DIAGNOSTIC CAT TEST-2

Instructions

1. DO NOT OPEN THE SEAL OF THIS BOOKLET. WAIT FOR THE SIGNAL TO START.
2. This booklet contains 44 pages including the blank ones. Immediately after opening the booklet, verify that all pages are printed properly.
3. Keep only the Admit Card, pencil eraser and sharpener with you. DO NOT keep with you books, rulers, slide rules, drawing instruments, calculators (including watch calculators), pagers, cellular phones, or any other device. These should be left outside the room.
4. This paper has 177 questions. The total time for the test is 120 minutes.
5. The paper is divided into four sections.
   - Section-I : 50 Questions 35 Minutes
   - Section-II : 25 Questions 25 Minutes
   - Section-III : 53 Questions 30 Minutes
   - Section-IV : 49 Questions 30 Minutes
6. Directions for answering the questions are given in the test booklet before each group of questions to which they apply. Read these directions carefully and answer the questions by darkening the appropriate ovals.
7. Wrong answers carry negative marks. There is only one correct answer for each question.
8. Do the rough work on the test booklet only and NOT on the answer sheet or any other paper.
9. Follow the instructions of the invigilator. Candidates found violating the instructions will be disqualified.
10. At the end of the test, remain seated. Do not leave the hall till the invigilator announces, "You may leave now." The invigilator will make the announcement only after collecting the test booklets and answer sheets from everyone in the room.

ANY CANDIDATE GIVING/SEEKING/RECEIVING ASSISTANCE OR FOUND COPYING WILL BE IMMEDIATELY DISQUALIFIED.

Section – I

Direction for questions 1 and 2: Answer the questions based on the following information.
John had calculated (correctly) that he had enough corn to feed his birds for 16 days only (keeping in mind the normal feeding), so he kept four birds and sold the rest. He also cut down their feeding by 20% (thus keeping the feed at 80% of the normal feed). He was thus able to make the corn last for 60 days.

1. How many birds did he have to start with?
   a. 12 b. 16 c. 20 d. 24

2. If he had sold only $\frac{1}{4}$ the number of birds than he actually sold, for how many days would his corn have lasted? (at 80% of normal feed)
   a. 15 b. 12 c. 32 d. 24

3. Jim entered a store and spent one-half of the money that was there in his purse. When he came out, he found that he had just as many paise as he had rupees and half as many rupees as he had paise when he went in. How much money did he have with him when he entered?
   a. Rs. 100 b. Rs. 99 and 98 paise
   c. Rs. 102 and 45 paise d. Rs. 89 and 75 paise

4. Mrs Doubtfire wrote all the numbers from 100 to 200. Then she started counting the number of one's that has been used while writing all these numbers. What is the number that she got?
   a. 119 b. 120 c. 121 d. None of these

5. If $f(x) = |x - 1|$, then which of the following is always true?
   a. $f(x^2) = [f(x)]^2$ b. $f(|x|) = |f(x)|$
   c. $f(x + y) = f(x) + f(y)$ d. None of these

6. There are two squares, one larger than the other. The perimeter of the larger square is 44 more than that of the smaller square, and the area of the larger square is 187 sq. unit more than the area of the smaller. Find the sides of the squares.
   a. 4 and 15 b. 3.5 and 14.5
   c. 3 and 14 d. 2.5 and 13.5

Direction for questions 7 and 8: Answer the questons based on the following information.
59292564P61Q is divisible by 99, but not by 22. Q is greater than P, then

7. P is
   a. 5 b. 2 c. 0 d. 4

8. Q is
   a. 5 b. 3 c. 7 d. 9

9. A tourist purchased a total of Rs. 1,500 worth of traveller's cheques in Rs. 10 and Rs. 50 denominations. During the trip, the tourist encashed 7 cheques and then lost all of the rest. If the number of Rs. 10 cheques encashed was one more or one less than the number of Rs. 50 cheques encashed, then what is the minimum possible value of the cheques that were lost?

a. Rs. 1,430 b. Rs. 1,310 c. Rs. 1,290 d. Rs. 1,270

10. There are four numbers in a sequence. The average of first three is 6, the average of the last three is 7, and the last number is 3 more than the first. The average of the second and the third numbers is

a. 6 b. 6.5 c. 5.75 d. Cannot be determined

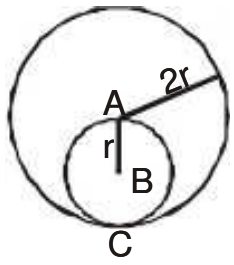
11. For the same budgeted amount, Ramu could buy fewer oranges than before after 20% hike in the price of oranges. What is the minimum number of oranges that he bought originally, if after the hike he still managed to buy an integral number of oranges?

a. 20 b. 5 c. 6 d. None of these

12. Three circles of radius R touch each other externally. Find out the area of the circle circumscribing them.

a. $\frac{\pi R^2}{3}\left(2+\sqrt{3}\right)^2$ b. $\frac{\pi R^2}{3}\left(\sqrt{3}-2\right)$ c. $\frac{\pi R^2}{3}\left(2+\sqrt{3}\right)$ d. $\frac{\pi R^2}{2}\left(\sqrt{2}+\sqrt{3}\right)$

13. There is a circular hoop inside a bigger circle. The diameter of the hoop is equal to the radius of the circle. If the hoop were to roll along the circumference of the circle, then how many rounds would it make before it comes back to the original position?



a. r b. 2r c. 2 d. $2\pi r$

14. Maximum value of $y = \min\left[\frac{1}{2}-\frac{3}{4}x^2, \frac{5}{4}x^2\right]$ is

a. $\frac{6}{16}$ b. $\frac{5}{4}$ c. $\frac{1}{2}$ d. $\frac{5}{16}$

15. After travelling 30 min, a train met with an accident and was stopped there for 45 min. Due to the accident, its speed reduced to $\frac{2}{3}$ of its former speed and the train reached its destination 1 hr 30 min late. Had the accident occurred 60 km after the point it occurred earlier, the train would have reached 30 min earlier. The length of the journey is

a. 90 km b. 120 km c. 150 km d. 180 km

16. What is the value of log x if $\log\left(x^3 \times y^2\right) = a$ and $\log\left(x^2 \times y\right) = b$?

a. a + b b. 2a + b c. 2b – a d. 2a – b

17. In accordance with the provisions of the new budget, a man pays tax at the rate of 5% and 10% as special surcharge on the amount of income tax leived. He altogether pays a tax of Rs. 11,000. Find the gross pay of the man (The allowed standard deduction is 20%.)

a. Rs. 2,00,000 b. Rs. 2,50,000 c. Rs. 3,00,000 d. Rs. 3,50,000

18 . The first of a series of cog wheels working into each other in a straight line, has certain number of teeth; the number of teeth in the second to that of the first is 6 : 7; of the third to the second is 5 : 6 and of the fourth to the second is 2 : 3. If the wheels are set in motion, then how many least number of revolutions must each wheel make before they are simultaneously in their original positions?

a. 420 each b. 70, 60, 50, 40 c. 7, 6, 5, 4 d. 60, 70, 84, 105

19.
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  AA        A > 0
+ BB        B > 0
 CDC        All A, B, C are integers. Find D.
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a. 4 b. 3 c. 2 d. 1

20. Paul finishes $\frac{3}{10}$ of the work in 5 days. But realising the urgency of work, he employed Peter and they together finished the work in 7 days. How much time would have Peter needed to finish the work if Paul was not available for assistance and he had to do the whole work all alone?

a. 12 days b. 15 days c. 20 days d. 25 days

21. If $X^2 + aX + 20$ can be expressed as (X + b) (X + c), where b and c are integers, then how many possible values can 'a' assume?

a. 3 b. 6 c. 8 d. 2

Direction for questions 22 to 26: Answer the questions based on the following information.

Raman, the great mathematician, called on Madan after many years. He enquired about his family. Madan said, "I have three sons. Their names are J, K and L. J is the eldest. L is the youngest. No twins. The product of the ages is 1400. L is at least 2-years-old. None of them is more than 45 years. The sum of their ages is equal to the age of my neighbour E. But even if I tell you E's age, you will not be able to arrive at my sons ages (despite your mathematical prowess). So I shall not tell you E's age. But L is younger than my neighbour's daughter P. If I tell you the age of P, you will be able to deduce the ages of all my sons. I shall not tell you anything further." Raman was able to deduce the ages of all !!!

22. J's age is

a. 25 years b. 28 years c. 35 years d. 20 years

23. K's age is

a. 8 years b. 10 years c. 15 years d. 14 years

24. L's age is

a. 7 years b. 2 years c. 5 years d. 4 years

25. E's age is

a. 48 years b. 37 years c. 43 years d. 39 years

26. P's age is

a. 5 years b. 6 years c. 3 years d. 8 years

27. The axial section of a right circular cylinder is a square of area S. The volume of the cylinder is

a. $\frac{\pi S}{2}$ b. $\frac{\pi S^2}{2}$ c. $\frac{\pi S^{\frac{3}{2}}}{4}$ d. $\frac{\pi S^{\frac{3}{2}}}{2}$

28. Mama gave Guddi a beautiful gold necklace as her birthday present. However, Guddi, being careless as she was, dropped the necklace which broke into five equal pieces of three links each. Guddi ran to a goldsmith and asked him to mend the necklace. The goldsmith said, "For every link that I open and solder, I'll charge Rs. 10." Thus, to get the chain mended, Guddi has to pay a minimum of

a. Rs. 20 b. Rs. 30 c. Rs. 50 d. Rs. 150

29. Two trains — a goods train 490 m long and a passenger train 210 m long — were travelling on parallel tracks towards each other. The driver of the passenger train noticed the driver of goods train when it was 700 m away; 28 s later the drivers passed each other. Find the respective speeds of each train, if we know that the goods train takes 35 s longer to pass the signal than the passenger train.

a. 36 and 54 km/hr b. 36 and 45 km/hr c. 30 and 50 km/hr d. 10 and 15 km/hr

30. A crazy mathematician went on listing all the six-digit numbers divisible by 7, 8 and 9. Then he deleted all the numbers which had not 523 as their first three digits. Which of the following may be a number in his new list?

a. 523152 b. 523141 c. 523656 d. Both (a) and (c)

31. A 10 hectares field is reaped by 2 men, 3 women and 4 children in 10 days. If 1 man, 1 woman and 1 child work in the ratio 5 : 4 : 2, then 16 hectares field will be reaped by 6 men, 4 women and 7 children in

a. 5 days b. 6.5 days c. 7 days d. 8 days

Direction for questions 32 to 35: Answer the questions based on the following information.
[x] is defined as the largest integer less than or equal to x. {x} is defined as the smallest integer greater than or equal to x.

32. What is the maximum value of {x} – [x]?

a. 0 b. 1 c. 2 d. [x]

33. If x is not an integer, then ([x] + {x}) is

a. an even number b. an odd number c. is equal to x d. greater than [x]

34. What is the value of $[(x + y + z) - ([x] + [y] + [z])]$; if $0 < \{x\} - x < 0.2$; $0.000 < \{y\} - y < 0.3$; $\{z\} - z = 0.4$?
a. 0 b. 1 c. 2 d. 3

35. What is the value of x if $1 < x < 2$ and $\{x\} + [x] = 2x$?
a. 1.2 b. 1.5 c. 1.75 d. Cannot be determined

36. For what positive values of P does the equation $P2^x + 2^{-x} = 5$ have real roots?
a. $0 < P \leq \frac{25}{4}$ b. $P \geq \frac{25}{4}$ c. $P \leq 0$ d. $P \geq 0$

37. P and Q are two points on the sides AB and AC respectively of ΔABC such that AP = x, PB = y, AQ = w and QC = z. Find the ratio of the area of ΔAPQ to the area of PQCB.
(Given x : y = m : 1, w : z = n : 1, m : n = 1 : 1 and n = 0.5)
a. 1 : 2 b. 2 : 3 c. 4 : 9 d. 1 : 8

38. There are two women participating in a chess tournament. Each participant played two games with every other participants. The number of games played by the men among themselves exceeded by 66 than the number of games played by men against women. How many participants were there in the tournament?
a. 16 b. 15 c. 14 d. 13

39. A water tank develops a leak at the bottom. When the tank is in good condition, it gets filled in 3.5 hr. It now takes half an hour longer for the tank to get completely filled. If the tank is full, how long would it take for the leak to empty the tank?
a. 14 hr b. 21 hr c. 28 hr d. None of these

40. There is a cubical block placed in a cylinder containing water. If 200 m^3 of water is poured, the level of the water rises by 10 m. If the area of the cross section of the cube is 20 m^2, find the area of the cross section of the cylinder.
a. 20 m^2 b. 10 m^2 c. 5 m^2 d. Data insufficient

41. A figure is composed of 6 squares in horizontal line, each with side 's' cm. If the number of centimetres in the perimeter of the figure is equal to the number of square centimetres in its area, the value of 's' is
a. 1 b. $\frac{5}{3}$ c. 2 d. $\frac{14}{6}$

42. a, b, c (a > c) are three digits from left to right of a three-digit number. If the number with these digits reversed, is subtracted from the original number, then resulting number has the digit 4 in its unit's place. The other two respective digits from left to right in the resulting number are
a. 5 and 4 b. 5 and 9 c. 4 and 5 d. 9 and 5

43. A cellphone company, AIRFREE, decides to give the first 10 min of airtime free of cost if a person purchases the instrument from them, else it charges Re.1 per minute. For the next 20 min of airtime it charges its subscriber Rs. 4.5 per minute. The next 20 min are charged at Rs. 8 per minute. Thereafter, with every 10 min increase in airtime, the charge per minute drops by Re. 1, falling to a mimimum of

Re.1 per minute. Ashish buys the phone from Palika Bazaar, and then subscribes to AIRFREE company. His first bill shows an airtime of 2 hr 20 min. How much is he required to pay?

a. Rs. 560 b. Rs. 500 c. Rs. 360 d. Rs. 270

Direction for questions 44 to 48: Answer the questions based on the following information.
There are six boxes numbered 1 to 6 consecutively. Each box has a different colour ball inside it. The balls are coloured red, green, yellow, purple, orange and blue. They follow the following conditions.

I. The purple ball must be hidden in a lower-numbered box than the box with the orange ball.
II. The red ball must be hidden in a box immediately adjacent to the box in which the blue ball is hidden.
III. The green ball must be hidden in box number five.

44. Which could be the possible order starting from box numbers 1 to 6?

a. Blue, green, purple, red, orange, yellow b. Blue, red, purple, yellow, green, orange
c. Orange, yellow, red, blue, green, purple d. Red, purple, blue, yellow, green, orange

45. If the blue ball is under box number four, then the red ball must be under box number.

a. 2 b. 3 c. 5 d. 6

46. Which ball could be under box number six?

a. Green b. Purple c. Red d. Yellow

47. If the purple ball is under box number four, the orange ball must be under box number

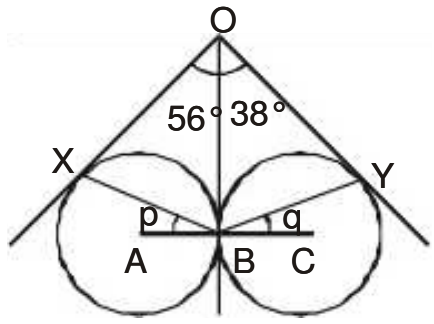
a. 2 b. 3 c. 4 d. 6

48. Which of the following must be true?

a. Green ball is under a lower-numbered box than yellow ball.
b. The orange ball is under a lower-numbered box than green ball.
c. The purple ball is under a lower-numbered box than the green ball.
d. The red ball is under a lower-numbered box than the yellow ball.

49. In the given figure, OX and OY are tangents and A and C are the centres of the circles. Find $(\angle p - \angle q)$.

a. 6° b. 7°
c. 8° d. 9°



50. Vibhor started journey with his car from the badlands with tank full of fuel, 12 gallons exactly. However, the moment he started out, the fuel tank sprung a leak. He travelled at 50 miles per hr until he ran out of fuel exactly 4 hr later. Knowing that the car runs 25 miles for each gallon, how much fuel did he lose through the hole?

a. 4 gallons b. 5 gallons c. 6 gallons d. 3 gallons

Section – II

Direction for questions 51 to 53: Answer the questions based on the following information.
Priya takes an examination which has questions with different degrees of difficulty and different marks corresponding to the degree of difficulty. The time taken by Priya to solve the questions is as follows.

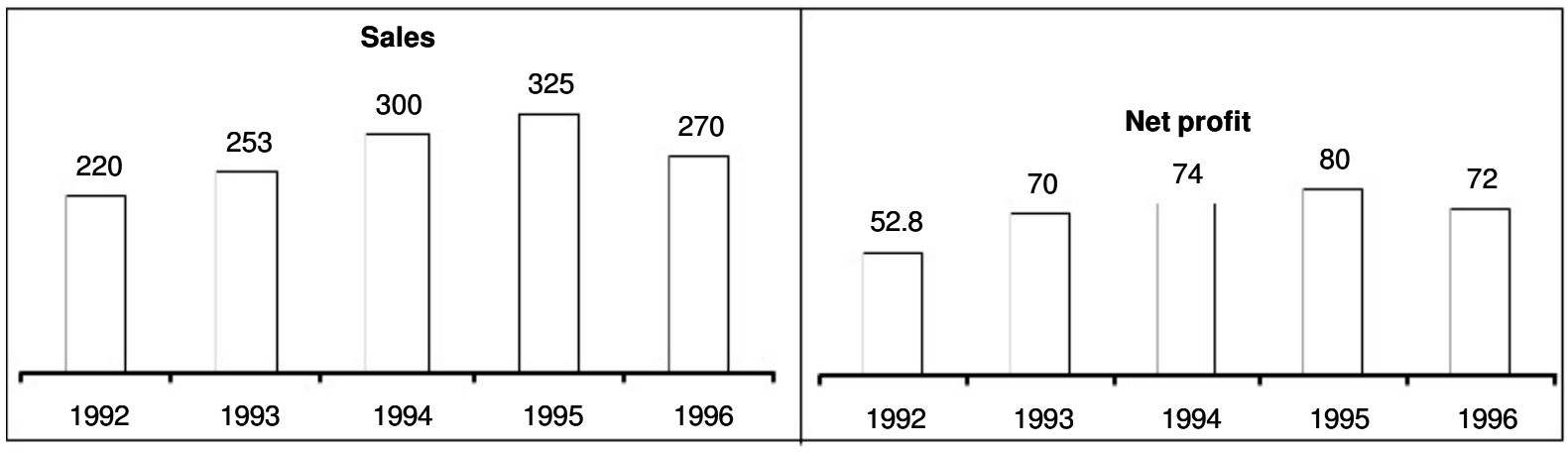
Degree of difficulty	Marks	Time taken to solve
Very difficult	5	7 min
Difficult	3	5 min
Not so difficult	1	2 min

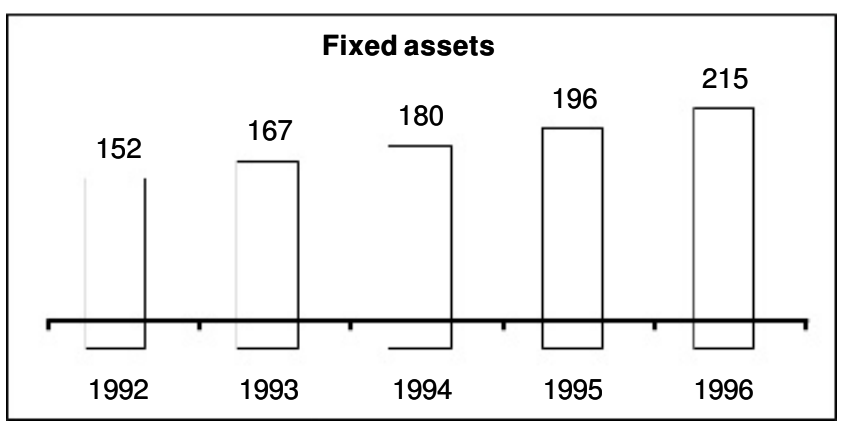
51. If Priya is given 1 hr to answer the questions and there are unlimited number of questions, then the maximum marks she can obtain is
a. 45 b. 42 c. 40 d. 44

52. If Priya is given $1\frac{2}{3}$ hr, then what is the maximum score she can obtain in this time?
a. 69 b. 78 c. 74 d. 71

53. If Priya has to score exactly 12 marks in the shortest possible time, then how much time she will require?
a. 16 min b. 20 min c. 21 min d. 18 min

Direction for questions 54 to 58: Answer the questions based on the following data.
The graph below gives the sales, net profit and fixed assets of the ABC Ltd. for 1992–96 (Rs. in crores).





54. The ratio of sales to fixed assets is the highest in
a. 1992 b. 1993 c. 1994 d. 1995

55. If the net profit ratio is expressed as net profit as a percentage of sales, then in which year has the ratio been the minimum?
a.1992 b. 1993 c. 1995 d. 1996

56. If the net profit ratio is multiplied by the sales to fixed asset ratio, then the highest value is
a. 34.8 b. 42.3 c. 43.8 d. 41.0

57. The lowest percentage increase in the fixed assets has been in
a. 1992-93 b. 1993-94 c. 1994-95 d. 1995-96

58. What has been the average net profit ratio of the company over the period 1992-96? [Net profit ratio is defined in question 55.]
a. 25.5% b. 24.8% c. 26.1% d. 23.9%

Direction for questions 59 to 64: Answer the questions based on the following table.

Y2K compliance by market segments

Segments	Fully compliant (in %)	Partially compliant (in %)	Non-complaint (in %)	%	(N=)
Manufacturing	54	24	21	100	202
Banking/Finance/Insurance	74	12	12	100	72
IT/Telecom	60	15	24	100	58
Services	48	23	29	100	58
Transportation	53	11	34	100	18
Govt/PSU	55	26	18	100	9
Utilities	51	29	19	100	9
Others	43	37	23	100	22

Note: N indicates sample size for each segment.

59. How many companies in India are Y2K non-compliant?
a. 97 b. 98 c. 99 d. Cannot be determined

60. The number of transportation companies that are fully compliant is what percentage of those that are non-compliant?
a. 119% b. 139% c. 156% d. 171%

61. Besides manufacturing, which segment has the highest number of surveyed companies partially Y2K compliant?
a. Utilities b. Services c. Others d. Govt/PSU

62. By December 31, 1999; 60% of the partially compliant and 10% of non-compliant companies of the sample size become fully compliant. How many companies in the sample size are still not Y2K compliant?
a. 125 b. 131 c. 147 d. Cannot be determined

63. In percentage terms of compliance, which segment has the same rank in both, full as well as partial compliance?
a. Manufacturing b. Govt/PSU c. Both (a) and (b) d. No such segment

64. In how many segments are more than 10 companies that are fully compliant?
a. 3 b. 4 c. 5 d. Cannot be determined

Direction for questions 65 to 69: Answer the questions based on the following table.
The plan-wise capacity addition in the power sector as compared to the target for the plan is represented in the following chart.

Plan	Period	Target (million watts)	Actual (million watts)
First	1951-56	1,300	1,100
Second	1956-61	3,500	2,250
Third	1961-66	7,040	4,520
Fourth	1969-74	9,264	4,579
Fifth	1974-79	12,499	10,202
Sixth	1980-85	19,666	14,226
Seventh	1985-90	22,245	21,401
Eighth	1992-97	30,588	18,000

65. In which Plan was the capacity addition in the power sector closest as a percentage of the target for the same period?
a. First Plan b. Fifth Plan c. Sixth Plan d. Seventh Plan

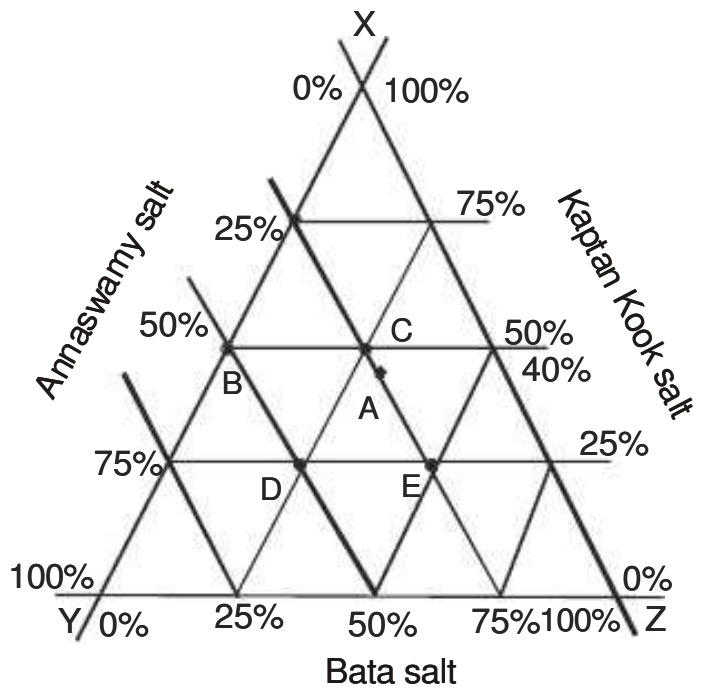
66. By the end of the Eighth Plan period, the actual capacity addition as a percentage of targeted capacity since 1951 was
a. 69% b. 76% c. 56% d. 71.9%

67. Actual capacity addition as a percentage of targeted capacity was the lowest in
a. Second Plan b. Third Plan c. Fourth Plan d. Eighth Plan

68. The percentage increase in actual capacity addition between the Fourth and Fifth Plan period is
a. 223% b. 123% c. 23% d. None of these

69. If the cost of creating a 1 million watt of power capacity was Rs. 100 lakh in the First Plan and rose by 25% in every successive Plan, then the expenditure incurred in creation of power capacity in the Fifth Plan period was
a. Rs. 24,900 crore b. Rs. 20,404 crore c. Rs. 20,907 crore d. Rs. 20,504 crore

Direction for questions 70 to 75: Answer the questions based on the following information.
The above figure shows market share of three brands of salts in 5 regions A, B, C, D and E.



To find the percentage of Kaptan Kook in region, say A. Draw a line parallel to YZ from A. The point at which it meets XZ gives the required percentage. Similarly, to find the percentage of Bata and Annaswamy salt for A draw lines parallel to XY and XZ respectively from A. The points of intersection of these lines on YZ and XY gives the percentage share of Bata salt and Annaswamy salt respectively.
The table below gives the break-up of salt market for five regions A, B, C, D and E.

Branded vs unbranded salt market		
Region	**Branded (Tonnes)**	**Unbranded (Percentage of total market in volumes)**
A	450	60%
B	365	45%
C	460	50%
D	750	30%
E	225	70%

70. The total unbranded market for salt in the five regions is approximately
a. 2285 tonnes b. 2850 tonnes c. 1850 tonnes d. 2250 tonnes

71. The region in which the difference between branded and unbranded salt sales is the highest is
a. A b. B c. D d. E

72. In which region is the sale of a single branded salt higher than the sale of unbranded salt?
a. D b. E c. Both (a) and (b) d. Cannot be determined

73. Which is the highest selling brand in the five regions combined?
a. Kaptan Kook Salt b. Bata Salt c. Annaswamy Salt d. Cannot be determined

74. By how many tonnes does the sales of Kaptan Kook salt exceed that of Bata salt (approximately)?
a. 570 tonnes b. 265 tonnes c. 360 tonnes d. 170 tonnes

75. Which region contributes the least to the sales of Annaswamy salt?

a. A b. C c. E d. H

Direction for questions 76 to 83: Arrange the four sentences, which are marked A to D so as to form a coherent paragraph.

76. A. It also recommends greater support for organic farming and other 'soil-friendly' land management practices and for a new soil conservation unit to coordinate policy, advice and research on soils.
B. Misuse and poor land management, industrial pollution and urban development are all taking their toll.
C. In the light of this, the Council for Protection of Rural England (CPRE), through its Charter for Soil, is calling for good soil management to be a precondition for receipt of agricultural aid.
D. Soil, the few inches of 'dust,' is in effect our most vital living resource yet it is under serious threat.
a. BCDA b. DBCA c. DCBA d. BDCA

77. A. An elephant may be described as resembling a blank wall, a tree trunk, a piece of rope, a large white bone or the wings of a giant bat.
B. It all depends on who you are, and where you stand to perceive it.
C. Individual studies of parts are limited in their ability to provide a coherent picture of the whole.
D. This is best supplied when individuals come together to share their observation.
a. DCBA b. CDBA c. CBAD d. ABCD

78. A. In a unanimous encounter, one's suspicion - profound, persistent and ineluctable, that there is more to the world than appearances, is confirmed.
B. The fundamental reinforcement of a belief in the spiritual nature of animal lives comes from unanimous encounters with wild creatures.
C. For someone reared in the tradition of the cultural west, it is also a confirmation that rationalism and enlightenment are not points on a continuum of progress but simply two species of wisdom.
D. For many indigenous people, such events make one feel more secure in the 'real' world because their unfolding takes the event beyond the more readily apparent boundaries of existence.
a. BDAC b. BCAD c. BACD d. BCDA

79. A. To 'hear' wild animals is not to leave the realm of the human; it's to expand this realm to include voices other than our own.
B. To some degree, this is a result of the pervasive influence of Native American Culture in certain parts of the west.
C. In daily conversation in many parts of the American west today, wild animals are given credit for conveying ideas to people, for 'speaking.'
D. It does not contradict the notion of human intelligence to believe, in these quarters, that wild animals are repositions of knowledge we have abandoned in our efforts to build civilizations and support ideas like progress and improvement.
a. ABCD b. CDBA c. CBDA d. ADCB

80. A. Choice was limited and the simplicity helped preserve a connection with the earth and a fundamental natural wholeness on all levels.
B. There were no irradiated tropical fruits in December or cling-wrapped passups in mid-summer.
C. The art of seasonal eating was part of a way of life for the ancient Chinese.
D. They existed on the land and believed that by living in harmony with Mother Nature and eating accordingly, optimum health and vitality could be achieved.

a. ABCD b. CBAD c. ACDB d. CADB

81. A. Philosophy, science, education, arts and even religion have put human beings at centre stage.
B. The Renaissance, the age of enlightenment, the industrial revolution and information technology have all been about human programme.
C. We are still living in the age of humanism.
D. Conquering nature, subjugating animals, training wilderness and treating the environment as a resource for humans has been the greatest project of human civilization for the last 500 years.

a. ADCB b. CBAD c. CBDA d. CABD

82. A. First, it requires a bit of common sense and, second, a right person who can work on cars and really understand the subject.
B. Most car manufacturers have laid down norms and time frames for proper upkeep of their cars.
C. Nowadays, with the power of computers to help you, maintaining a foreign car or for that matter any car is not a great job.
D. In most mechanics with experience, I have seen a lack of understanding on the subject, they do something stupid to cover up their deficiency and end with the sagest policy of replacement, which costs the car owner a huge amount and also involves time to procure parts. If only we follow strictly these rules, I can assure you, your car will be well-maintained and no further work will need to be carried out as modern cars are highly reliable machines.

a. CABD b. CDAB c. DBCA d. BDCA

83. A. These 'smart antennas,' combined with sophisticated signal processing techniques, may be especially critical in preventing internet traffic jams as an increasing number of people use wireless devices to download files from the web.
B. The use of multiple antennas may enable a new generation of cellular communications equipment to better access the Internet and download large amounts of data, including video files, says Michael Zoltouwski, professor in Purdue University's School of Electrical and Computer Engineering.
C. Just as people hear better with two ears than with one, future wireless communication devices may have two or more antennas so they can outperform conventional, single — antenna versions.
D. The performance of wireless devices, such as cellphones and laptop computers, is plagued by interference.

a. DACB b. DBAC c. DCBA d. CABD

Direction for questions 84 to 90: Arrange the sentences A, B, C and D to make a coherent paragraph between the statements 1 and 6.

84. 1. Sugarcane is one of the major commercial crops in India.
A. Field experiments were conducted at the Agricultural College and Research Institute, Madurai with a view to study the effect of green manure intercropping and nitrogen levels on the yield and quality of surgarcane.
B. The pulses, viz. blackgrain and soyabean are very well suited, which come to maturity earlier and provide monetary returns.
C. Adoption of wider row spacing and slow growth rate of sugarcane at the initial stage offers ample scope for receiving short duration intercrops.
D. Growing of green manure in the inter row spacing and incorporation at appropriate time not only supplemented the fertilizer but also maintained the soil fertility and sustained the sugarcane yield.
6. The results showed that sugarcane can be intercropped with two rows of soyabeans after planting with 75 per cent recommended dose of nitrogen

a. DACB b. CBAD c. CBDA d. DABC

85. 1. Falling interest rates, collapsing confidence and sluggish activity all command the attention of economic policy makers.
A. That is why there is so little outcry about the fact that there are 330 million people around the world suffering from depression, 90 per cent of whom won't get adequate treatment.
B. If this were a disease of the body, an environmentally caused cancer or an infectious epidemic, these figures would be at the centre of outraged campaigns around the world.
C. The disease afflicts more people than heart disease does — far more than AIDS and most cases are not even diagnosed.
D. Seen in people rather than in countries or markets, though, the same symptoms cause much less of a stir.
6. But because depression is a slippery, silent illness, few cry out.

a. DBAC b. DCBA c. DABC d. DACB

86. 1. Soon after dawn on May 21,1494, Vasco de Gama and his crew arrived at Calicut after the first direct sea voyage from Europe to Asia.
A. Europe's ignorance of, and isolation from, the cosmopolitan intellectual and commercial life of Asia were ended forever.
B. Its merchant classes would invent new forms of commercial credit and the first great corporation, vital parts of capitalism's operating system, and spread their trading network across the seven seas.
C. If history's modern age has a beginning, this is it.
D. With ships, weaponry and a willingness to use them both, the countries of Europe were about to colonize the rest of the world.
6. And what did the men shout as they came ashore?

a. CADB b. CDBA c. CABD d. DBCA

87. 1. The sprawling islands that make up the Philippines straddle a region where strategic tensions have been growing.
    A. In the words of the defence minister, Orlando Mercado, the Philippines has “a navy that cannot go out to sea and an air force that cannot fly.”
    B. Maybe, indeed American troops should once again be allowed to set foot on Philippine soil?
    C. But the country’s leaders have a particular reason to be nervous, the decrepit state of their armed forces.
    D. No wonder the government feels it may need some help and no wonder there is another bout of heart-searching over the country’s relations with the US, its former colonial power.
    6. The senate plans to vote on the ratification of an accord with the US called the visiting forces agreement (VFA), which sets out the legal terms under which American servicemen can train with their Philippines counterpart.

a. ADBC b. CADB c. DBCA d. DBAC

88. 1. Laser light differs from ordinary light because the wave-like oscillations of the light rays are all in step.
    A. The light is emitted from a substance, that has been ‘excited’ — given excess energy, which it releases as light.
    B. The light is confined in a chamber with mirrors at either end.
    C. The regimentation arises because some light itself stimulates the emission of more light, which is in step with the stimulus.
    D. Bouncing back and forth between the mirrors, the light stimulates even more emission with each pan.
    6. Eventually the light bursts out in one coherent beam through one of the mirrors, which is designed to be slightly transparent.

a. ABDC b. BDCA c. ACBD d. ACDB

89. 1. Most human DNA — around 97 per cent — is ‘junk’, serving little or at least no obvious purpose.
    A. The rest is a hotch potch of genes taken from animals, plants and even the most primitive forms of bacteria.
    B. Further up the evolutionary path, we share countless genes with plants and flies.
    C. In fact, large numbers of genes vital for the ‘housekeeping’ function of our cells, such as repairing and reading DNA, match those that keep bacteria ticking over.
    D. A gene quickly named Sonic Ledgehog, for example plays a key role in the growth and orientation of a fly’s wings.
    6. In human embryos, an equivalent gene orchestrates the growth of orientation of our arms.

a. ADBC b. ACBD c. ABDC d. ABCD

90. 1. Mutual fund is a collective investment scheme in which a large number of investors pool in their money.
    A. The tax system prevailing till 1997 recognised the trust characteristics of mutual funds and thus exempted the income of mutual fund whereas the unit holders have to pay tax on income received from mutual fund.
    B. Mutual funds are thus established as trusts as required by the Securities and Exchange Board of India (SEBI).
    C. In 1997, when tax on dividend was exempted in the hands of the receivers but companies were required to pay dividend tax, it caused a peculiar situation for mutual fund investors.
    D. The tax rate depends on the nature of income (divided or capital gains) and is applicable to such investor.
    6. The government has denied extending the benefit to unit holder of mutual funds and asked the holder to pay tax on the dividend received thereby taking the dividend for a third time.

a. BACD b. BDAC c. BCDA d. BADC

Direction for questions 91 to 98: Each question is based on a short passage or upon a set of given conditions. Choose the best answer for each question.

91. The most popular boys in school are Amit, Alok and Ajay. Right behind them in popularity are Rohit, Pradeep and Sanjay. All of these boys are members of the football team. If I join the football team my popularity is bound to rise.
Which of the following best describes the author's form of reasoning in the passage above?
a. He states a hypothesis, then gives an example in support of it.
b. He gives an opinion, buttressing it with examples.
c. He proceeds from individual examples to reach a conclusion through inductive reasoning.
d. He states a commonly accepted theory and refutes it.

92. After seeing Akansha's scores go up after a summer of intensive tutoring, Rahul decided to use money from his savings account to pay Akansha's tutor to work with him.
Which is the most logical inference you can draw from the information given above?
a. Akanksha's scores improved because of the tutoring.
b. Rahul thought that Akanksha's scores improved because of tutoring.
c. Akanksha's scores would have remained the same without tutoring.
d. Rahul's scores will not improve without tutoring.

93. None of the professors at Cerebral College has ever voted for the right-wing parties, therefore, well-educated people are leftists.
The reasoning used in the passage above is most similar to that found in which of the following statements?
a. None of the workers in the assembly line are males; therefore, the company discriminates against men.
b. None of the keepers at the zoo have had a raise in salary for six months; therefore, the keepers are not doing their jobs well.
c. No athletes ever eat junk food; therefore, sedentary people always eat junk food.
d. None of the singers at the opera are females; therefore all good singers are males.

94. No one in this whole school likes me very much. I did not get a single vote in the last student council election.
Which of the following, if true, would most weaken the conclusion given above?
a. No one knew that the speaker was running for a position in the last election.
b. Very few students bothered to vote in the last election.
c. Most of the faculty and administration supported the eventual winner of the last election.
d. The students usually vote for the most popular students.

95. Mrs Anand was running late for work and left the house so abruptly that she left the water running and all the lights on. Which of the following can you infer from the above passage?
a. Leaving water running and the light on can be expensive if done regularly.
b. Mrs Anand thought it was important not to be late.
c. Mrs Anand was afraid to be late, fearing she might be fired.
d. Mrs Anand is not a good organiser of her time.

96. When Sudesh was awarded the Manager of the Month plaque, he stated. “I couldn’t have done it without my staff, all of whom I trained myself.”
Sudesh’s statement is an example of which of the following?
a. Indirect self-praise
b. Assuming facts not in evidence
c. A false conclusion
d. Restating the obvious

97. No one is safe from burglars anymore. Recent surveys show that 45 per cent of all burglary victims are weak, old or invalid people.
The argument in the passage assumes which of the following?
I. Most burglary victims fight back.
II. Burglars only rob the helpless as a rule.
III. Burglary is on the upswing in India.
a. I b. II c. III d. I and II

98. The biggest movie stars in Hollywood all revere director Li Yong; therefore, director Li Yong is the best director in the world.
The reasoning in which of the following is most likely the reasoning used in the sentence above?
a. The Pulitzer Prize was voted to Mr Karl this year, therefore, Mr Karl is convinced that he is the best writer in the world.
b. The American runner won the 100 metre dash in the Olympics; the triumph allows him to be called “The Fastest Man on Earth.”
c. All top models in Paris like the work of photographer Scavullo; therefore, Scavullo is the world’s finest photographer.
d. Professor Martinez is the most interesting professor in America today; all the Rhodes scholar try to take his classes.

Direction for questions 99 to 103: In each question, a partially completed theme is given. The completed theme contains three sentences. Indicate which of the sentences should be inserted to complete the theme.

99. The bus ran down the slope. ___ It threw the passengers into a panic.
    I. It oscillated gently due to the application of brakes.
    II. It gently halted at the bottom.
    III. It gathered speed as it went.
    a. I b. II c. III and I d. II and III

100. Everyone is fascinated by dinosaurs. ___ Whether it is reading a book or visiting your local natural history museum.
    I. They make colourless matter.
    II. But understanding them takes effort.
    III. It is like peering into yesterday.
    a. I and II b. II and III c. III d. II

101. Last week a man, roughly 60-years-old, rented a 0.38 calibre pistol at the shooting range. ___ Instead, he committed suicide.
    I. He wanted to murder somebody.
    II. He wanted to exercise his grip
    III. He should have been there for target practise.
    a. I b. I, II and III c. III d. II

102. The history of the black peoples' struggle for justice in Nigeria and elsewhere goes back a long way. ___ Justice though slow, seems in sight.
    I. But it seems to be almost unattainable.
    II. So long, that they are near giving up.
    III. The struggle has crawled forward steadily.
    a. III b. I c. II d. II and III

103. She smiled at him tenderly. Suddenly, her smile disappeared. ___
    I. He ran screaming from the room.
    II. It was replaced by a frown.
    III. Her displeasure was inexplicable.
    a. I and III b. II and III c. II, III and I d. II and I

Direction for questions 104 to 108: Each question has a sentence followed by four choices. Select from among the four choices the one which most logically complements the idea contained in the given sentence.

104. You are not in charge of the universe,
    a. you are in charge of a part of it. b. in fact, you inhabit it.
    c. you are in charge of yourself. d. you are no part of it.

105. In the hospital emergency, a doctor bends over an unconscious two-year-old, the child's breathing is rapid and shallow, his
    a. pulse is pounding. b. speech is inarticulate.
    c. hearing is impaired. d. eyes bright and shining.

106. The power of thinking atrophies unless
a. it is constantly upgraded.
b. it is continually updated.
c. it finds a constant productive outlet.
d. it is used.

107. War is delightful to those who
a. have a chance of winning it.
b. are zealous and full of ambition.
c. love national glory.
d. have had no experience of it.

108. It seems to me that our ideals, laws and customs should be based on the proposition that each generation, in turn, becomes the custodian rather than the absolute owner of our resources and each generation has the obligation to
a. enjoy their life to the fullest.
b. pass this inheritance on to the future.
c. enhance them and to save them.
d. use them at their will to enhance the glory of mankind.

Direction for questions 109 to 113: Four statements with blanks are given, followed by four alternatives. Choose the one which fits the set of statements the maximum number of times.

109. I. The council, I am sure, will ___ caution.
II. Mr Ram Adhikari was ___ for the dependent.
III. In light of the extreme sensitivity of the issue, he decided to keep his ___.
IV. After a commercial evaluation, the panel thought fit to ___ the first proposal.
a. advocate b. recommend c. counsel d. suggest

110. I. Richmond is an urban sprawl that has gradually ___ on the unspoilt countryside.
II. In the Shyam Suvarna case, the Mumbai High Court ruled the basic constitutional rights had been ___.
III. The company maintained that the new product of the competition clearly ___ on their copyright.
IV. The hawkers outside the Victoria Memorial have ___ on municipal property.
a. encroached b. violated c. infringed d. intrude

111. I. The sorry plight of the child will ___ him to tears.
II. They have asked me to ___ the piano upstairs.
III. The new management will ___ all the backlog work on the sales manager.
IV. This is an extremely tactical ___ on her part.
a. reduce b. transfer c. shift d. move

112. I. He practises his ___ in the back alleys of Westminister.
II. The teaching ___ has, since time immemorial enjoyed the respect of society.
III. I would consider this a fair ___.
IV. To him, it is more than a ___; it is a vocation.
a. exchange b. trade c. profession d. occupation

113. I. A methodical man plans his work in a ___ manner.
II. He is, I admit, rather ___ on the uptake.
III. The river clogged as it was with rubbish, flowed in a ___ manner down the plains.
IV. He is a man ___ to anger; but when roused, he is formidable.
a. deliberate b. slow c. sluggish d. leisurely

Direction for questions 114 to 118: Fill in the blanks with the appropriate words/set of words.

114. While the honourable function of language is to ___ communication, we must remember that another of its historic functions, sometimes deliberate, sometimes accidental, is to ___ thought.
a. facilitate … promote
b. promote … conceal
c. popularise … prevent
d. help … enhance

115. Erosion in nature is a beneficial process; the same process ___ by human mismanagement has become one of the most ___ forces that had ever been released by man.
a. enhanced … lucrative
b. hastened … potent
c. checked … raucous
d. accelerated … destructive

116. It is my purpose, as one who lived and acted in those days, to show how easily the tragedy of the second world war could have been prevented; how the ___ of the wicked was reinforced by the ___ of the virtuous.
a. malice … weakness
b. contempt … malice
c. weakness … strength
d. stubbornness … weaknesses

117. Until a certain economic equality among the different parts of the world has been achieved, the poorer nations will ___ the richer ones, and the richer ones will ___ violent action on the part of those who are less prosperous.
a. envy … dread
b. dread … instigate
c. berate … recent
d. respect … prevent

118. Everyone has his own ideas of how man became man, and what life was like among creatures, no longer ___ but not yet ___, who inhabited the earth a million years ago.
a. apes … human
b. enslaved … free
c. primitive … civilized
d. apes …evolved

Direction for questions 119 to 128: Each question below contains six statements followed by four sets of combinations of three; Choose the set in which the statement are logically related.

119. A. No school boy studies hard.
B. All school boys go to school.
C. Some school boys are good at games.
D. All school girls study hard.
E. No school girl is a school boy.
F. All school girls are children.
a. ABC b. BCD c. ADE d. DEF

120. A. Some businessmen have good planning skills.
B. Some professionals have good planning skills.
C. Some businessmen have good implementation skills.
D. Some businessmen have good planning skills.
E. Good planning skills lead to good implementation.
F. Some businessmen implement well.
a. ACD b. ADB c. DEF d. ABC

121. A. Some humans are non-vegetarians.
B. All Indian are humans.
C. All humans need food to live.
D. All Indians are non-vegetarian.
E. Indians need food to live.
F. Some humans are Indians.
a. ADF b. ABC c. AEF d. BCE

122. A. All lions are brave.
B. All lions are regal.
C. All animals are lions.
D. All lions need food.
E. All animals need food.
F. All animals need rest.
a. CDE b. ABC c. BCD d. CEF

123. A. Final year students would like a good career.
B. All final year students are eligible as candidates for MBA entrance examination.
C. Final year students are eligible for a good career.
D. Some of those who are candidates for an MBA entrance examination are final year students.
E. All those eligible as candidates for an MBA entrance examination are eligible for a good career.
F. All those who would like a good career are entitled to it.
a. AEF b. EBC c. BCF d. CDF

124. A. All bright people acknowledge brains in others.
B. Some knowledgeable men are bright.
C. Some knowledgeable men do not acknowledge brains in others.
D. Some knowledgeable men are persons who are bright.
E. Some knowledgeable men are not bright.
F. All bright people do not necessarily acknowledge brains in others.
a. ABE b. ACF c. ADE d. ACE

125. A. Some thoughts lack clarity.
B. Anything unclear is not worth writing about.
C. Some thoughts are worth writing about.
D. All thoughts lack clarity.
E. Some thoughts are clear.
F. No thought is worth writing about.
a. ABF b. BCD c. BEF d. BDF

126. A. All successful people are satisfied.
B. All hardworking people are satisfied.
C. All hardworking people are successful.
D. No hardworking person is successful.
E. No hardworking person is satisfied.
F. Some hardworking people are satisfied.

a. ADE b. BEF c. ACB d. ADF

127. A. No dull person is fit to teach.
B. Everyone who is bright can think.
C. No young person can think.
D. Some of those who think are fit to teach.
E. All who can think are fit to teach.
F. Everyone who is bright is fit to teach.

a. BDE b. BEF c. BDF d. ADE

128. A. Some cricketers are disapproving of greed.
B. Some cricketers are sincere.
C. All cricketers are disapproving of greed.
D. All those who are disapproving of greed are sincere.
E. Some of those who are disapproving of greed are sincere.
F. Some cricketers are not sincere.

a. BCD b. ABD c. BCE d. ABF

Section – IV

Direction for questions 129 to 177: Read the passages and answer the questions that follow.

Passage – 1

As the century draws to a close, our great challenge is to create sustainable communities — social, cultural and physical environments in which we can satisfy our needs and aspirations without diminishing the integrity of the natural world and the chances of future generations.

In our attempts to build and nurture sustainable communities, we can learn valuable lessons from ecosystems, which are sustainable communities of plants, animals and micro-organisms. To understand ecosystems, we need to learn the basic principles of ecology, the language of nature. We need to become ecologically literate, or 'ecoliterate'.

Now, to understand the principles of ecology, we need a new way of seeing the world. We need to think in terms of relationships, connectedness and context. In science, this new way of thinking is known as systems thinking. It emerged during the first half of the century in several disciplines in which scientists explored living organisms, ecosystems and social systems, and recognized that all these systems are integrated wholes whose properties cannot be reduced to those of smaller parts.

Systems thinking was raised to a new level during the past 20 years with the development of a science of complexity. It involved a whole new mathematical language and a set of concepts to describe the complexity of living systems.

The emerging new theory of living systems is the theoretical foundation of ecological literacy. Instead of seeing the universe as a machine composed of elementary building blocks, scientists have discovered that the material world, ultimately, is a network of inseparable patterns of relationships that the planet as a whole is a living, self-regulating system. The view of the human body as a machine and of the mind as a separate entity is being replaced by one that sees not only the brain, but also the immune system, the bodily tissues, and even each cell, as a living, cognitive system. Evolution is no longer seen as a competitive struggle for existence, but rather as a cooperative dance in which creativity and the constant emergence of novelty are the driving forces.

This new vision of reality, informed by eco-literacy, will form the basis of our future technologies, economic systems and social institutions. It is obvious that this has profound implications for education in the 21st century. It will require a pedagogy that puts the understanding of life at its very centre. It will be an experience of learning that overcomes our alienation from the natural world and rekindles a sense of place. We will need a curriculum that teaches our children the fundamental facts of life — that one species' waste is another species' food; that matter cycles continually through the web of life; that the energy driving all ecological cycles flows from the sun; that diversity assures resilience; that life, from its beginning more than three billion years ago, did not take over the planet by combat but by networking. Teaching this new knowledge, which is also ancient wisdom, will be the most important role of education in the next century.

Because of its intellectual grounding in systems thinking, eco-literacy offers a powerful framework for the systemic approach to school reform that is now widely discussed among educators in many countries. Systemic school reform is based on, essentially, two insights — a new understanding of the process of learning and a new understanding of leadership.

Recent research in neuroscience and cognitive development has resulted in a new understanding of the process of learning, based on the view of the brain as a complex, highly adaptive, self-organizing system. The new understanding recognizes the active construction of knowledge in which all new information is related to past experience in a constant search for patterns and meaning, the importance of experiential learning, of diverse learning styles involving multiple intelligences, and of the emotional and social context in which learning takes place.

This understanding of the learning process suggests corresponding instructional strategies. In particular, it suggests designing an integrated curriculum, emphasizing contextual knowledge, in which the various subject areas are perceived as resources in service of a central focus. An ideal way to achieve such an integration is the approach called 'project-based learning', which consists in facilitating learning experiences that engage students in complex, real-world projects — for example, a school garden, or a creek restoration — through which they develop and apply skills and knowledge.

Such curriculum integration through ecologically-oriented projects is possible only if the school becomes a true learning community in which teachers, students, administrators and parents are all interlinked in a network of relationships, working together to facilitate learning. In such a learning community, the teaching does not flow from the top down, but there is a cyclical exchange of information. The focus is on learning and everyone in the system is both a teacher and a learner. Feedback loops are intrinsic to the learning process, and feedback becomes the key purpose of assessment. Systems thinking is crucial to understand the functioning of learning communities. Indeed, the principles of ecology can also be interpreted as principles of community.

Finally, the systemic view of learning, instruction, curriculum design and assessment can only be implemented with a corresponding practice of leadership. This new kind of leadership is inspired by the discovery of a very important property of living systems, which has been identified only recently. Every living system occasionally encounters points of instability, at which some of its structures break down and new structures emerge. The spontaneous emergence of order — of new structures and new forms of behaviour — is one of the hallmarks of life. In other words, creativity — the generation of forms that are constantly new — is a key property of all living systems.

Leadership, therefore, consists to a large extent in continually facilitating the emergence of new structures and incorporating the best of them into the organization's design. This type of 'systemic' leadership is not limited to a single individual but can be distributed, and responsibility then becomes a capacity of the whole.

In summary, eco-literacy includes three components: understanding the principles of ecology, thinking systemically, and using the principles of ecology and systems thinking as the context and language for school reform.

As we go toward the beginning of a new millennium, the survival of humanity will depend on our ability to understand the principles of ecology and live accordingly. This is an enterprise that transcends all our differences

of race, culture or class. The earth is our common home, and creating a sustainable world for our children and for future generations is our common task. This responsibility can only be fulfilled if we and our children can learn to live without damaging the fragile ecosystem.

129. Eco-literacy includes
I. thinking systemically.
II. being a part of a universal drive to plant trees.
III. understanding principles of ecology.
IV. using the principles of ecology and systems thinking as the context and language for school reform.
a. II, III and IV b. I, III and IV c. II and III d. All of these

130. Leadership as a creative force
I. is limited to a single individual.
II. is a reflection of a capacity of the whole.
III. helps in implementing systemic view of learning.
IV. facilitates emergence of new structure.
a. I, II and III b. II and IV c. II, III and IV d. None of these

131. The new understanding of the process of learning emphasizes the following except
a. the importance of experiential learning.
b. the importance of emotional and social context in which learning takes place.
c. the importance of understanding leadership.
d. the importance of diverse learning styles.

132. The most important role of education in the next century will be
a. to put in place a pedagogy that has understanding of life at its very centre.
b. overcoming human alienation from the natural world.
c. systemic school reforms to end drug abuse.
d. teaching the new knowledge of 'eco-learning'.

133. Characteristic of learning community includes
a. greater autonomy for the participants.
b. moving from a stage of interdependence to enhanced individual effort.
c. cyclic exchange of information.
d. top down approach to learning.

134. Ecological literacy stresses on all the following except
a. material world as a network of inseparable parts.
b. evolution as a cooperative effort.
c. enhanced human interaction to facilitate environmental adjustment.
d. systemic thinking towards understanding the interdependencies involved.

135. The requirements for putting in place the new learning process include
I. 'project-based' learning.
II. making schools a true learning community.
III. emphasizing contextual knowledge.
IV. designing an integrated curriculum.
a. I and II b. I, II and III c. III and IV d. All of these

Passage – 2

Propaganda is more or less the systematic effort to manipulate other people's beliefs, attitudes, or actions by means of symbols (words, gestures, banners, monuments, music, clothing, insignia, hairstyles, designs of coins and postage stamps, and so forth). Deliberateness and a relatively heavy emphasis on manipulation distinguish propaganda from casual conversation or the free and easy exchange of ideas. The propagandist has a specified goal or set of goals. To achieve these, he deliberately selects facts, arguments and displays symbols and presents them in ways he thinks will have the most effect. To maximise effect, he may omit pertinent facts, and he may try to divert the attention of the reactors (the people whom he is trying to sway) from everything but his own propaganda.

Comparatively, deliberate selectivity and manipulation also distinguish propaganda from education. The educator tries to present various sides of an issue — the grounds for doubting as well as the grounds for believing the statements he makes, and the disadvantages as well as the advantages of every conceivable course of action. Education aims to induce the reactor to collect and evaluate evidence for himself and assists him in learning the techniques for doing so. It must be noted, however, that a given propagandist may look upon himself as an educator, may believe that he is uttering the purest truth, that he is emphasizing or distorting certain aspects of the truth only to make a valid message more persuasive, and that the courses of action that he recommends are in fact the best actions that the reactor could take. By the same token, the reactor who regards the propagandist's message as self-evident truth may think of it as educational; this often seems to be the case with 'true believers' — dogmatic reactors to dogmatic religious or social propaganda. 'Education' for one person may be 'propaganda' for another.

Related to the world propaganda, as it is more generally used, is the concept of 'propaganda of the deed'. This denotes taking non-symbolic action (such as economic or coercive action), not for its economic or coercive effects but for its possible propagandistic effects. Example of propaganda of the deed would include staging an atomic 'test' or the public torture of a criminal for its presumable deterrent effect on others, or giving foreign 'economic aid' primarily to influence the recipient's opinions or actions and without much intention of building up the recipient's economy.

Distinctions are sometimes made between overt propaganda, in which the propagandist and perhaps his backers are made known to the reactor, and covert propaganda, in which the source is secret or disguised — a 'hidden persuader'. Covert propaganda might include such things as unsigned political advertisements, clandestine radio stations using false names, and statements by editors, politicians, or others who have been secretly bribed by governments, political backers, or business firms. Sophisticated diplomatic negotiation, legal argument, collective bargaining, commercial advertising and political campaigns are of course quite likely to include considerable amounts of both overt propaganda and covert propaganda and to be accompanied by propaganda of the deed.

Another term related to propaganda is psychological warfare (sometimes abbreviated to 'psychwar'), which is the pre-war or wartime use of propaganda directed primarily at confusing or demoralizing enemy populations or troops, putting them off guard in the face of coming attacks, or inducing them to surrender.

Still another related concept is that of brainwashing. This term usually means intensive political indoctrination. It may involve long political lectures or discussions, long compulsory reading assignments, and so forth,

sometimes in conjunction with efforts to reduce the reactor's resistance by exhausting him either physically through torture, overwork, or denial of sleep or psychologically through solitary confinement, threats, emotionally disturbing confrontations with interrogators or defected comrades, humiliation in front of fellow citizens, and the like. The term brainwashing has been widely used in sensational journalism to refer to such activities (and to many other activities) when they have allegedly been conducted by Maoists in China and elsewhere.

Another related word, advertising, has mainly commercial connotations, though it need not be restricted to this; political candidates, party programmes, and positions on political issues may be 'packaged' and 'marketed' by advertising firms. The words promotion and public relations have wider, more vague connotations and are often used to avoid the implications of 'advertising' or 'propaganda'. 'Publicity'and 'publicism' often imply merely a subject known to a public, without educational, propagandistic, or commercial intent. The 20th century propagandist with money and imagination can use a very wide range of signs, symbols, and media to convey his message. Signs are simply stimuli — 'information bits' capable of stimulating, in some way, the human organism.

A symbol is a sign having particular meaning for a given reactor. Two or more reactors may of course attach quite different meanings to the same symbol. Thus, to Nazis, the swastika was a symbol of racial superiority and the crushing military might of the German folk; to some Asiatic and North American peoples, it is a symbol of universal peace and happiness. Media are the means — the channels — used to convey signs and symbols to the intended reactor or reactors. A comprehensive inventory of media used in the 20th century propaganda could cover many pages.

Among audiovisual media, television may be the most powerful for many purposes. Television can convey a great many types of signs simultaneously; it can gain heavy impact from mutually reinforcing gestures, words, postures and sounds and a background of assemblies of prestigious or powerful people. Other audiovisual media include public speakers, motion pictures, theatres, marching bands, mass demonstrations, picketing, face-to-face conversations between individuals, and 'talking' exhibits at fairs, expositions and art shows.

The larger the propaganda enterprise, the more important are such mass media as television and the press and also the organisational media — that is, pressure groups set up under leaders and technicians who are skilled in using many sorts of signs and media to convey messages to particular reactors. Vast systems of diverse organisations can be established in the hope of reaching leaders and followers of all groups (organised and unorganised) in a given area, such as a city, region, nation or coalition of nations or the entire world. Pressure organisations are especially necessary, for example, in closely fought sales campaigns or political elections, especially in socially heterogeneous areas that have extremely divergent regional traditions, ethnic and linguistic backgrounds and educational levels and very unequal income distributions. Diversities of these sorts make it necessary for products to be marketed in local terms and for political candidates to appear to be friends of each of perhaps a dozen or more mutually hostile ethnic groups, of the educated and the uneducated and of the very wealthy as well as the poverty-stricken.

136. According to the passage, the difference between a propagandist and an educationist blurs the most when
    a. both the latter and the former are deliberate and selective in their approach.
    b. the former starts believing that he is acting in the best interests of the people.
    c. the people do not see any reason to disbelieve the former.
    d. both hold strong opinions on an issue.

137. According to the passage, an intensive effort to overcome the reactor's resistance is most likely to be used during
   a. psychological warfare.
   b. brainwashing.
   c. covert propaganda.
   d. propaganda of the deed.

138. From the passage, we can infer all of the following except that
   a. if the reactor population is fragmented into different groups, there will be less reliance on mass media.
   b. as propaganda machines and enterprises become larger, the use of audiovisual media is crucial.
   c. specialists, in signs and symbols, will lessen in importance as a cleaved and heterogeneous reactor population is targetted.
   d. large propaganda machines usually have various organisations that reach various opinion leaders and their follower groups.

139. According to the passage,
   a. a medium that helps us convey more than one type of symbol always has more impact than the written medium.
   b. audiovisual media have an array of signs and symbols which are mutually exclusive.
   c. television will have a heavy impact on a closely fought sales campaign in socially heterogeneous areas.
   d. a large propaganda machine usually has numerous and diverse organisations operating within to carry out its objectives.

140. According to the passage,
   a. sensational journalism is a type of brainwashing.
   b. education usually collects and evaluates evidence which is then presented to reactors.
   c. a hidden persuader is most likely to convey self-evident truths to true believers.
   d. an event used to influence people more than it affects them is 'propaganda of the deed'.

141. According to the passage, advertising
   a. can use both covert and overt propaganda.
   b. is used only for commercial user.
   c. need not have educational, propagandist, or commercial intent.
   d. is used as a euphemism for promotion.

142. Which of the following statements is false?
   a. A propagandist may have good intentions.
   b. An education is selective in the presentation of facts.
   c. A covert propagandist may be known to his reactor.
   d. A political party's position on an issue may be influenced by its advertising agency.

143. All the following are true of political candidates except that
   a. they need to forge relationships with conflicting groups.
   b. their programmes are usually cosmeticised and packaged.
   c. they need to market themselves in local terms.
   d. they need diverse organisations to reach out to different groups.

144. From the passage, we can infer that
   a. covert propaganda is more frequent than overt propaganda.
   b. propaganda of the deed is more likely to be covert propaganda than overt propaganda.
   c. covert propaganda must necessarily use an intermediary person between the source and the reactor.
   d. dropping leaflets exhorting surrender across lines during war is an example of covert propaganda.

145. According to the passage, an educator
   a. can be considered a propagandist.
   b. will not be deliberate in his approach to a reactor.
   c. will help a reactor to think as the educator does.
   d. is not selective in his choice of reactors.

146. According to the passage, all the following are true except that
   a. a symbol can be meaningless.
   b. a symbol could have different meanings to different reactors.
   c. a symbol for one person could be a sign for another.
   d. a meaningful sign is a symbol.

147. According to the passage, propaganda is
   a. the orchestrated use of symbolic actions to an end.
   b. a harsher term for ‘publicism’ or ‘publicity’.
   c. the extensive use of symbols in mass media.
   d. use of symbols to maximise a desired effect.

148. According to the passage, dropping leaflets behind enemy lines during war is an example of
   a. propaganda of the deed
   b. covert propaganda
   c. psychological warfare
   d. brainwashing

Passage – 3

A green alternative to the petrol-driven car has just gone on trial in the world’s fussiest environmental market. This week, two nails were hammered into the coffin of the internal-combustion engine. The first came when Toyota and General Motors, which between them make a quarter of the world’s cars, signed a pact to develop alternatives. These include battery-powered cars, ‘hybrid’ vehicles that have both electric and petrol engines, and most significantly, vehicles powered by fuel cells. The second was the result of an alliance between Daimler Chrysler and Ford (another quarter of the world’s car production), and Ballard Power Systems, a Canadian firm that has been developing fuel cells for use in vehicles for several years.

On April 20, two fuel-cell cars, one from Daimler Chrysler and one from Ford, were driven around the streets of California's capital, Sacramento. They were the first of a fleet of 45 cars and buses from the two car makers that are to be road-tested in California (mainly in the Los Angeles area) over the next four years. The tests will be conducted under the beady eye of John Wallace, head of Ford's Alternative Fuel division, and he will be looking to see how the vehicles stand up to the stresses and strains of ordinary daily use.

Mr Wallace's interests are satisfyingly prosaic-the sort of things that concern users as much as engineers. He is considering practical questions about the machines' reliability. For instance, it takes only a few seconds to start a modern petrol-driven car, but, at least in cold weather, a fuel cell needs several minutes of warming up before it can produce enough power to drive off. Mr Wallace wants to know how much of a pain that will be (perhaps not too much in southern California), and whether it can be reduced. He also wants to find some way of quietening the intrusive noise of the compressors that are needed to make a fuel-cell car work. And he particularly wants to investigate the infrastructure (refuelling stations, for example) that will be needed to support the widespread ownership of such cars.

The difficulty here is that fuel cells use not hydrocarbons but hydrogen. And hydrogen, being an explosive gas with a ridiculously low boiling point, is hard to handle routinely. Yet it is fairly easy to make it 'on the fly' from methanol, and it is this chemical (which is a liquid at room temperature) that drivers will eventually put in their tanks. Three oil companies (Shell, Texaco and Arco) are taking part in the tests, and they will make methanol for fuel-cell cars available at selected petrol stations. (Existing methanol available in Los Angeles contains 15 per cent petrol and is thus unsuitable.)

A fuel cell works by chemically combining hydrogen with oxygen from the air. The result in energy in the form of moving electrons, which is used to power an electric motor; and water, the fuel cell's principal waste product. That the GM-Toyota deal and the trial cars were wheeled out just before 'Earth Day' (April 22, for those who missed it) was probably not a coincidence. Water, after all, hardly counts as a serious pollutant. The tests are being carried out in California for a similar reason. The state's 'zero-emission vehicles' law requires 10 per cent of a car maker's sales there to be pollution-free by 2004. Since battery-powered vehicles have proved a flop — their range is too limited and they take too long to recharge — fuel-cell cars are seen as the best hope of complying with the legislation.

In practice, that has meant a fudge in the law. Fuel-cell vehicles that put hydrogen in their tanks (as the current prototypes do) are truly zero-emission, but those that use methanol release a tiny amount of carbon monoxide. They also release carbon dioxide (though less than a petrol-driven car), but that is not covered by the law. The Californian government, however, is not going to push the point too far. After all, the total energy-efficiency of the process of making, delivering and using the fuel (well to wheel, as they call it) in a methanol-fed fuel-cell vehicle is 27 per cent, compared with only 17 per cent in a petrol-engine vehicle. As a result, the government is prepared to credit methanol-powered fuel-cell cars as being worth 0.6 of a true zero-emission vehicle for legal purposes. If, that is, anyone is actually prepared to buy one.

That remains a big concern. At the moment, it costs around $4,000 per kilowatt to make a fuel-cell engine as compared with $40 per kilowatt for an internal-combustion engine. Mass production will eliminate some of that gap, but not all of it. And although the trial will help to work out the best way to deliver the fuel cell's hydrogen, and how to build a suitable distribution network, it will not necessarily bring the price down to the point where fuel cells can compete with petrol or diesel. That is a task of pure engineering.

Fuel cells come in several varieties, but the heart of the sort developed by Ballard is a polymer membrane coated on either side with platinum also acts as a catalyst. On one side of the membrane, hydrogen is decomposed into its constituent electrons and protons. The electrons disappear into the electrode, while the protons pass through the membrane. On the other side, the electrons return via the second electrode, having passed through the coils of an electric motor that drives the wheels of the car. Here they recombine with the protons and also oxygen atoms, to make water.

One source of high cost is obvious enough — the platinum. The amount needed has already been reduced, but it will have to be cut further. A second is the grooved graphite plates that are used to direct the flow of hydrogen and oxygen. These are being replaced with cheap carbon composites. On their own, these and similar economies should bring the cost of a kilowatt of output down to around $20, if as many as twenty-five thousand engines a year were produced. But a fuel-cell engine is more than a stack of cells. If it is ultimately fuelled by methanol, it needs a chemical reactor known as a reformer to release the hydrogen. It also needs an efficient but cheap electric motor.

Reformers are bulky and expensive. Efforts to shrink them have run into problems, according to Firoz Rasul, Ballard's boss. The main one is that smaller reformers produce too much carbon monoxide. Besides diminishing the fuel cell's green credentials, this 'poisons' the platinum and stops it doing its job. So far, nobody has come up with an answer to this difficulty that does not involve shifting to another, presumably more expensive, source of hydrogen.

As for the motor, the main problems are that its magnets are made of molybdenums and titanium — both pricey — and that it needs a complex array of special switches called thyristors to control it. So yet another result that the organisers hope will come out of the road trials is some way of simplifying this electronic control system.

As the test cars paraded outside Sacramento's capitol building, their designers were no doubt keeping their fingers crossed that these difficulties will go away. But at least the photo opportunity was alluring: it was a beautiful, smogless day. Some time, if their dreams work out, all Californian days, even in Los Angeles, may be like that.

149. The reasons why the cost of fuel cells remains high include all the following except
    a. the magnets of the motor are made of molybdenum and titanium which are expensive.
    b. methanol as a source of hydrogen is expensive.
    c. reformers are bulky and expensive.
    d. platinum used on either side of the polymer membrane is an expensive fuel.

150. Battery powered vehicles have proved a flop because
    I. Their range is too limited.
    II. They take too long to recharge.
    III. Costs are prohibitive.
    IV. They require a lot of maintenance.
    a. I and IV b. III c. I and II d. III and IV

151. According to the passage, the tests being conducted under Mr John Wallace would focus on the following except
a. searching for a cheaper fuel as against hydrogen.
b. investigating the infrastructure required.
c. finding out ways to lower the noise levels of compressors.
d. if and how the time required for warming up fuel cells can be reduced.

152. The passage suggests the following measures to make the cost of per unit fuel cell output comparable to the petrol engine output.
I. Increased production to achieve economies of scale.
II. Replace grooved graphite plates with cheap carbon batteries.
III. Reducing the amount of platinum required.
IV. Using cheap electric motors.
a. II and III b. II, III and IV c. III and IV d. All of these

153. The Californian Government is prepared to be less stringent when it comes to fuel-cell cars using methanol as
I. it is very difficult to track down an offender.
II. there are many public interest groups involved.
III. they have greater efficiency as compared to petrol engine vehicle.
IV. to enhance their market acceptability.
a. III and IV b. I, III and IV c. II and IV d. I and III

154. Hydrogen has proved to be a difficult fuel to handle because
a. it vapourizes quickly.
b. its high boiling point requires greater amount of energy to ignite the mixture.
c. it is an explosive gas with a very low boiling point.
d. it is difficult to liquify.

Passage – 4

Brands are built by people. This is just as true in banking as it is in any other sector of business. In this respect, at least we can be sure that nothing is likely to change in the new millennium. The fundamental prerequisites of a strong brand will also continue to apply.

To be strong, a brand should reflect a set of values based on reality. The more dearly understood these values are by everyone inside and outside the bank, the more likely the bank is to be successful.

Brand values should be promoted consistently over time across all communication disciplines, including visual, behavioural and promotional.

The greatest value of a brand is its ability to separate you from your competitors. The ultimate reward for achieving a strong brand is loyalty which renders customers, employees and investors immune to competitor activity and actively supportive of change, be it strategic or product innovation.

But whatever the strength of the brand, its market position will face continual challenge from competitors. Therefore, building successful bank brands starts with the depth of an organization's commitment to continually deliver customer satisfaction.

It is said that it takes about five years to build a brand and five minutes to lose one. The secret of long-term brand strength is the ability to track closely the perceptions of your customers against your organisation's brand values and those of your competitors to ensure that your desired position reflects reality or stays tolerably close to it.

But brand values alone are not enough. Analysis of the brand values adopted by the world's major banks reveals remarkable similarity. 'Big, trustworthy, safe, powerful, professional, reliable, helpful, customer-focused', etc. — all. As financial markets continue to open up, growth-hungry commercial investment and development banks, insurance companies, finance companies, mutual funds and other institutions are converging on the financial services market. Players outside the traditional financial industry are intent on entering the market; technology companies, Internet players, retailers, car companies, almost anyone with access to a defined customer base now seems to have the potential to add financial services to their product offering.

The channels of contact between banks and their customers will continue to multiply. Currently, Standard Chartered customers communicate with us through the Internet, telephones, ATM, cards, PCs, televisions, mobile phones, mailing, banking halls, advertising media and news coverage. In the next millennium, new technology will enable us to create even more exciting solutions to satisfy the needs of our customers.

I am convinced that despite the continuing proliferation of communication channels and promotional media, the fundamental brand concept will still hold true in the new millennium. Brands will continue to be made not by technology, but by people.

For Standard Chartered, building a more successful brand will continue to be driven by the development of our culture, which has at its core the wholehearted commitment of our employees to providing world-class customer service.

155. The author suggests that
   I. it is technology that ultimately drives the brand.
   II. the channels of contact between banks and their customers will continue to multiply.
   III. the brand comes to life with the identification of core values and customer perception.
   IV. having a defined customer base is an important perquisite for offering financial services.
   a. I, II and IV b. II, III and IV c. All of these d. None of these

156. According to the passage, challenges facing the banking sector don't include
   a. need for being sensitive to local market requirements.
   b. relating to target customer segments.
   c. different legal and accounting requirements.
   d. implementation of the agreed strategy.

157. The success and the strength of a brand can be measured by all except
   a. ability to separate yourself from your competitors.
   b. contribution to the firms bottomline.
   c. the ability to reflect a set of values based on reality.
   d. ability to track closely the perception of your customer.

158. All the following have been the impact of Internet and e-commerce on banking except
   a. initial customer trail leading to permanent customer loyalty.
   b. the need to offer your target customer an increasingly broader range of services than your competitor.
   c. strategic horizon for doing business reduced to three to four weeks.
   d. creation of completely new brands possible in a matter of weeks.

Passage – 5

Does the human immunodeficiency virus (HIV) cause acquired immune deficiency syndrome (AIDS)? According to Dr Roberto A Giraldo of the Laboratory of Clinical Immunology at the New York Hospital — Cornell Medical Centre, it does not. Toxins and malnutrition, coupled with other factors that stress the immune system, probably cause AIDS, says Dr Giraldo, a Columbian by birth. A member of a worldwide forum called the 'Group for the Scientific Reappraising of the HIV/AIDS Hypothesis' or 'Scientific Reappraisal Group', he is of the opinion that AIDS is not an infectious disease and that it makes no logic to say that it is sexually transmitted or caused by a germ. Dr Giraldo was part of a three-member team that visited India on February 1, espousing this theory.

The other two medical experts who accompanied Giraldo were Dr De Harven, emeritus professor of pathology at the University of Toronto, and Dr Koehnlein, who was trained at the Haemotological Oncological Department of Kiel University and who has been treating AIDS patients since 1992. Dr Harven says that he 'started to worry ever since pharmaceutical companies began sponsoring medical research'.

After noting the effects of azidothymidine (AZT) and other standard antiviral regimes, Dr Koehnlein treats AIDS patients without administering antiviral and immunosuppressives. He claims to have kept HIV-positive patients alive and well. The three doctors and other experts were invited by Purushothaman Mulloli, convener of the Joint Action Council, a forum that has been projecting an alternative view in the HIV/AIDS debate since the mid-1990s.

Dr Giraldo, Dr Koehnlein and Dr De Harven belong to a 'dissident' group of 2,000 researchers, which includes three Nobel laureates including the inventor of the polymerase chain reaction (PCR) test, a test used to detect HIV. Talking to Frontline, Dr Giraldo said that whenever a new disease affected people, the basic question to be asked was what was new about the condition from which the disease had supposedly originated? He said that the first cases of AIDS in the United States were reported among five gay persons. They were not 'normal gay people'; they were drug addicts using cocaine, heroin and popper, an aphrodisiac that came to be used widely in the late 1960s and early 1970s. Popper, a derivative of amyl nitrite, is known to destroy the immune system. Dr Giraldo said that it was well known that cocaine destroyed the immune system and so did heroin, alcohol and marijuana. These were immunological stressors which, in conjunction with other factors, including abysmally low food intakes, caused AIDS.

Dr Giraldo maintains that basic mistakes were made in the beginning of AIDS research in the 1980s. Having studied infectious diseases since 1965 and done a specialised course in the subject, Dr Giraldo began asking himself questions premised on simple doubts: why did two out of 10 people get tuberculosis while the rest did not? Since the beginning of the century, people have had immune deficiencies and it made little sense to say that the virus that caused AIDS would selectively go about its victims. In the mid-1970s, Dr Giraldo got interested in Kaposis sarcoma, which was prevalent in Central Africa and which occurred in heavily immune-suppressed persons, such as those who underwent chemotherapy for cancer and so on. Another parasitic condition called Toxoplasmosis was found among heavily immune-suppressed people who were not gay or who did not belong to the high-risk category. Both Kaposis sarcoma and Toxoplasmosis were associated with AIDS.

AIDS, Dr Giraldo emphasises, is caused by stressors-mental, physical, biological and chemical. He admits that while it is easy to explain that HIV caused AIDS, it is difficult to understand his group's hypothesis. It is simple logic that prolonged exposure to drugs or toxins causes various reactions in the human body. Of late, different groups of people are being exposed to various stressors, in high amounts. Contracting AIDS is not easy, he says. Normally, the human body is strong enough to deal with several stressors at the same time. However, these days, people get exposed to a wide variety and large amounts of stressors.

Dr Giraldo says that chemical stressors involve reaction to drugs of various kinds. People use more drugs today than they did 20 years ago. With high degrees of pollution everywhere, even in food, chemical exposure levels are on the rise.

Physical stressors include technological gadgets, such as computers, cell phones, wireless, satellites and so on that create electromagnetic fields which affect the immune system. Dr Giraldo quoted a Canadian study that revealed a high incidence of cancer among people working near high-tension wires.

Biological stressors are caused by the intrusion of living objects into the human body, says Dr Giraldo. Sperm is a biological stressor and so is blood. He says that commercial sex workers were exposed to a large quantity of sperm. A study conducted on the health of commercial sex workers during the Vietnam war revealed that the poorer among them, who entertained a relatively large number of customers each day, had higher rates of infection. Although wary of drawing a correlation between promiscuity and the immune system, Dr Giraldo says that nutritional stressors coupled with biological stressors can debilitate the immune system. Homosexuality, according to him, has always existed but now it is associated more than ever before with phenomena, such as drug abuse. Regarding mental stressors, he says that it is an accepted fact in medicine that mental stress produces certain chemical reactions in the body which affect the immune system.

Dr Giraldo holds the view that the causes of AIDS in developing countries are different from that in developed nations. If some homosexuals in the US or Europe were found to have AIDS, in Africa it is not so; neither do people in Africa 'do Poppers', or 'have sexual orgies', according to him. Similarly, the gay population in poor countries are not contracting AIDS. Commercial sex workers who are exposed to poverty and drugs are the ones who contract AIDS, he says. He says that in developed countries, physical and mental stressors are the main factors causing AIDS, and in developing or under-developed nations, malnutrition is the main reason.

Dr Giraldo says that never before in the history of humankind had there been so wide a difference in the per capita income levels of people as now. Never before have people in poor countries been so poor and malnourished while rich people so rich.

For Dr Giraldo and his group, AIDS is a toxic syndrome and not an infectious one. He says that he met Dr Robert Gallo, the scientist best known for discovering the cause of AIDS, and asked him as to how it was possible that AIDS was transmitted homosexually in developed countries and heterosexually in Africa. The answer was that no research has been done to prove that AIDS was sexually transmitted and neither was the HIV virus isolated. Dr Giraldo says that on April 23, 1984 without presenting any scientific discussion or paper Dr Gallo and three others announced to the US media that HIV leads to AIDS and that the researchers of the Federal Government had discovered the same.

Each of the three tests widely used to detect the presence of HIV — ELISA, Western Blot, and PCR — all have a caveat that testing alone cannot confirm HIV presence. However, pharmaceutical companies knew this fact and yet actively promoted the tests. There are more than 70 conditions that made people react positively to the ELISA Test, he says.

Dr Giraldo and his group believe that there is a new condition called AIDS and never before was humankind exposed to this kind of immune deficiency. They want AIDS research to be done independently of HIV though there are very few journals which would even entertain a statement of the Scientific Reappraisal Group requesting a reappraisal of the HIV/AIDS hypothesis'.

159. Examples quoted to substantiate Dr Giraldo's arguments include that
    I. Canadian study revealing a high incidence of cancer among people working near high tension wires.
    II. gay population in poor countries don't contract AIDS.
    III. in Central Africa, people who underwent chemotherapy for cancer would be associated with AIDS.
    IV. first cases of AIDS in US included 5 not 'normal' gay people.
    a. I, II and III b. II and IV c. I and III d. All of these

160. Which among the following is not a belief held by Dr Giraldo regarding AIDS?
    a. It is not an infectious disease.
    b. It is not sexually transmitted.
    c. It is not caused by a germ.
    d. It is not related to toxicity levels.

161. According to the passage, which of the following are false?
    I. Testing alone can't confirm HIV presence.
    II. AIDS research in 1980s was largely without any mistake.
    III. No research has been done to prove that AIDS is sexually transmitted.
    IV. Scientists have managed to isolate the HIV virus.
    a. I and III b. II and III c. II and IV d. III and IV

162. Who among the following personalities has not been involved in projecting an alternative view over the HIV/AIDS debate?
    a. Dr Robert Gallo
    b. The inventor of PCR test
    c. Dr De Harven
    d. Dr Giraldo

163. According to Dr Giraldo,
   a. AIDS is not caused by stressors.
   b. contracting AIDS is not easy as the human body is quite resilient.
   c. causes of AIDS in developing countries to a large extent are same as those in developed countries.
   d. the effects rather than the origin of new disease should be the basis of the study.

Passage – 6

Why are we afraid of certain animals? Fear inclines us to be cautious, which would have been essential in the survival of our forebearers and is, perhaps surprisingly, still essential today. Humans evolved alongside the great carnivores and developed a healthy respect for them. Their superior physical attributes — power, weapons and speed — meant they could easily run down, capture and kill humans. To survive, our ancestors had to rely on superior intelligence, combined with a degree of caution acquired at an early stage in life.

Man is born prepared to fear the unusual. This natural caution was, and still is, shaped by experience — it was obviously beneficial to learn to distinguish between animals that were dangerous and those that were not. An infant, crawling away from the security of its cave-dwelling parents and the warmth of the fire, was more likely to come into contact with wild animals. It was important for human babies, in their helpless state, to avoid things which could be dangerous. It is therefore at this stage that we are most prone to developing strong fears of unusual objects and animals.

All animals need to be afraid to stay alive. Freedom from fear is, from a survival point of view, a bad thing. Fear is a response to a perceived danger, and if we no longer felt it as we approached the cliff edge or the motorway pile-up, we would all have shorter lives.

Although fear is an experience we all have and can recognise, it is not easy to define. One solution is simply to say that fear is what we feel when we are afraid — but this does not take us very far! Fear can cover a range of emotions from mild unease to blind panic. Also, because we are dealing with something as subjective as an emotion, it is hard to understand it objectively: your emotions may be quite different from mine when faced with a charging rhino.

Perhaps the most obvious starting point is with the effects fear has which we can observe. This is where Darwin began — The frightened man first stands like a statue, motionless and breathless. . . the heart beats quickly and violently. . . the skin instantly becomes pale. . . the hairs also on the skin stand erect and the superficial muscles shiver. . . in connection with the disturbed action of the heart, the breathing is hurried. . . the mouth becomes dry. . . one of the best marked symptoms is the trembling of all the muscles of the body and this is often first seen in the lips . . .

Most of the physical changes we associate with fear are generated by adrenaline, a hormone secreted by the adrenal gland. If we are given an injection of adrenaline, the sympathetic nervous system reacts and we sweat, our heart rate increases, our pupils dilate and our hair stands on end. We exhibit all the physical symptoms of fear but we do not necessarily feel afraid. So the state of physiological arousal alone is not sufficient to induce the emotion of fear.

The quotation from Darwin which sparked off so much discussion of the relationship between physical and mental states raises another essential question — What is the origin of our fear? For Darwin, as for so many ethologists today, the origins of human emotions lie in our animal ancestry. Fear has a survival value, not only in making us avoid dangers, but in preparing us to cope with them. Darwin pointed out that the increased pulse rate and breathing make the animal better able to fight or to flee; the thinly scattered hairs stand erect over a human's body through the action of the same minute muscles as those which make an animal bristle and so appear larger and more terrifying to its enemies. Fear equips us to cope with danger. If we want to understand it better, we should look carefully at the animals with whom we have a shared evolutionary history.

At this point, we need to deal with an approach to the natural world that many biologists today think of as a major folly: anthropomorphism. This simply means attributing human emotions and motivations to animals. Scientists who work in the field of animal psychology and behaviour watch each other like hawks for any sign of this misdemeanour and do not hesitate to scream loudly when they come across it. It was a common mistake among field naturalists of the 19th century, and is common today in children's books and a certain genre of natural history television film. Because serious zoologists always get into a lather about it, we need to get it into perspective. If an animal runs away from danger, it is reasonable to say that it is afraid? We know that the physiological responses are the same in humans as in other animals, and that they tend to be attributable to infusions of adrenaline into the bloodstream. So, although we can never be sure that an animal feels fear in the same conscious way as we do, it seems reasonable to say that an animal which shows the same physiological symptoms as ours in the face of danger is afraid.

Humans have refined and developed fear in subtle ways that arise from our twisted psychologies. A phobia is a fear which is out of all proportion to the actual danger, and cannot be reasoned away. Phobias have been reported since the time of Hippocrates, but were not recognised as disorders in their own right until the end of the 19th century. It seems to have taken the professionals a surprisingly long time to recognise something that most of us come across from time to time. Perhaps they were loath to label as a disorder something which affects everybody to a small degree.

Amongst the most common phobias are those involving insects, snakes, diseases and animals in general. A survey of fears conducted in America in the early 1980s produced some surprising results: here in the apparently violent and crime ridden culture of the United States, the fear of being mugged didn't feature. People were more afraid of speaking in front of an audience than anything else, and this was twice as terrifying to them as insects and bugs.

164. The most striking aspect of this passage is
    a. its vivid description of human evolution and fear in modern societies.
    b. its simple illustration as to how psychology and environment work together to shape our basic instincts.
    c. the highlighting done regarding the evolution of fear in humans and its religious overtones.
    d. its evidence that fear is necessary for survival of the fittest.

165. The author is most likely to agree with the following except
    a. the natural instinct of fear takes shape with passage of time.
    b. fear is natural to all of us and mostly, is easily recognised and hence can be explained easily.
    c. fear is likely to change our physical and emotional state.
    d. emotions vary from person to person and hence reactions to fearful situations also vary.

166. The author is least unlikely to agree with all of the following except
   a. fear is a necessary emotion, the absence of which makes our survival difficult.
   b. anything subjective is a bit difficult to understand in the objective sense.
   c. the human babies' example tells us that experience is not at all necessary to incite fear.
   d. motorway pile-ups incite fear if we go near them.

167. The language of the passage can best be categorised as
   a. elaborate and descriptive yet simple.
   b. inquisitive and thought provoking.
   c. humorous at times but overall not focussed.
   d. philosophical and subtle yet challenging.

168. '. . . get into a lather. . .' reflects
   a. that zoologists get to the floating parts of the issue.
   b. that zoologists get into a quarrel about anthropomorphism.
   c. that phobias have been a cause of serious psychological trouble to most of the people.
   d. that anthropomorphism can never be the key to understanding human psyche in relation with fear.

169. An appropriate title to the passage can be
   a. *Fear and the Human Psyche.*
   b. *Fear, Evolution and Man*.
   c. *Fear as an Instinct*.
   d. *Fear and Survival*.

Passage – 7

Why a demarcation criteria for science and metaphysics? The intention of establishing an ideal demarcation criteria is not to draw a line to separate the meaningful from the meaningless. Neither is its function to eliminate either one of the disciplines. A demarcation criteria attempts to distinguish. A clear distinction and hierarchy between the two disciplinary categories is needed to establish critical analysis of knowledge, a central tendency in scientific evaluation.

The human intellect is never fully satisfied with plain descriptions of the observed — it will attempt to interpret and explain it either through science or metaphysics. The essence of science is the search for an objective reality and attempt to establish rational consistency in a seemingly irrational world. Metaphysics, quite on the contrary, provides answers to questions and produces non-contradictory explanations for the world's irrationalities. A dedicated scientist may spend a lifetime seeking solutions, yet he will end up unveiling a new multitude of questions and paradoxes, some of them unsolvable. A metaphysical thinker, however, may see paradoxical phenomena as the yet unknown manifestations of something that cannot be comprehended. In metaphysical areas of knowledge, such as religion and astrology, solutions to all phenomena are presented detached of uncertainty or critical doubt. One must recognize, however, that in scientific history, metaphysics in the form of myths has often had a significant positive impact on scientific development. Myths existed before science — methodological science was a reaction and backup to mythological metaphysics.

The idea of dualism is a highly relevant foundation in the quest for an ideal demarcation criteria. In general terms, metaphysics attempts to detach phenomena from objects in which they appear. Once detached, a phenomenon becomes an essence of its own, something merely acting on an object. For example, a mystic of the middle ages would see sickness as a mystical something acting on the patient thus dualistically identifying the sickness and the patient as two separate essences interacting. Science, on the other hand, seeks to bind objects and phenomena together and make the phenomenon a manifestation of the object's essence — the sickness becomes a reaction of the body. Another common example would be the dualism of the mind: introducing a soul is metaphysics, however, defining consciousness as a chemical brain function would be scientific monism.

All systems of knowledge are founded on the use of language. Thus, a clinical approach to demarcation is the examination of the system of paradigms utilized by both science and metaphysics. Standard logic can analyze statements in terms of their relations and structural truth-value, however, it cannot introduce content analysis. Conclusive statements can be evaluated in terms of their premises, and premise series can be logically filtered for gaps and contradictions. However, all language methods appear to be encompassed by limiting cases. For example, if a paradigm that does not stem from empirically proven premises is considered metaphysical, natural laws test out unscientific. Equally, if contradictions are found to exist within a series of premises, no derived statement is founded on the reality described by the premises. In the early 20th century, European philosophers of science Sir Karl Popper and Rudolf Carnap attempted to create methods of language-based demarcation without final success. They even sought to formulate a model of a new language incapable of expressing metaphysical statements. In practice the attempt proved futile.

The information content of a scientific statement can be either proved or falsified. Since such evaluation is necessarily based on observation and analysis, an experiment or simulation can be used to present the content of the statement. The usual source of scientific paradigms is the scientific method, which introduces a system of observation and examination that will certify the scientific value of a theory. If a paradigm can be proven empirically, it has obvious scientific value. However, even falsification is a step forward since it will add to scientific knowledge. A metaphysical statement, on the contrary, yields no proof or falsification since it cannot be approached by empirical means. It may stem from sublime experiences or of divine doctrine — hence cannot be proved or falsified.

The core of science has long thought to be the scientific method. As a logical and empirical system of observation, analysis and formulation it provides science with an internal logic. A new distinction between science and metaphysics can be presented: science has the empirical foundation and inductive method, whereas metaphysics is based on a speculative and expectational method. In order for a field of knowledge to be scientific, it must be backed up by a series of systematic and concrete observations and non-fallible logic. Though it may extend models beyond strict evidence, it will primarily build up on facts, whether contradictory or not. Metaphysics performs 'theory' development by beginning from expectations and extending to speculative models to find correlation with a specific phenomenon. However, metaphysical fields such as astrology may seek evidence of the reality by closely empirical means. The position of a planet may be described as the empirical proof of a phenomenon even though the method has been turned upside down. The phenomenon is observed and the speculative model adjusted to explain it without room for contradiction.

Probability can also be used as an element of an ideal demarcation criteria. If a paradigm cannot be directly proved or falsified through an experiment or logic, one can observe the probability of falsification or proof if an

empirical experiment could be conducted. Related observations, logical assumptions and series of consistency can be used as tools to certify such probability. Non-testable statements will prove radically improbable, therefore, metaphysical. If a phenomenon is of indirectly observable nature, such that its properties are reflected on and from other objects, any model of the essence of the phenomena will gain probability value. For example, the observation of stars losing mass or acting against gravitational predictions is considered reflective proof of the probability of a black hole model, though the essence of the black hole can be formulated only in the abstract. Among human sciences, psychology provides reflective evidence of behavioural phenomena — hence tested models are probable to falsification or proof.

A scientific statement can be used as a basis for prediction. Prediction necessitates the existence of consistent interpretation models that can be tested universally in specific conditions. Since metaphysical statements tend to be simultaneously specific and general, they also tend not to have significant predictive value. Furthermore, a metaphysical paradigm cannot be used for prediction since it does not, in most cases, systematically account for fluctuating variables. The predictability value can be criticized to be case relative, however, in most cases, it introduces a significant property in terms of demarcation.

The boundary between metaphysical and scientific systems of knowledge is seldom obvious. For example, in abstract fields, such as quantum physics and psychology, strict falsifying or proving may appear equally impossible as with metaphysical statements. In quantum mechanics, the concept of the uncertainty principle suggests that some observations may never reach the status of certainty due to limitations in possible observation. In psychology, similar uncertainties exist as distractions and inauthentic conditions in between the observer and the observed psychological phenomena. Absolute proof may not be acquired but the pursuit is considered scientific. As 20th century theoretical physicists such as Albert Einstein have shown, a distinctly empirical scientific area of research can eventually extend beyond its concrete and observational limits. However, calling the special and general theories of relativity metaphysics would imply of a problematic demarcation criteria.

Theology is generally accepted to be based on metaphysical foundations, yet a methodically scientific system is constructed upon them. Therefore, should theology be called a metaphysical human science? An ideal demarcation criteria will not only provide with field distinctions, but will present a hierarchy in which scientific knowledge is ranked more valuable and useful than metaphysical knowledge. In the demarcation of science and metaphysics, a clear hierarchy of the two disciplinary categories emerges. Knowledge that has not been critically evaluated and analyzed cannot be used in the development and derivation of further knowledge — it is not authentic knowledge. Even the most elaborate architectural wonder will fall into ruins unless each one of its elements is carefully evaluated. That is why in all areas of research and exploration the evaluation of acquired information is a central and fundamental process. As discussed, metaphysical knowledge lacks the qualities of evaluated knowledge. Thus, it can be concluded that metaphysics may be an important field for a human, an emotional and believing being, but in terms of functional knowledge science outranks metaphysics in disciplinary hierarchy.

170. Why is there a need to establish demarcation criteria between science and metaphysics?
    a. To separate the meaningful from the meaningless.
    b. To eliminate one of the disciplines.
    c. Demarcation between the two disciplines leads to a hierarchy in knowledge.
    d. Distinction and hierarchy is needed to establish critical analysis of knowledge.

171. The essence of science is
a. to provide answers to questions about the nature of the universe.
b. to provide rational consistency to a seemingly irrational world.
c. to explain all the irrational phenomenon in the world.
d. to provide description of observed phenomenon.

172. The text implies that science outranks metaphysics in terms of functional knowledge in disciplinary hierarchy. Metaphysics has all of the following characteristics except
a. it cannot be used in the development and derivation of further knowledge, since it cannot be critically evaluated and analyzed.
b. it is unable to evaluate acquired information.
c. it can be used as a basis for prediction.
d. it is based on speculative and expectational method.

173. It is difficult to establish a clear-cut boundary between scientific and metaphysical systems, because
a. strict falsification or proof can prove to be as difficult in some areas of science as in metaphysics.
b. in quantum mechanics, the concept of the uncertainty principle suggests that some observations may never reach the status of certainty due to limitations in possible observation.
c. knowledge that has not been critically evaluated and analyzed cannot be used in the development and derivation of further knowledge — it is not authentic knowledge which is always the case in metaphysics and at times in science.
d. prediction necessitates the existence of consistent interpretation models that can be tested universally in specific conditions.

174. The following are the differences between science and metaphysics as outlined in the passage except
a. the essence of science is the search for an objective reality and attempt to establish rational consistency in a seemingly irrational world. Metaphysics, quite on the contrary, provides answers to questions and produces non-contradictory explanations for the world's irrationalities.
b. a dedicated scientist may spend a lifetime seeking solutions, yet he will end up unveiling a new multitude of questions and paradoxes, some of them unsolvable. A metaphysical thinker, however, may see paradoxical phenomena as the yet unknown manifestations of something that cannot be comprehended.
c. scientific knowledge is one which has been verified by observation, analysis, experiments and simulation, whereas metaphysics is satisfied with providing descriptions of what is observed, without seeking to provide explanations or interpretations of the observed phenomena.
d. science seeks to bind objects and phenomena together and make the phenomenon a manifestation of the object's essence — the sickness becomes a reaction of the body. Metaphysics, on the other hand, attempts to detach phenomena from objects in which they appear. Once detached, a phenomenon becomes an essence of its own, something merely acting on an object.

175. The following words can be associated with science whether as a tool or a characteristic except
a. probability.
b. prediction.
c. empiricism.
d. dualism.

176. Select an appropriate title for the passage.
   a. *Critical Analysis of Knowledge*
   b. *Demarcation*
   c. *Hierarchy of Knowledge Systems*
   d. *Knowledge of Science and Metaphysics*

177. The author probably ranks science over metaphysics in the hierarchy to distinguish. The reason is:
   a. the essence of science is to provide answers to questions about the nature of the universe.
   b. in quantum mechanics, the concept of the uncertainty principle suggests that some observations may never reach the status of certainty due to limitations in possible observation.
   c. knowledge that has not been critically evaluated and analyzed cannot be used in the development and derivation of further knowledge — it is not authentic knowledge. That is why in all areas of research and exploration, the evaluation of acquired information is a central and fundamental process. Metaphysical knowledge lacks the qualities of evaluated knowledge.
   d. the predictability value can be criticized to be case relative, however, in most cases it introduces a significant property in terms of demarcation.

Diagnostic CAT

Answers and Explanations

1	a	**2**	d	**3**	b	**4**	b	**5**	d	**6**	c	**7**	c	**8**	a	**9**	d	**10**	d
11	c	**12**	a	**13**	c	**14**	d	**15**	b	**16**	c	**17**	b	**18**	d	**19**	c	**20**	d
21	b	**22**	a	**23**	d	**24**	d	**25**	c	**26**	a	**27**	c	**28**	b	**29**	a	**30**	d
31	d	**32**	b	**33**	b	**34**	c	**35**	b	**36**	a	**37**	d	**38**	d	**39**	c	**40**	d
41	d	**42**	b	**43**	a	**44**	b	**45**	b	**46**	d	**47**	d	**48**	c	**49**	d	**50**	a
51	b	**52**	d	**53**	d	**54**	c	**55**	a	**56**	b	**57**	b	**58**	a	**59**	d	**60**	c
61	b	**62**	a	**63**	c	**64**	d	**65**	d	**66**	d	**67**	c	**68**	b	**69**	a	**70**	a
71	c	**72**	a	**73**	c	**74**	b	**75**	c	**76**	b	**77**	d	**78**	c	**79**	c	**80**	b
81	b	**82**	a	**83**	d	**84**	b	**85**	d	**86**	c	**87**	b	**88**	c	**89**	b	**90**	a
91	c	**92**	b	**93**	d	**94**	a	**95**	b	**96**	a	**97**	b	**98**	c	**99**	c	**100**	b
101	a	**102**	a	**103**	b	**104**	c	**105**	a	**106**	d	**107**	d	**108**	b	**109**	a	**110**	a
111	d	**112**	d	**113**	b	**114**	b	**115**	d	**116**	a	**117**	a	**118**	a	**119**	c	**120**	c
121	d	**122**	a	**123**	b	**124**	d	**125**	d	**126**	c	**127**	b	**128**	c	**129**	b	**130**	c
131	c	**132**	d	**133**	c	**134**	c	**135**	d	**136**	c	**137**	b	**138**	c	**139**	c	**140**	d
141	a	**142**	c	**143**	d	**144**	b	**145**	b	**146**	a	**147**	d	**148**	c	**149**	b	**150**	c
151	a	**152**	d	**153**	a	**154**	c	**155**	c	**156**	c	**157**	b	**158**	a	**159**	d	**160**	d
161	c	**162**	a	**163**	b	**164**	b	**165**	b	**166**	c	**167**	b	**168**	b	**169**	b	**170**	d
171	b	**172**	c	**173**	a	**174**	c	**175**	d	**176**	a	**177**	c						

Scoring table

Total questions	Total attempted	Total correct	Total wrong	Score	Time taken
177					

1. Four birds at 80% feed for 60 days.
Hence, for 16 days at 100% feed, number of birds

$= 4 \times \frac{80}{100} \times \frac{60}{16} = 12$

2. He sells 2 birds, hence 10 birds have feed for 24 days.

3. Use the process of elemination to arrive at the correct answer.

4. From 100 to 200 there are 101 numbers. There are $100\,1^{s}$ in the hundredth's place.

$10\,1^{s}$ in the tenth place

and $10\,1^{s}$ in the units place.

5. Use options.

6. Use options.

Questions 7 and 8:

The number is divisible by 99 thus it is divisible by 11 also. Now sum of odd and even digits is 33 + Q and 16 + P respectively. Thus 17 + Q – P is either 0 or 11 or 22 … now Q > P. Thus Q – P is +ve but <9 as both are single digit numbers since Q – P > 0 and 17 + Q – P cannot be 0 or 11 and can only be 22 as Q – P < 9 thus Q – P = 5
Now since it is divisible by 99 it is divisible by 9 too
$\Rightarrow$ 49 + P + Q is divisible by 9
Thus P + Q = 5 or 14. But as maximum value of Q is 9 and Q – P is 5. Thus, maximum value of P + Q = 13
$\therefore$ P + Q = 5
Thus, we get P = 0, Q = 5.

9. Let t be the number of Rs. 10 traveller's cheques that were cashed and let f be the number of Rs. 50 traveller's cheques that were cashed. Then t + f = 7, and t is either f + 1 or f – 1. Thus, either t = 4 and f = 3, or t = 3 and f = 4. In the first case, the value of the lost cheques would have been Rs. 1,500 – t (Rs. 10) – f(Rs. 50)
= Rs. 1,500 – Rs. 40 – Rs. 150 = Rs. 1,310; whereas, in the second case, the value would have been Rs. 1,500 – Rs. 30 – Rs. 200 = Rs. 1,270. The lesser of these amounts is Rs. 1,270.

10. $\frac{(a+b+c)}{3} = 6, \ \frac{(b+c+d)}{3} = 7, \ d - a = 3$

Hence, no unique solution can be obtained as the last equation can be derived from the first two.

11. The price becomes $\frac{6}{5}$ of original price.

Hence, quantity bought = $\frac{5}{6}$ of original quantity.

Hence, there must be a minimum of 6 oranges purchased originally.

12. Centre of circumcircle will lie on centroid of triangle formed by connecting centres of three circles.

Centroid $\frac{2}{3}\left(\frac{\sqrt{3}}{2} \times 2R\right) = \frac{2}{\sqrt{3}}R$

$\therefore$ Area = $\pi\left(\frac{2}{\sqrt{3}}R + R\right)^2$

13. The point C has to move through 2π (2r).
So number of revolutions = 2.

14. One function is increasing and other decreasing for maxima,

$\therefore$ x = $\frac{1}{2}$, hence, y = $\frac{5}{16}$

15. Let the length of the journey = x km and the speed of the train = v km/hr

Then, $\frac{1}{2} + \frac{3}{4} + \frac{x - \frac{v}{2}}{\frac{2v}{3}} - \frac{x}{v} = 1\frac{1}{2}$ [converting min to hrs]

Also, $\frac{\frac{v}{2} + 60}{v} + \frac{3}{4} + \frac{x - \frac{v}{2} - 60}{\frac{2v}{3}} - \frac{x}{v} = 1$

Solving for x, we get x = 120 km and v = 60 km/hr

16. $\log (x^3 \times y^2) = a \Rightarrow 3 \log x + 2 \log y = a$ ... (i)
$\log (x^2 \times y) = b \Rightarrow 2 \log x + \log y = b$ ... (ii)
Solving (i) and (ii), $\log x = 2b - a$

17. Let GP gross pay = Rs. 1,000
After 20% deduction, remaining = 1000 × 80%
= Rs. 800
Rs. 800 × 5% tax = Rs. 40
Rs. 40 + 10% of 40 (surcharge) = Rs. 44.
$\therefore$ When the amount of tax is
Rs. 44, GP = Rs. 1,000

$\therefore$ Rs. 11,000 , GP = $\frac{1000}{44} \times 11000$

= Rs. 2,46,363 nearly about Rs. 250,000

18. The number of revolutions is inversely proportional to the number of teeth. The ratio of number of teeth of the wheels is 7 : 6 : 5 : 4. Thus the ratio of number of revolutions will be 1/7 : 1/6 : 1/5 : 1/4, i.e.
60 : 70 : 84 : 105. When the wheels make 60, 70, 84, 105 revolutions respectively they would come back to the original position.

19. AA + BB = CDC
As sum of 2 two-digit numbers cannot be greater than 200 so C = 1
Hence, the only value of D = 2.

20. Assume the work has 150 units (LCM of 3, 10, 5).
Hence, Paul does 9 units per day. In 5 days he finishes 45 units.
The rest 105 units are being completed in 7 days.
Hence, 15 units are being done by Peter and Paul each day. So Peter does 6 units per day.

He will take $\frac{150}{6} = 25$ days to complete the job alone.

Alternative method:

Paul does $\frac{3}{10}$ of work = 5 days.

So in 1 day Paul does $\frac{3}{50}$ work

Remaining work = $1-\frac{3}{10}=\frac{7}{10}$

Now 1 day's work of Paul + Peter

$= \frac{\frac{7}{10}}{7}=\frac{1}{10}$

$\therefore$ 1 day Peter's work = $\frac{1}{10}-\frac{3}{50}=\frac{1}{25}$

Peter requires 25 days to complete the work.

21. 20 may be factorised as (20,1) ; (–20, –1); (5, 4); (–5, – 4); (10, 2); (–10, –2). a may be 21, – 21, 9, – 9, 12 or –12, i.e. six values.

Questions 22 to 26:

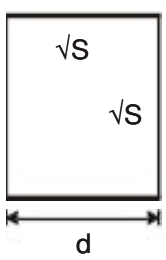
We have 1400 = 2 × 2 × 2 × 5 × 5 × 7 = L × J × K

Thus

	J	L	K	L + J + K
1.	35	2	20	57
2.	25	2	28	55
3.	35	4	10	49
4.	25	4	14	43
5.	35	5	8	48
6.	28	5	10	43
7.	20	5	14	39
8.	40	5	7	52
9.	25	7	8	40
10.	20	7	10	37

Since we know that E's age, which is (L + J + K) will not help us to deduce the ages, E has to be 43. Any other age of E gives the unique ages of L, J and K.
Knowing E is 43, if telling P's age would allow the deduction of the ages, P's age cannot be anything else but 5 (as otherwise L may have been 4 or 5 in each of those cases).
Thus L = 4, P = 5, K = 14, J = 25, E = 43.
Hence, the solution for the set follows.

27.



Height $\sqrt{S}$

$\Leftrightarrow d=\sqrt{S}. \therefore r=\frac{\sqrt{S}}{2}$

Volume of cylinder = $\pi r^2 h = \pi\left(\frac{S}{4}\right)\left(\sqrt{S}\right)$

$\therefore$ Volume = $\frac{\pi}{4}(S)^{\frac{3}{2}}$

28. Take one section and open up all its 3 links. Now you can easily join the remaining 4 sections with these links to form a complete chain. Cost = 3 × Rs. 10 = Rs. 30.

29. Let the speed of the goods train be X m/s, and that of the passenger train, Y m/s. In 28 s the goods train covered 28X (m), and the passenger train, 28Y (m). Therefore, 28X + 28Y = 700.

The goods train passes the signal lights in $\frac{490}{X}$ s and the passenger train in $\frac{210}{Y}$ s.

Therefore, $\frac{490}{X}-\frac{210}{Y}=35,$ Solving the two equations, X = 36 km/hr and Y = 54 km/hr.

Short cut:
Check direct from option (a), 36 km/hr = 10 m/s and 54 km/hr = 15 m/s. So goods train takes 49 s $\left(\frac{490}{10}\right)$ and passenger train takes 14 s $\left(\frac{210}{15}\right)$. Hence goods train takes 35 s longer than the passenger train.

30. Use the options.

31. Since the ratio in which they work is 5 : 4 : 2,

5 women = 4 men, therefore, 3 women = $\frac{12}{5}$ men and 4 women = $\frac{16}{5}$

5 children = 2 men, therefore, 4 children = $\frac{8}{5}$ men and 7 children = $\frac{14}{5}$ men.

Therefore, if $2+\frac{12}{5}+\frac{8}{5}=6$ men reap 10 hectares in 10 days, then $6+\frac{16}{5}+\frac{14}{5}=12$ men will reap 16 hectares in $10\left(\frac{6}{12}\right)\left(\frac{16}{10}\right)=8$ days.

32. When x is an integer the difference is 0. Otherwise 1.

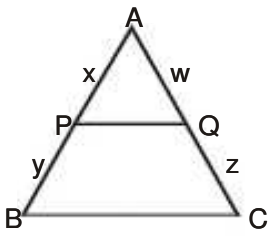
33. If [x] is odd, then {x} is even and vice versa.

34. The value lies between [0.8 + 0.7 + 0.6] and [0.999... + 0.999... + 0.6]. In either cases the answer is the same.

35. The solution is $(1 + 2) = 2x$

36. Let $2^x = y$ and solve.

37.



So $m = 0.5$; $\frac{x}{y} = 0.5$; $\frac{w}{z} = 0.5$

$$\text{So } \frac{\text{ar } (\Delta APQ)}{\text{ar } (\Delta ABC)} = \left(\frac{\frac{1}{2}}{\frac{3}{2}}\right)^2 = \frac{1}{9}$$

$$\therefore \frac{\text{ar}(\Delta APQ)}{\text{ar}(\bullet PQCB)} = \frac{1}{(9-1)} = \frac{1}{8}$$

38. x men played $2 \times 2x$ games with women and $x(x - 1)$ games among themselves the difference being 66.
So $x(x - 1) = 4x + 66$

$\Rightarrow x^2 - 5x - 66 = 0$
$\Rightarrow x = 11$, so $x + 2 = 13$

39. The net inflow into the tank is $\frac{7}{8}$ of earlier since it is

taking $\frac{8}{7}$ times the original time.

Hence, the leak must be reducing the rate by $\frac{1}{8}$.

Hence, if the inlet pipe takes 3.5 hr the leak will take 8(3.5) or 28 hr to empty the tank.

Alternative method:

3.5 hr = $\frac{7}{2}$ hr.

It gets $\frac{1}{2}$ hr more to fill the tank,

i.e. if the tank is full, the time taken by the leak to empty it

$= \frac{2}{7} - \frac{1}{4} = \frac{1}{28}$, so 28 hr..

40. The area of cross section of the cylinder depends on the initial level of water and on the fact whether the block was completely merged in water or not.

41. The area of the figure is $6s^2$ cm^2 and the perimeter is 14s cm.

$\Rightarrow 6s^2 = 14s$ or $s = \frac{14}{6}$.

42. If 'abc' is the original three digit number, then
$(100a + 10b + c) - (100c + 10b + a) = 99 (a - c) = \_\_4$.
For this to happen, $a - c$ must be 6. Therefore, the number will be $99 \times 6 = 594$. Therefore, the other digits from left to right are 5 and 9 respectively.

43. First 10 min = 10×1 = Rs. 10
Next 20 min = 20×4.5 = Rs. 90
Next 20 min = 20×8 = Rs.160
Next 90 min = 10 (7 + 6 + 5 + 4 + 3 + 2 + 1 + 1 + 1)
= Rs. 300
Total bill = 10 + 90 + 160 + 300 = Rs. 560

44. Choice a, c and d are rejected. (Blue and red balls are not adjacent in a and d, purple ball is in a higher number than orange in c)

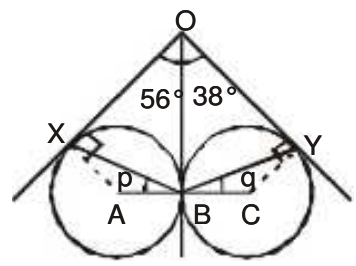
45. Since red ball is hidden adjacent to blue and 5th number box is occupied by green.

46. (a) Green is number 5.
(b) Purple cannot be, since it has to be at box lower than orange.
(c) Red cannot be because it has to be adjacent of blue ball.

47. By condition (i) where 5th box is occupied by green ball.

48. Only c is definitely true.

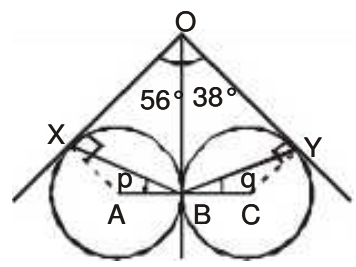
49.



$\angle OXA = 90°$; $\angle OBA = 90°$
$\therefore \angle XAB = 360° - (90° + 90° + 56°) = 124°$
ΔXAB and ΔYCB are isosceles triangles.

Hence, $\angle p = \frac{56}{2} = 28°$ and $\angle q = \frac{38}{2} = 19°$
$\therefore \angle p - \angle q = 9°$

Alternative method:



In the figure
OX = OB as they are the lines drawn from a single point that are tangent to the circle.
$\therefore \Delta OXB$, is an isosceles triangle.

And $\angle OXB = \angle OBX = x$
$\therefore$ In ΔOXB, $x + x + 56 = 180$
$x = 62$
And $\angle OBA = \angle OBX + \angle XBA$
$90 = 62 + P$
$P = 28°$
Similarly, $OB = OY$
$\therefore$ In ΔOBY is isosceles triangle.
$\angle OBY = \angle OYB = y$
In ΔOBY
$y + y + 38 = 180$
$y = 71°$
$\angle OBY = \angle OBY + \angle YBC$
$90° = 71 + q$
$q = 19$
$\therefore p - q = 28 - 19 = 9°$

50. Vibhor had lost 4 gallons.
Since he travelled at 50 miles per hour for 4 hr = 200 miles, he used 8 gallons $\left(\frac{200}{25}\right)$ for the journey.

51. Marks per minute spent, for very difficult questions
$= \frac{5}{7} = 0.7$.

Difficult questions $= \frac{3}{5} = 0.6$

Not so difficult questions $= \frac{1}{2} = 0.5$

Priya should do the maximum possible 'very difficult' questions. So in 60 min, she will solve. $\frac{60}{7} \approx 8$ questions (4 min will be left over). In these 4 min she can answer 2 'not so difficult' questions.
So marks obtained = $8 \times 5 + 2 \times 1 = 42$

52. $1\frac{2}{3}$ hr = 100 min
As seen in the previous problem, she should attempt the maximum possible 'very difficult' questions so number of questions = $\frac{100}{7}$ = 14 questions.
2 minutes will be left over in which she can do one 'not so difficult' question.
Marks obtained = $14 \times 5 + 1 \times 1 = 71$.

53. To get exactly 12 marks Priya should answer 2 'very difficult' and 2 'not so difficult' questions.
Total time = $2 \times 7 + 2 \times 2 = 18$ min

Questions 54 to 58:

	1992	1993	1994	1995	1996
Sales to fixed asset ratio	1.45	1.51	1.66	1.65	1.25
Net profit to sales ratio	24%	28%	24.66%	24.61%	26.6%
(NP ratio) × (Sales to fixed asset ratio)	34.8	42.3	41.0	40.6	33.2

The solution for 53 to 56 can be derived from this chart.

57. It will be in the year 1994 and value is $\frac{13}{167}$.

58. Total net profit is 348.8 and total sales is 1368.
25% of 1368 is 342. Thus answer has to be marginaly higher than 25%.

59. We only know Y2K-compliance of the companies sampled, not all companies in India.

60. $\left(\frac{53}{34}\right) \times 100 = 156\%$

61. Services has 23% of 58 companies which gives the highest number of companies.

62. Partially compliant companies = 94
60% become compliant
Remaining = 40% of 94
Non – compliant companies = 97
10% become compliant
Remaining = 90% of 97;
Remaining $0.4 \times 94 + 0.9 \times 97 = 125$

63. Manufacturing has 4th rank in both categories.
Govt/PSU has 3rd rank in both categories.

64. We do not know the total number of companies in each segment, we only know the sample size.

65. (a) comes out to be near 84%.
(d) comes out to be near 96%.
Hence, (d) is the answer.

66. Capacity addition = $\frac{76278}{106102} \times 100 = 71.9\%$

67. $\frac{4579}{9264} \times 100 = 49\%$

68. $\frac{10.202 - 4579}{4579} \times 100 = 123\%$

69. $2.44 \times 10202 \approx$ Rs. 24,900 crores

Questions 70 to 75:
The following table can be constructed from the data given.

Region	Weight (approx.) (in tonnes)		Branded salt (market share in %)		
	Branded	Unbranded	Kaptan Kook	Bata salt	Annaswamy salt
A	450	675	40	35	25
B	365	300	50	0	50
C	460	460	50	25	25
D	750	325	25	25	50
E	225	525	25	50	25

Questions 70 to 72 can be answered from the above information.

73. We can eliminate Bata salt by observation.
Sale of Kaptan Kook = 40% of 450 + 50% of 365 + 50% of 460 + 25% of 750 + 25% of 225 = 836.25 tonnes.
Sale of Annaswamy salt = 25% of 450 + 50% of 365 + 25% of 460 + 50% of 750 + 25% of 225 = 25% of (450 + 460 + 225) + 50% of (750 + 365) = 841.25 tonnes

74. Sales of Bata salt = 25% of (460 + 750) + 50% of 225 + 35% of 450 = 572.5
Difference = 836.25 – 572.5 = 263.75

75. Region E.

76. D introduces soil as the subject of the passage. B should follow as it explains why soil is under threat, as stated in D.

77. A should be the first sentence as it introduces the elephant as the subject. The rest follows logically.

78. B should be the first sentence as it introduces the subject matter, i.e. unanimous encounters with wild animals. A elaborates what such events do. C should follow as it uses the phrase 'is also a confirmation'. D concludes the passage by saying that such events can move beyond the more apparent boundaries of reality.

79. C tells us that the passage is about wild animals 'speaking' to humans. B should follow as it states how this belief has come about.

80. C should be the first sentence as it introduces a proper noun – 'the ancient Chinese' which is later referred to by 'they' in D. A should logically follow B as it sums up B by saying 'choice was limited'.

81. C is clearly the introductory sentence. It should be followed by B as it names different ages. D should be the concluding sentence as it talks about the greatest project of human civilization, in last 500 years.

82. The use of 'Nowadays' suggest that C should be the first sentence, followed by A which tells us why it is easy to maintain a car.

83. C introduces the communication devices with antennas as the subject of the passage. A should logically follow due to its use of the phrase 'these smart antennas'.

84. A should precede D as D states the effect of growing of green manure in the inter row spacing, as was required by the experiments mentioned in A. 6 should follow as it mentions the results of these experiments.

85. D should follow 1 as it refers to the 'same symptoms' which are mentioned in 1. A logically follows as it uses D as a reason for facts presented in D. C should precede 6 as it mentions that a large number of people are afflicted by the disease, though 'few cry out' as is mentioned in 6.

86. C refers to the voyage as 'this', so should be the sentence following 1. A mentions the ultimate effect of the voyage, and should be the next sentence. B supports A and D cries for victory.

87. C mentions a particular reason for the leaders to be nervous, and should follow 1, which was mentioned that the region has many strategic tensions. A should follow C as it elaborates on the state of the armed forces.

88. A should be the first sentence in the series as it refers to the first step, i.e. the emission of the light, followed by C which states how more light is emitted. B states that light is confined in a chamber with mirrors and D should thus follow it as it states the effect of these mirrors.

89. 1 talks about 'most' of the genes, so A which talks about 'rest' of them should follow. B should be followed by D, as it gives an example to elaborate upon B. 6 should follow D as it talks of an 'equivalent gene' in humans.

90. B should follow 1 as it comments upon the fact presented in 1. A talks of the period till 1997, while C refers to 1997. So A should be followed by C. D should follow C as it uses a phrase 'such investor' for the 'mutual fund investor' mentioned in C.

91. The author has given some examples and reach the general conclusion that all popular boys are members of the football team, through inductive reasoning.

92. Rahul would have used the money from his account to pay the tutor only if he thought that Akansha's scores had increased due the tutoring.

93. The author reasons that if no females sing in operas, no females are good singers.

94. If no one voted for the speaker because no one knew that the speaker was running for the elections, then this would weaken the argument that the speaker did not get a single vote because no one liked her.

95. The answer can be b or c. But c is assumed in b, as Mrs Anand thought it was important not to be late. The reason could be that she felt that if she were late she would be fired.

96. In praising his staff, he has indirectly praised himself by saying that he had trained the staff himself.

97. Only if it is assumed that burglars only rob the weak and helpless whom they can overpower, then we can logically reach the conclusion that "No one is safe from burglars anymore"

98. All X respect Y, therefore Y is the best. This reasoning is same as the one given in choice (c). All X like to work with Y, therefore Y is the best.

99. Since the bus was running down the slope, it must have gathered speed (III) and oscillated on application of brakes (I), which in turn would have caused the passengers to panic.

100. I is irrelevant to the given topic.

101. The use of 'instead' would be justified by use of something totally opposite to what he had done. The word 'rather' and not 'instead' would be appropriate with choice (c).

102. Only if the struggle has continued steadily, would justice seem in sight even if it is slow.

103. II would logically follow the given sentence, due to its use of 'it' for 'the smile'. III would follow as the smile had suddenly vanished, so the pleasure would most probably be inexplicable.

104. a and d are logically not correct. c is the best option as it puts the universe and you at two opposite ends.

105. A 'pounding pulse' best complements 'rapid breathing'.

106. 'Atrophy' means to waste away due to lack of exercise. So to prevent atrophy, a thing needs to be used.

107. War can be delightful only as long as one has not been involved in it.

108. A generation is just a custodian of ideals, laws and customs, so should pass it on to the next generation.

109. 'Advocate' can be used as a verb in I and IV, and as a noun in II and III.

110. 'Encroached' can be used in all the sentences, except II, as encroached is always followed by on/upon.

111. 'Move' can be used in all the sentences, as a verb in I, II and III and as a noun in IV.

112. 'Occupation' can be used in III and IV, while 'trade' and 'profession' can be used only in I and II respectively.

113. 'Slow' can be used in II and IV.

114. Here, we are talking of two functions of communication, one of which is honourable, and the other not so desirable (as can be inferred from the use of 'while' in the beginning of the sentence.) Conceal fits best in the second blank.

115. While natural erosion is beneficial, erosion caused by humans is destructive.

116. 'Malice' is the best adjective to describe 'the wicked'.

117. The poor envy the rich, and the rich dread some violence from the poor may be due to this envy.

118. We are talking about the process of evolution of man, so the best choice would be one that implies a move from apes to man.

119. A and D are mutually exclusive sets, hence no schoolgirl is a schoolboy.

120. Some A is B. B is C. Some A is C.

121. All A is B and all A is C. this means that some C are B.

122. If all A are B and all B are C, it follows that all A are C.

123. If all A are B and all C are A, it follows that all C are B.

124. If all A are B but some C are not B, it follows that some C are not A.

125. If all A are B and all C are A, then all B are also C.

126. If all A are B and all C are A, then it follows that all C are B.

127. If all A are B and all B are C, then it follows that all A are C.

128. If some A are B and all A are C, then it follows that some who are C are also B.

129. Refer paragraph 13.

130. Refer paragraph 12.

131. Refer paragraph 8.

132. Refer the last paragraph.

133. Refer paragraph 10, line 4.

134. All other have been mentioned in paragraphs 5 and 6.

135. Refer paragraph 9.

136. Refer paragraph 2, lines 8-10.

137. Refer paragraph 6, line 3.

138. (a) can be inferred from paragraph 11 which states that in such cases, product has to be marketed in local terms. (b) can be inferred from paragraph 11, line 1 and (d) form paragraph 11, lines 3 and 4.

139. Refer paragraph 11.

140. This can be inferred from para 3 which gives an example of 'propaganda of deed'.

141. Refer paragraph 4.

142. Refer paragraph 4, line 2.

143. Refer paragraph 11.

144. Refer paragraph 3 and 4.

145. Refer paragraph 2.

146. Refer paragraph 9, line 1.

147. Refer paragraph 7, line 4.

148. Refer paragraph 5.

149. (a) has been stated in paragraph 13, line 1; (c) in paragraph 12, line 1 and in paragraph 11, line 1.

150. Refer paragraph 5, lines 6 and 7.

151. Refer paragraph 4.

152. (a) has been suggested in paragraph 9, (b) in paragraph 11, line 2; (c) in paragraph 11, line 1; (d) in paragraph 11, line 6.

153. III can be inferred from paragraph 8, and IV from lines 4-5 of paragraph 8.

154. Refer paragraph 5, lines 1-2.

155. All of them are mentioned in the passage.

156. Can be inferred from the passage.

157. (a) can be inferred from paragraph 4 line 1; (c) from paragraph 2 and (d) from paragraph 6.

158. Customer loyalty is something the bank has to work for.

159. I can be inferred from paragraph 8; II from paragraph 10; III from paragraph 5, line 6; IV from paragraph 4, line 5.

160. Paragraph 12 states that it is a toxic syndrome.

161. II can be inferred from paragraph 12, lines 5-6; III from paragraph 12, line 4.

162. All others have been mentioned in paragraph 4, lines 1-2.

163. Refer paragraph 6, line 4-5.

164. The author has done so by comparing the human and animal psychology and their reaction to fear.

165. Refer paragraph 4, line 1.

166. The author states that it is important even for babies to avoid things that could be dangerous, and even an infant instinctively does so.

167. The first line is a question and throughout the passage, the author provides us facts about how psychology and environment work together to form our basic instincts.

168. Refer paragraph 8.

169. The passage is about man's reaction to fear, and how evolution can be used to study it (refer paragraph 7).

170. Refer paragraph 1, line 5.

171. Refer paragraph 2, line 2-3.

172. Refer paragraph 2, line 3-4.

173. Refer paragraph 9, line 2-3.

174. Refer paragraph 6, line 12.

175. Refer paragraph 3 which states that dualism can be used for metaphysics, not for science.

176. The passage tells us about different systems of knowledge.

177. Refer paragraph 9, lines 16-18.