below consists of a set of labelled sentences. These sentences, when properly sequenced, form a coherent paragraph. Choose the most logical order of sentences from among the options.

67.

1. In addition, there should be a windfall profits tax on oil and gas companies.
2. The world needs to rethink the sources of growth.
3. Capital gains should be taxed at least at as high a rate as ordinary income.
4. Why should those who make their income by gambling in Wall Street's casinos be taxed at a lower rate than those who earn their money in other ways?
5. If the foundations of economic growth lie in advances in science and technology, not in speculation in real estate or financial markets, then tax systems must be realigned.
6. Such returns will, in any case, get a substantial benefit because the tax is not imposed until the gain is realized.

(1) ECDFAB
(2) BEDCFA
(3) CDFAEB
(4) BDECFA
(5) EFADEB

68.

1. Another problem is that fewer and fewer transnational agro - businesses now dominate marketing, production, and inputs.
2. In addition, more securitization, online trading, and other financial market developments have facilitated speculative investments in futures and options markets, including those of food.
3. Moreover, with less government support, rural credit has become prohibitively expensive.
4. Meanwhile, rich countries' agricultural subsidies and tariffs have undoubtedly undermined food production in developing countries.
5. Falling asset prices in other financial market segments may be more important for explaining the surge in food prices than supply constraints.
6. This comes at the expense of small farmers and consumers, particularly the poor.

(1) ABCDEF
(2) AFCBED
(3) AFECBD
(4) FCBAED
(5) BEDAFC

69.

1. We cannot afford to ignore the signs of the importance of the environment for our health.
2. The research is hard to do, very little of it is now funded by the government and private sector.
3. Moreover, confusion about environmental cancer risks also results from the disinformation campaigns inspired by the tobacco industry.
4. The limited nature of evidence on some environmental cancer hazards should not be confused with proof that no harm has occurred.
5. To address the scourge of cancer, we must complement efforts to detect and treat cancer with new ways to keep people from developing the disease in the first place.
6. A way of looking is a way of not looking, runs a Chinese proverb.

(1) FDBCAE
(2) FDEACB
(3) ABCFED
(4) ADBCFE
(5) EDBCAF

Directions for Questions 70 to 72: Each of the questions below contains a passage followed by alternative summaries. Choose the option that best captures the essence of the text.

70. On the scale of decades, climate changes can result from interaction of the atmosphere and ocean currents. Many climate fluctuations - including not only the El Niño Southern oscillation - the best known - but also the Pacific decadal oscillation, the North Atlantic oscillation, and the Arctic oscillation - owe their existence at least in part to different ways that heat can be stored in the oceans and move between different reservoirs. On longer time scales ocean processes such as thermohaline or density driven circulation play a key role in redistributing heat, and can dramatically affect climate.

(1) Short and long term climate changes occur owing to the interaction of the atmosphere, oceans and the density of the oceans.
(2) The currents that result from the variability of ocean temperature and density can lead to short term climatic fluctuations as well as significantly alter the climate over long periods.
(3) Climate changes can result from the way heat is stored in the oceans and move between different reservoirs. On longer time scales the ocean density also affects climate changes.
(4) Ocean variability in temperature and density determine the currents that determine climatic changes in the atmosphere.

(5) Short term climatic changes result from the variability in the ocean temperature and ocean density can lead to significant long term climatic consequences.

71. The Spence report is a consensus document, and therefore an easy target for cheap shots. It has no "big ideas" of its own, and at times it tries too hard to please everyone and cover all possible angles. But, as Spence puts it with regard to economic reform itself, you need to take small steps in order to make a big difference in the long run. It is quite a feat to have achieved the degree of consensus he has around a set of ideas that departs in places so markedly from the traditional approach. It is to Spence's credit that the report manages to avoid both market fundamentalism and institutional fundamentalism. Rather than offering facile answers such as "just let markets work" or "just get governance right," it rightly emphasizes that each country must devise its own mix of remedies. Foreign economists and aid agencies can supply some of the ingredients, but only the country itself can provide the recipe.

(1) Though the Spence report has no big ideas, it is unconventional in approach and suggests that each country must devise its own mix of remedies.
(2) Though the Spence report is a consensus document, it is unconventional in approach towards economic reform and suggests that a country must develop its own formula.
(3) The Spence report has no big ideas, but on economic reform it avoids both market fundamentalism and institutional fundamentalism, and underplays the role of foreign economists and aid agencies.
(4) The several ideas in the Spence report on economic reforms have achieved a degree of consensus, and deviate from the market and the institutional fundamentalism to stress that each country must devise its own solutions.
(5) The Spence report on economic reforms deviates from the conventional market and the institutional fundamentalism to stress that each country must devise its own solutions.

72. Calls for tighter regulation of nanotechnology have occurred alongside a growing debate related to the human health and safety risks associated with nanotechnology. The Royal Society identifies the potential for nanoparticles to penetrate the skin, and recommend that the use of nanoparticles in cosmetics be conditional upon a favourable assessment by the relevant European Commission safety advisory committee. Also there are reports that 'certain nanoparticles may move easily into sensitive lung tissues after inhalation, and cause damage that can lead to chronic breathing problems'.

(1) In the face of the reports of human health and safety risks associated with nanotechnology, there is a demand for stricter regulation of this technology.

(2) In the face of human health and safety risks associated with nanotechnology, specifically to human skin and lungs, there is a demand for stricter regulations.
(3) As nanoparticles are likely to penetrate skin and even into sensitive lung tissues, there are demands that there be tighter regulation on nanotechnology.
(4) There are demands for the regulation of nanotechnology as the Royal Society in its report has identified the potential risks of nanoparticles.
(5) In the face of human health and safety risks associated with nanotechnology, the Royal Society in its report has called for stricter regulation on nanotechnology.

Directions for Questions 73 to 75: Each of the questions consists of a certain number of sentences. Some sentences are grammatically incorrect or inappropriate. Select the option that indicates the grammatically correct and appropriate sentence(s).

73.

(1) The reason that the evolution of the different parts of physics does not however take place with equal speed because the circumstances in which they are placed are not equally favourable.
(2) The evolution of the different parts of physics do not, however, take place with equal speed, because the circumstances in which they are placed are not equally favourable.
(3) The evolution of the different parts of physics does not, however, take place with equal speed, because the circumstances where they are placed are not equally favourable.
(4) The evolution of the different parts of physics does not, however, take place with equal speed, because the circumstances in which they are placed are not equally favourable.
(5) The evolution of the different parts of physics does not, however, take place with equal speed because the circumstances where they are placed are not equally favourable.

74.

(1) One of the most interesting consequence of the recent discoveries have been to rehabilitate in the eyes of scholars speculations relating to the constitution of matter, and in a more general way, metaphysical problems.
(2) One of the most interesting consequences of the recent discoveries has been to rehabilitate in the eyes of scholars, speculations relating to the constitution of matter, and, in a more general way, metaphysical problems.
(3) One of the most interesting consequences of the recent discoveries have been to rehabilitate in the eyes of scholars, speculations relating to the constitution of matter, and, in a more general way, metaphysical problems.

(4) One of the most interesting consequences of the recent discoveries has been to rehabilitate in the eyes of scholars speculations relating to the constitution of matter; and in a more general way metaphysical problems.

(5) One of the most interesting consequences of the recent discoveries has been, to rehabilitate in the eyes of scholars, speculations relating to the constitution of matter; and in a more general way metaphysical problems.

75.

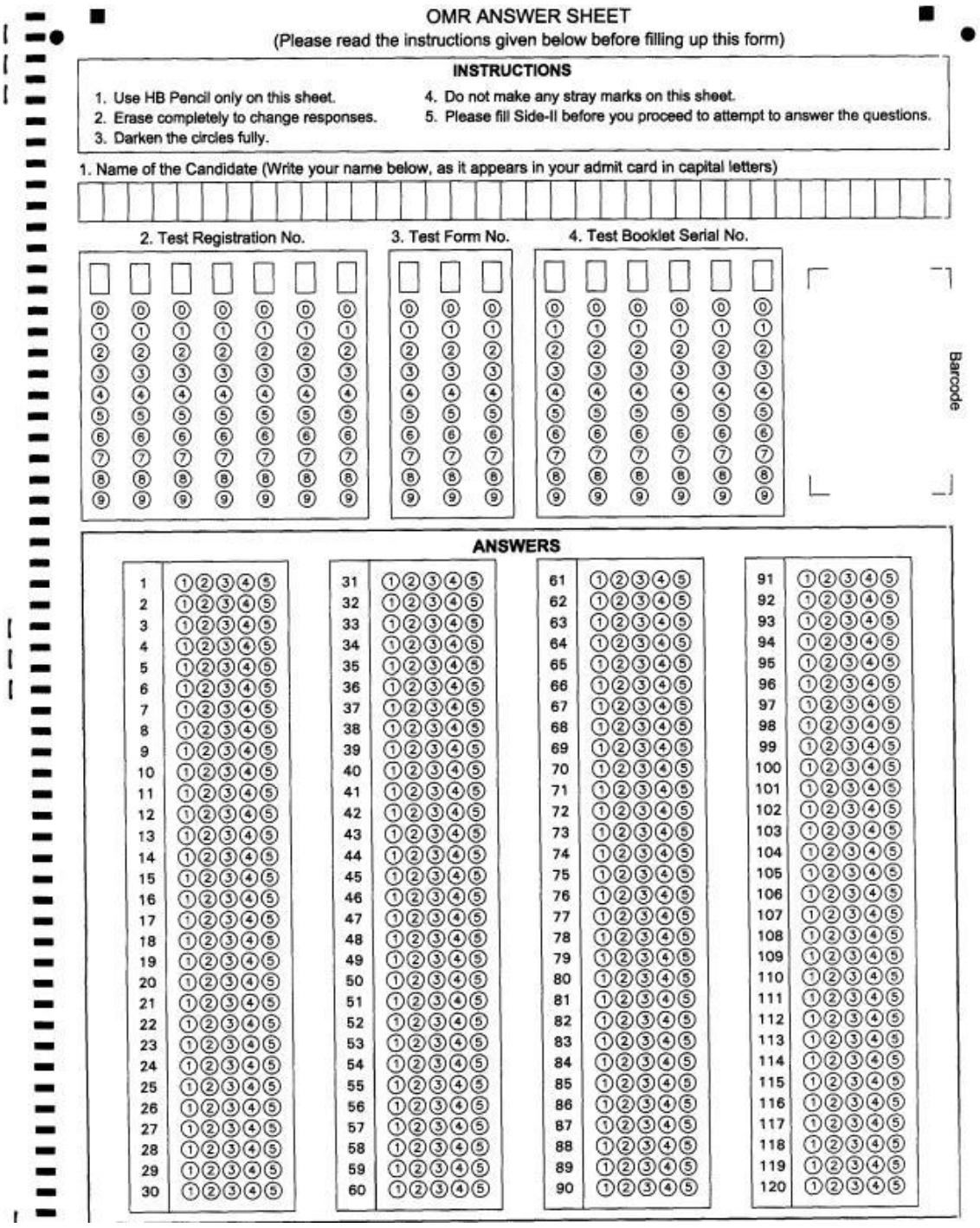
(1) On the 17th December 1870, a physicist who has left a lasting name in the University of Paris M. d'Almeida at that time Professor at the Lycée Henri IV, and later Inspector-General of Public Instruction, quit Paris; and in a balloon, descended in the midst of the German lines.

(2) On the December 17, 1870, a physicist who has left a lasting name in the University of Paris, M. d'Almeida, at that time Professor at the Lycée Henri IV and later Inspector-General of Public Instruction, quit Paris and, in a balloon, descended in the midst of the German lines.

(3) On the December 17 1870- a physicist who has left a lasting name in the University of Paris - M. d'Almeida, at that time Professor at the Lycée Henri IV, and later Inspector-General of Public Instruction quit Paris, and in a balloon, descended in the midst of the German lines.

(4) On the 17 December 1870, a physicist who has left a lasting name in the University of Paris, M. d'Almeida, at that time Professor at the Lycée Henri IV; and later Inspector-General of Public Instruction; quit Paris, and, in a balloon, descended in the midst of the German lines.

(5) On the 17th December 1870, a physicist who has left a lasting name in the University of Paris, M. d'Almeida, at that time Professor at the Lycée Henri IV, and later Inspector-General of Public Instruction, quit Paris, and, in a balloon, descended in the midst of the German lines.



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3	33	63	93
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5	35	65	95
6	36	66	96
7	37	67	97
8	38	68	98
9	39	69	99
10	40	70	100
11	41	71	101
12	42	72	102
13	43	73	103
14	44	74	104
15	45	75	105
16	46	76	106
17	47	77	107
18	48	78	108
19	49	79	109
20	50	80	110
21	51	81	111
22	52	82	112
23	53	83	113
24	54	84	114
25	55	85	115
26	56	86	116
27	57	87	117
28	58	88	118
29	59	89	119
30	60	90	120

Answer Key

Section I:

Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
1	**2**	6	**2**	11	**4**	16	**2**	21	**5**
2	**4**	7	**3**	12	**1**	17	**3**	22	**4**
3	**2**	8	**4**	13	**5**	18	**3**	23	**3**
4	**3**	9	**2**	14	**3**	19	**2**	24	**2**
5	**4**	10	**4**	15	**1**	20	**4**	25	**3**

Section II:

Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
26	**3**	31	**3**	36	**3**	41	**4**	46	**5**
27	**2**	32	**4**	37	**4**	42	**5**	47	**3**
28	**1**	33	**1**	38	**3**	43	**3**	48	**2**
29	**2**	34	**5**	39	**5**	44	**1**	49	**1**
30	**3**	35	**4**	40	**2**	45	**3**	50	**4**

Section III:

Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.	Q.	Ans.
51	**2**	56	**5**	61	**2**	66	**2**	71	**4**
52	**4**	57	**4**	62	**2**	67	**2**	72	**1**
53	**4**	58	**2**	63	**3**	68	**2**	73	**4**
54	**3**	59	**3**	64	**5**	69	**1**	74	**2**
55	**4**	60	**5**	65	**3**	70	**2**	75	**5**