

Question  
Paper with  
Solutions

CAT  
1998

# CAT 1998 Actual Paper

## Section – I

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**Direction for questions 1 to 5:** A part of each sentence given below has been underlined. You have to select the option that best replaces the underlined part.

1. British Airspace has been focusing on building European links.  
a. concentrating on creating European links  
b. pursuing ways of building European connectivity  
c. stressing on building European links  
d. focusing on forging European links
2. The appetite of banks for funds was lost under the onslaught of the slowdown, corporates refused to borrow even as bank deposits flourished.  
a. bank deposits flourished  
b. bank deposits swelled  
c. bank deposits were enhanced  
d. bank deposits flummoxed
3. The 8th-century revival of Byzantine learning is an inexplicable phenomenon, and its economic and military precursors have yet to be discovered.  
a. a phenomenon yet to be discovered  
b. a phenomenon incompletely explained  
c. an inexplicable phenomenon  
d. an unidentifiable phenomenon
4. The management can still hire freely but cannot scold freely.  
a. cannot scold at will  
b. cannot give umbrage  
c. cannot take decisions to scold  
d. cannot scold willfully
5. Many people mistake familiarity for a vulgar style, and suppose that to write without affectation is to write at random speed.  
a. is to write at random  
b. is to write randomly  
c. is to write fast  
d. is to do speed writing

**Direction for questions 6 to 15:** Fill in the blanks of the following sentences using the most appropriate word or words from among the options given for each.

6. Football evokes a \_\_\_\_ response in India compared to cricket, that almost \_\_\_\_ the nation.  
a. tepid ... boiling  
b. lukewarm ... electrifies  
c. turbid ... fascinating  
d. apocryphal ... genuinely fascinates

7. Social studies, science matters of health and safety, the very atmosphere of the classroom — these areas are few of the \_\_\_\_ for the \_\_\_\_ of proper emotional reactions.  
a. things ... growth  
b. fertile areas ... basis  
c. fertile fields ... inculcation  
d. important areas ... formation
8. When children become more experienced with words as visual symbols, they find that they can gain meaning without making \_\_\_\_ sounds.  
a. aural  
b. audible  
c. vocal  
d. intelligible
9. Learning is more efficient when it is \_\_\_\_\_. It is less efficient when it is \_\_\_\_\_.  
a. fast ... slow  
b. rapid ... turtle-slow  
c. tedious ... like a joy ride  
d. fun ... drudgery
10. To a greater or lesser degree all the civilized countries of the world are made up of a small class of rulers \_\_\_\_ and of a large class of subjects \_\_\_\_\_.  
a. formed by a small minority ... who are uncivilized  
b. powerfully corrupt ... pointless crusaders  
c. corrupted by too much power ... corrupted by too much passive obedience  
d. who are ruled ... who ruled
11. Simple arithmetic tells us that there is more \_\_\_\_ than \_\_\_\_\_.  
a. imitation ... innovation  
b. improvisation ... improvement  
c. impracticality ... knowledge  
d. improbability ... probability
12. As a step towards protesting against the spiralling prices, the farmers have decided to stage a picket in an effort to \_\_\_\_\_.  
a. show their virility  
b. make themselves heard  
c. curb the prices  
d. topple the government
13. Science is a sort of news agency comparable \_\_\_\_ to other news agencies.  
a. principally  
b. in principle  
c. in principal  
d. in spirit and form
14. Most political leaders acquire their position by causing a large number of people to believe that these leaders are \_\_\_\_ by altruistic desires.  
a. actuated  
b. convinced  
c. categorised  
d. led
15. Everyone will admit that swindling one's fellow beings is a necessary practice; upon it is based the really sound commercial success formula — \_\_\_\_\_.  
a. sell what you cannot buy back  
b. buy what you will sell to another at a higher price  
c. buy cheap and sell dear  
d. sell what you can, do not buy from a competitor







30. A. An essay which appeals chiefly to the intellect is Francis Bacon's *Of Studies*.  
 B. His careful tripartite division of studies expressed succinctly in aphoristic prose demands the complete attention of the mind of the reader.  
 C. He considers studies as they should be; for pleasure, for self-improvement, for business.  
 D. He considers the evils of excess study: laziness, affectation, and preciosity.  
 a. DCBA                      b. ABCD                      c. CDBA                      d. ACBD
31. A. By reasoning we mean the mental process of drawing an inference from two or more statements or going from the inference to the statements, which yield that inference.  
 B. So logical reasoning covers those types of questions, which imply drawing an inference from the problems.  
 C. Logic means, if we take its original meaning, the science of valid reasoning.  
 D. Clearly, for understanding arguments and for drawing the inference correctly, it is necessary that we should understand the statements first.  
 a. ACBD                      b. CABD                      c. ABCD                      d. DBCA

**Direction for questions 32 to 36:** In each question, the main statement is followed by four sentences. Select the pair of sentences that relates logically to the given statement.

32. Either Sita is sick or she is careless.  
 A. Sita is not sick.                      B. Sita is not careless.  
 C. Sita is sick.                      D. Sita is careless.  
 a. AB                      b. AD                      c. BA                      d. DA
33. Ram gets a swollen nose whenever he eats hamburgers.  
 A. Ram gets a swollen nose.                      B. Ram does not eat hamburgers.  
 C. Ram does not get a swollen nose.                      D. Ram eats hamburgers.  
 a. AB                      b. DC                      c. AC                      d. BC
34. Either the employees have no confidence in the management or they are hostile by nature.  
 A. They are not hostile by nature.                      B. They are hostile by nature.  
 C. They have confidence in the management.                      D. They have no confidence in the management.  
 a. BA                      b. CB                      c. DA                      d. BD
35. Whenever Ram reads late into the night, his father beats him.  
 A. His father does not beat Ram.                      B. Ram reads late into the night.  
 C. Ram reads early in the morning.                      D. Ram's father beats him in the morning.  
 a. CD                      b. BD                      c. AB                      d. None of these
36. All irresponsible parents shout if their children do not cavort.  
 A. All irresponsible parents do not shout.                      B. Children cavort.  
 C. Children do not cavort.                      D. All irresponsible parents shout.  
 a. AB                      b. BA                      c. CA                      d. All of these

**Direction for questions 37 to 40:** Each question contains four arguments of three sentences each. Choose the set in which the third statement is a logical conclusion of the first two.

37. A. Some Xs are Ps. Some Ps are Ys. Some Xs are Ys.  
B. All Sonas are bright. Some bright are crazy. Some Sonas are crazy.  
C. No faith is strong. Only strong have biceps. No faith has biceps.  
D. All men are weak. Some weak are strong. Some strong are weak.  
a. A and D                      b. C only                      c. D only                      d. None of these
38. A. Some icicles are cycles. All cycles are men. Some icicles are men.  
B. All girls are teeth. No teeth is yellow. No girls are yellow.  
C. No hand is foot. Some foot are heads. Some hands are heads.  
D. Every man has a wife. All wives are devoted. No devoted has a husband.  
a. A, B and C                      b. A and B                      c. C and B                      d. A, B and C and D
39. A. No sun is not white. All moon is sun. All moon is white.  
B. All windows are open. No open space is allocated. All window is closed space.  
C. No German can fire. All Americans bombard. Both, Germans and Americans can fight.  
D. No X is Z. No Z is Y. No X is Y.  
a. A only                      b. B only                      c. C only                      d. D only
40. A. All Ts are square. All squares are rectangular. All Ts are rectangular.  
B. Some fat are elongated. Some elongated things are huge. Some fat are huge.  
C. Idiots are bumlbers. Bumlbers fumble. Idiots fumble.  
D. Water is good for health. Health foods are rare. Water is rare.  
a. D only                      b. C only                      c. Both A and C                      d. All of these

**Direction for questions 41 to 50:** Read the passages given below and answer the questions that follow.

41. Efficiency is all right in its place, in the shop, the factory, the store. The trouble with efficiency is that it wants to rule our play as well as our work; it won't be content to reign in the shop, it follows us home.

It can be inferred from the above passage that

- a. efficiency can become all-pervading.  
b. efficiency does not always pay.  
c. efficiency can be more of a torture than a blessing.  
d. None of these



- 42 In order to ease the traffic congestion, the transport planners decided to have a sophisticated system of elevated monorail travel in the city. However, it was pointed out by somebody that a metro rail system would be a more effective solution to the traffic problem. The plan was thus stalled. Moreover, since a budget had not been drawn up for the project, it was deemed fit to stall the work of the monorail for some time. In the meanwhile, the traffic planners of the city decided to build an efficient system of subways and flyovers in the city with the aim of easing the same problem. At the instant when the planners were preparing to award the contracts to the concerned parties, the transport planners came up with the contention that the subways interfered with the site of a pillar of the monorail system. The traffic planners had to give up the idea and think of other possible solutions.

Which of the following can we infer from the above passage?

- a. The city authorities felt that the monorail system was essentially impractical.
  - b. There is a strong contention between the two groups of planners in the city.
  - c. The projects would be stalled for an indefinite period.
  - d. None of these
43. The company encourages its managers to interact regularly, without a pre-set agenda, to discuss issues concerning the company and society. This idea has been borrowed from the ancient Indian concept of religious congregation, called satsang. Designations are forgotten during these meetings; hence, it is not uncommon in these meetings to find a sales engineer questioning the CEO on some corporate policy or his knowledge of customers.

Based on the information provided in the above passage, it can be inferred that

- a. the company is concerned about its reputation with its employees.
  - b. the company believes in fostering the spirit of dialogue without degenerating it into a positioning based debate.
  - c. the company had some inter-personnel problems in the past due to which it felt the need for these corporate satsangs.
  - d. All of these
44. From Cochin to Shimla, the new culture vultures are tearing down acres of India's architectural treasures. Ancestral owners are often fobbed off with a few hundred rupees for an exquisitely carved door or window, which fetches fifty times that much from foreign dealers, and yet more from the drawing room sophisticates of Europe and the US. The reason for such shameless rape of the Indian architectural wealth can perhaps, not wrongly, be attributed to the unfortunate blend of activist disunity and the local indifference.

It can be inferred from the above passage that

- a. the environment created by the meeting between activist disunity and local indifference is ideal for antique dealers to thrive in India.
- b. only Indians are not proud of their cultural heritage and are hungry for the foreign currency that is easily available in return of artifacts.
- c. most Indian families have heirlooms which can be sold at high prices to Europeans and Americans.
- d. India provides a rich market for unscrupulous antique dealers.

45. Deepa Metha's *Fire* is under fire from the country's self-appointed moral police. Their contention is that the film is a violation of the Indian cultural mores and cannot be allowed to influence the Indian psyche. According to them, such films ruin the moral fabric of the nation, which must be protected and defended against such intrusions at all cost, even at the cost of cultural dictatorship.

Based on the information in the above passage, it can be inferred that

- a. the assumption underlying the moral police's critique of *Fire* is that the Indian audience is vulnerable to all types of influence.
  - b. the assumption underlying the moral police's critique of *Fire* is that the Indian audience is impressionable and must be protected against 'immoral' influences.
  - c. the moral police thinks it has the sole authority to pass judgement on films screened in India.
  - d. None of these
46. The dominant modern belief is that the soundest foundation of peace would be universal prosperity. One may look in vain for historical evidence that the rich have regularly been more peaceful than the poor, but then it can be argued that they have never felt secure against the poor; that their aggressiveness stemmed from fear; and that the situation would be quite different if everybody were rich.

It can be inferred from the above passage that

- a. a lot of aggression in the world stems from the desire of the haves to defend themselves against the have-nots.
  - b. universal prosperity as a foolproof measure of peace can no longer be accepted.
  - c. Both (a) and (b)
  - d. Neither (a) nor (b)
47. The effect produced on the mind by travelling depends entirely on the mind of the traveller and on the way in which he conducts himself. The chief idea of one very common type of traveller is to see as many objects of interest as he possibly can. If he can only after his return home say that he has seen such and such temple, castle, picture gallery, or museum, he is perfectly satisfied. Far different is the effect of travels upon those who leave their country with a mind prepared by culture to feel intelligent admiration for all the beauties of nature and art to be found in foreign lands. When they visit a new place, instead of hurrying from temple to museum to picture gallery, they allow the spirit of the place to sink into their minds, and only visit such monuments as the time they have at their disposal allows them to contemplate without irreverent haste.

It can be inferred from the above passage that

- a. the writer prefers the second type of traveller.
- b. the first type of traveller is the lay traveller who does not understand the worth of any place he travels to.
- c. the objective of the second type of traveller is not to see much, but to see well.
- d. All of these

48. Whether we look at the intrinsic value of our literature, or at the particular situation of this country, we shall see the strongest reason to think that of all foreign tongues, the English tongue is that which would be the most useful to our native subjects.

It can be inferred that

- a. the speaker is a die-hard colonist.
  - b. the speaker has the good of the nation at heart.
  - c. the speaker is addressing an issue related to a colonial empire.
  - d. None of these
49. Where the film *Bombay* loses out is where every commercial film congenitally goes awry — becoming too simplistic to address serious issues and failing to translate real life to reel.

Which of the following can be inferred from the above line?

- a. The film's director aimed at recreating real life on the silver screen.
  - b. The film was too simplistic for the audience's taste.
  - c. The film was successful in spite of its shortcomings.
  - d. None of these
50. Aspiration is nothing new. Neither is the debate over what the Indian middle class is, what it wants and what it buys. Since the mid-80s, that has been the focus of the economic policy papers so called pro- and anti-poor budgets and marketing strategies that have successfully broken the barrier of urban selling and reached deeper into rural India with increasing income levels and aspirations.

Based on the above passage, it can be inferred that

- a. the Indian middle class has been the focus of economic policies for a long time.
- b. the Indian middle class has graduated from being the 'deprived' middle class to the 'pampered' middle class.
- c. Both (a) and (b)
- d. Neither (a) nor (b)

## Section – II

**Direction for questions 51 and 52 :** Choose the appropriate alternative.

51. A company has a job to prepare certain number cans and there are three machines A, B and C for this job. A can complete the job in 3 days, B can complete the job in 4 days, and C can complete the job in 6 days. How many days will the company take to complete the job if all the machines are used simultaneously?
- a. 4 days                      b.  $\frac{4}{3}$  days                      c. 3 days                      d. 12 days
52.  $n^3$  is odd. Which of the following statement(s) is(are) true?
- I.  $n$  is odd.                      II.  $n^2$  is odd.                      III.  $n^2$  is even.
- a. I only                      b. II only                      c. I and II                      d. I and III

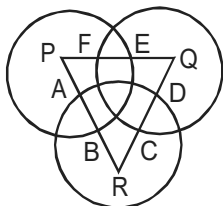
**Direction for questions 53 and 54:** Answer the questions based on the following information.

Production pattern for number of units (in cubic feet) per day.

Day	1	2	3	4	5	6	7
Number of units	150	180	120	250	160	120	150

For a truck that can carry 2,000 cubic ft, hiring cost per day is Rs. 1,000. Storing cost per cubic feet is Rs. 5 per day.

53. If all the units should be sent to the market, then on which days should the trucks be hired to minimize the cost?
- a. 2nd, 4th, 6th, 7th                      b. 7th                      c. 2nd, 4th, 5th, 7th                      d. None of these
54. If the storage cost is reduced to Re 0.80 per cubic feet per day, then on which day(s), should the truck be hired?
- a. 4th                      b. 7th                      c. 4th and 7th                      d. None of these
55. One bacterium splits into eight bacteria of the next generation. But due to environmental condition only 50% survives and remaining 50% dies after producing next generation. If the seventh generation number is 4,096 million, what is the number in first generation?
- a. 1 million                      b. 2 million                      c. 4 million                      d. 8 million
56. Three circles, each of radius 20, have centres at P, Q and R. Further, AB = 5, CD = 10 and EF = 12. What is the perimeter of  $\triangle PQR$ ?



- a. 120                      b. 66                      c. 93                      d. 87

**Direction for questions 57 to 59:** Answer the questions based on the following information.

The following operations are defined for real numbers.

$a \# b = a + b$ , if  $a$  and  $b$  both are positive else  $a \# b = 1$

$a \nabla b = (a \times b)^{a+b}$  if  $a \times b$  is positive else  $a \nabla b = 1$ .

57.  $\frac{(2\#1)}{(1\nabla2)} =$

a.  $\frac{1}{8}$

b. 1

c.  $\frac{3}{8}$

d. 3

58.  $\frac{\{((1\#1)\#2) - (10^{1.3} \nabla \log_{10} 0.1)\}}{(1\nabla2)} =$

a.  $\frac{3}{8}$

b.  $\frac{4 \cdot \log_{10} 0.1}{8}$

c.  $\frac{(4 + 10^{13})}{8}$

d. None of these

59.  $\left| \frac{(X\#-Y)}{(-X\nabla Y)} \right| = \frac{3}{8}$ , then which of the following must be true?

a.  $X = 2, Y = 1$

b.  $X > 0, Y < 0$

c.  $X, Y$  both positive

d.  $X, Y$  both negative

60.  $(BE)^2 = MPB$ , where  $B, E, M$  and  $P$  are distinct integers. Then  $M =$

a. 2

b. 3

c. 9

d. None of these

61. Five-digit numbers are formed using only 0, 1, 2, 3, 4 exactly once. What is the difference between the maximum and minimum number that can be formed?

a. 19800

b. 41976

c. 32976

d. None of these

62. How many numbers can be formed from 1, 2, 3, 4, 5, without repetition, when the digit at the unit's place must be greater than that in the ten's place?

a. 54

b. 60

c. 17

d.  $2 \times 4!$

63. Distance between A and B is 72 km. Two men started walking from A and B at the same time towards each other. The person who started from A travelled uniformly with average speed of 4 km/hr. While the other man travelled with varying speed as follows: in the first hour his speed was 2 km/hr, in the second hour it was 2.5 km/hr, in the third hour it was 3 km/hr, and so on. When will they meet each other?

a. 7 hr

b. 10 hr

c. 35 km from A

d. Mid-way between A and B

64. P, Q, R and S are four statements. Relation between these statements is as follows.

I. If P is true, then Q must be true.

II. If Q is true, then R must be true.

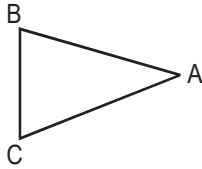
III. If S is true, then either Q is false or R is false.

Which of the following must be true?

- a. If P is true, then S is false
- b. If S is false, then Q must be true
- c. If Q is true, then P must be true
- d. If R is true, then Q must be true

**Direction for questions 65 and 66:** Answer the questions based on the following information.

A cow is tethered at point A by a rope. Neither the rope nor the cow is allowed to enter  $\triangle ABC$ .



$$\angle BAC = 30^\circ$$

$$I(AB) = I(AC) = 10 \text{ m}$$

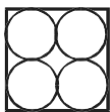
65. What is the area that can be grazed by the cow if the length of the rope is 8 m?
- a.  $134\pi \frac{1}{3}$  sq. m
  - b.  $121\pi$  sq. m
  - c.  $132\pi$  sq. m
  - d.  $\frac{176\pi}{3}$  sq. m
66. What is the area that can be grazed by the cow if the length of the rope is 12 m?
- a.  $133\pi \frac{1}{6}$  sq. m
  - b.  $121\pi$  sq. m
  - c.  $132\pi$  sq. m
  - d.  $\frac{176\pi}{3}$  sq. m

**Direction for questions 67 to 69:** Answer the questions based on the following information.

A, B, C and D are to be seated in a row. But C and D cannot be together. Also B cannot be at the third place.

67. Which of the following must be false?
- a. A is at the first place
  - b. A is at the second place
  - c. A is at the third place
  - d. A is at the fourth place
68. If A is not at the third place, then which of the following options does C have?
- a. The first place only
  - b. The third place only
  - c. The first and third place only
  - d. Any of the places
69. If A and B are together, then which of the following must be necessarily true?
- a. C is not at the first place
  - b. A is at the third place
  - c. D is at the first place
  - d. C is at the first place
70. A yearly payment to the servant is Rs. 90 plus one turban. The servant leaves the job after 9 months and receives Rs. 65 and a turban. Then find the price of the turban.
- a. Rs. 10
  - b. Rs. 15
  - c. Rs. 7.50
  - d. Cannot be determined

71. Four identical coins are placed in a square. For each coin the ratio of area to circumference is same as the ratio of circumference to area. Then find the area of the square that is not covered by the coins.



- a.  $16(\pi - 1)$                       b.  $16(8 - \pi)$                       c.  $16(4 - \pi)$                       d.  $16 \left( 4 - \frac{\pi}{2} \right)$
72. Three wheels can complete 60, 36 and 24 revolutions per minute. There is a red spot on each wheel that touches the ground at time zero. After how much time, all these spots will simultaneously touch the ground again?
- a.  $\frac{5}{2}$  s                      b.  $\frac{5}{3}$  s                      c. 6 s                      d. 7.5 s
73. A certain number, when divided by 899, leaves a remainder 63. Find the remainder when the same number is divided by 29.
- a. 5                      b. 4                      c. 1                      d. Cannot be determined
74. A is the set of positive integers such that when divided by 2, 3, 4, 5, 6 leaves the remainders 1, 2, 3, 4, 5 respectively. How many integers between 0 and 100 belong to set A?
- a. 0                      b. 1                      c. 2                      d. None of these

**Direction for questions 75 to 77:** Answer the questions based on the following information. A, B, C and D collected one-rupee coins following the given pattern.  
 Together they collected 100 coins.  
 Each one of them collected even number of coins.  
 Each one of them collected at least 10 coins.  
 No two of them collected the same number of coins.

75. The maximum number of coins collected by any one of them cannot exceed
- a. 64                      b. 36                      c. 54                      d. None of these
76. If A collected 54 coins, then the difference in the number of coins between the one who collected maximum number of coins and the one who collected the second highest number of coins must be at least
- a. 12                      b. 24                      c. 30                      d. None of these
77. If A collected 54 coins and B collected two more coins than twice the number of coins collected by C, then the number of coins collected by B could be
- a. 28                      b. 20                      c. 26                      d. 22

**Direction for questions 78 and 79:** Answer the questions based on the following information.

Amar, Akbar and Anthony are three friends. Only three colours are available for their shirts, viz. red, green and blue. Amar does not wear red shirt. Akbar does not wear green shirt. Anthony does not wear blue shirt.

78. If Akbar and Anthony wear the same colour of shirts, then which of the following is not true?
- a. Amar wears blue and Akbar wears green
  - b. Amar wears green and Akbar wears red
  - c. Amar wears blue and Akbar does not wear blue
  - d. Anthony wears red
79. If two of them wear the same colour, then how many of the following must be false?
- I. Amar wears blue and Akbar does not wear green
  - II. Amar does not wear blue and Akbar wears blue
  - III. Amar does not wear blue and Akbar does not wear blue
  - IV. Amar wears green, Akbar does not wear red, Anthony does not wear green
- a. None                              b. One                              c. Two                              d. Three
80. Number of students who have opted for subjects A, B and C are 60, 84 and 108 respectively. The examination is to be conducted for these students such that only the students of the same subject are allowed in one room. Also the number of students in each room must be same. What is the minimum number of rooms that should be arranged to meet all these conditions?
- a. 28                              b. 60                              c. 12                              d. 21
81. How many five-digit numbers can be formed using the digits 2, 3, 8, 7, 5 exactly once such that the number is divisible by 125?
- a. 0                              b. 1                              c. 4                              d. 3
82. You can collect as many rubies and emeralds as you can. Each ruby is worth Rs. 4 crore and each emerald is worth Rs. 5 crore. Each ruby weighs 0.3 kg. And each emerald weighs 0.4 kg. Your bag can carry at the most 12 kg. What should you collect to get the maximum wealth?
- a. 20 rubies and 15 emeralds                              b. 40 rubies
- c. 28 rubies and 9 emeralds                              d. None of these
83. I have one-rupee coins, 50-paisa coins and 25-paisa coins. The number of coins are in the ratio 2.5 : 3 : 4. If the total amount with me is Rs. 210, find the number of one-rupee coins.
- a. 90                              b. 85                              c. 100                              d. 105
84. My son adores chocolates. He likes biscuits. But he hates apples. I told him that he can buy as many chocolates he wishes. But then he must have biscuits twice the number of chocolates and should have apples more than biscuits and chocolates together. Each chocolate cost Re 1. The cost of apple is twice the chocolate and four biscuits are worth one apple. Then which of the following can be the amount that I spent on that evening on my son if number of chocolates, biscuits and apples brought were all integers?
- a. Rs. 34                              b. Rs. 33                              c. Rs. 8                              d. None of these



**Direction for questions 85 and 86:** Answer the questions based on the following information.

A company purchases components A and B from Germany and USA respectively. A and B form 30% and 50% of the total production cost. Current gain is 20%. Due to change in the international scenario, cost of the German mark increased by 30% and that of USA dollar increased by 22%. Due to market conditions, the selling price cannot be increased beyond 10%.

85. What is the maximum current gain possible?  
a. 10%                      b. 12.5%                      c. 0%                      d. 7.5%
86. If the USA dollar becomes cheap by 12% over its original cost and the cost of German mark increased by 20%, what will be the gain? (The selling price is not altered.)  
a. 10%                      b. 20%                      c. 15%                      d. 7.5%

**Direction for questions 87 to 90:** Answer the questions based on the following information.

Mr Bankatlal acted as a judge for the beauty contest. There were four participants, viz. Ms Andhra Pradesh, Ms Uttar Pradesh, Ms West Bengal and Ms Maharashtra. Mrs Bankatlal, who was very anxious about the result, asked him about it as soon as he was back home. Mr Bankatlal just told that the one who was wearing the yellow saree won the contest. When Mrs Bankatlal pressed for further details, he elaborated as follows:

All of them were sitting in a row.

All of them wore sarees of different colours, viz. green, yellow, white, red.

There was only one runner-up and she was sitting beside Ms. Maharashtra.

The runner-up was wearing the green saree.

Ms West Bengal was not sitting at the ends and was not the runner up.

The winner and the runner-up are not sitting adjacent to each other.

Ms Maharashtra was wearing white saree.

Ms Andhra Pradesh was not wearing the green saree.

Participants wearing yellow saree and white saree were at the ends.

87. Who wore the red saree?  
a. Ms Andhra Pradesh                      b. Ms West Bengal  
c. Ms Uttar Pradesh                      d. Ms Maharashtra
88. Ms. West Bengal was sitting adjacent to  
a. Ms Andhra Pradesh and Ms Maharashtra  
b. Ms Uttar Pradesh and Ms Maharashtra  
c. Ms Andhra Pradesh and Ms Uttar Pradesh  
d. Ms Uttar Pradesh
89. Which saree was worn by Ms Andhra Pradesh?  
a. Yellow                      b. Red                      c. Green                      d. White
90. Who was the runner-up?  
a. Ms Andhra Pradesh                      b. Ms West Bengal  
c. Ms Uttar Pradesh                      d. Ms Maharashtra

91. I started climbing up the hill at 6 a.m. and reached the top of the temple at 6 p.m. Next day I started coming down at 6 a.m. and reached the foothill at 6 p.m. I walked on the same road. The road is so short that only one person can walk on it. Although I varied my pace on my way, I never stopped on my way. Then which of the following must be true?
- a. My average speed downhill was greater than that of uphill
  - b. At noon, I was at the same spot on both the days.
  - c. There must be a point where I reached at the same time on both the days.
  - d. There cannot be a spot where I reached at the same time on both the days.
92. What is the digit in the unit's place of  $2^{51}$ ?
- a. 2
  - b. 8
  - c. 1
  - d. 4
93. There are two containers: the first contains 500 ml of alcohol, while the second contains 500 ml of water. Three cups of alcohol from the first container is taken out and is mixed well in the second container. Then three cups of this mixture is taken out and is mixed in the first container. Let A denote the proportion of water in the first container and B denote the proportion of alcohol in the second container. Then
- a.  $A > B$
  - b.  $A < B$
  - c.  $A = B$
  - d. Cannot be determined
94. A number is formed by writing first 54 natural numbers in front of each other as 12345678910111213 ... Find the remainder when this number is divided by 8.
- a. 1
  - b. 7
  - c. 2
  - d. 0
95. A, B, C, D, ..., X, Y, Z are the players who participated in a tournament. Everyone played with every other player exactly once. A win scores 2 points, a draw scores 1 point and a loss scores 0 point. None of the matches ended in a draw. No two players scored the same score. At the end of the tournament, by ranking list is published which is in accordance with the alphabetical order. Then
- a. M wins over N
  - b. N wins over M
  - c. M does not play with N
  - d. None of these

## Section – III

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**Direction for questions 96 to 145:** Read each of the following passages carefully and answer the questions that follow.

### Passage – 1

The narrator of *Midnight's Children* describes it as a kind of collective fantasy. I suppose what he, or I, through him was trying to say, was that there never had been a political entity called India until 1947. The thing that became independent had never previously existed, except that there had been an area, a zone called India. So it struck me that what was coming into being, this idea of a nation-state, was an invention. It was an invention of the nationalist movement. And a very successful invention.

One could argue that nation-states are a kind of collective fantasies. Very similar things happened with the unification of Italy, and also with the unification of Germany. The history of India is a history of independent nation-states. It is a history of Oudh or Bengal or Maratha kingdoms. All those independent histories agreed to collectivise themselves into the idea of the nation of India. In the case of Pakistan, it was less successful. Pakistan was under-imagined. It did not survive as a nation-state.

If you ask people in general, they would have absolutely no problem with the idea of India at all. I think, in a way the strength of the nationalist idea is shown by its ability to survive the extraordinary stresses that it was placed under. I think the stresses of things — communalism, the high degree of public corruption, of regional rivalries, of the tension between the centre and the state, the external pressures of bad relations with Pakistan — these are colossal pressures which any state could be forgiven for being damaged by. I think the thing to say about the success of the idea is that it remains an idea though people might not find it very easy to give a simple definition of it. But that it does exist and that it is something to which people feel they belong, I think is now the case. That it survives these stresses is an indication of its strength.

I'm not interested in an idealised, romantic vision of India, I know it is the great pitfall of the exile. So you know for me, always, the issue of writing about India has been not to write as an outsider. On the other hand, evidently something has changed in the last 10 years, which is that as a result of various circumstances, I've not been able to return. All I can say is that I have felt it as the most profound loss and I still do. There have been many losses in the last decade but the loss of the easy return to India has been for me an absolute anguish, an inescapable anguish. I feel as if I've lost a limb. I am very anxious to bring that period to an end.

I do not think that one of the most interesting phenomena for India as a country is the phenomenon of the Indian Diaspora. I often think Indian — Indian Indians — find that very hard to understand. In England, when people call themselves British Indian, they mean both halves of that. And yet, what it means to be a British Indian is very alien to an Indian Indian. The same is true in the Caribbean, in Africa, in Canada, in the United States, and so on. The thing that has interested me is that there are now many, many ways of being something which you can legitimately call Indian. Being an Indian in India is just one of those ways.

The forces of disintegration are always there. I think in every society there is the tension between the forces that bring it together and the forces that pull it apart. I'm worried, above all, of the communal issue because half a century is no time at all in the eye of history, and half a century ago something of colossally horrible proportion took place. The fact that it hasn't happened for 50 years on quite the same scale means nothing. It could still happen tomorrow. One of the things that I remember very vividly, being there 10 years ago at about the time of the killings that took place in Assam, is discussing this with good friends and fellow writers. And I remember somebody said to me, until we understand that we are capable of these things, we can't begin to move beyond them. Because it's a very easy response to atrocities, to say: oh those terrible people did that, and we are not like that. I think the difficult response is to accept we are also capable of that, the thing that happened there could also, in certain circumstances, be something that we were able to perpetrate. The civilising influence is what prevents most of us from giving vent to those terrible urges. Those urges are part of humanity as well as the more civilized urges.

Of course, I fear in India the recurrence of communal or regionalist inter-community violence. I fear the long-term damage to a democracy that can be done by mass corruption. I think corruption is in a way a subversion of democracy and the commonplace view in India is that corruption is everywhere. In a sense, you could say that is not a democratic society. If money, favour and privilege is what makes the place work, then that's not a democracy. At least it runs the danger of being no longer able to call itself a democracy.

What was happening, I thought, was that people were trying to seize control of that rhetoric. That is to say, special interest groups. You could say Hindus are a very large special interest group. If any group inside such a complex and many faceted country tries to define the nation exclusively in its own terms, then it begins to create terrible stresses. I do think that the kind of attempt to define India in Hindu terms is worrying for that reason. It creates backlashes, it creates polarisation, and it creates the risk of more upheaval. Partly, I am saying this as a kind of objective observer, but nobody is an objective observer.

I come from an Indian minority, I no doubt have a minority perspective. I can't ignore that and nor would I wish to. Partly, also I am speaking temperamentally. That is to say, the kind of religious language in politics is something I find temperamentally unpleasant. I don't like people who do that, whether they be sectarians in Northern Ireland or India. I believe in, if possible, separating one's personal spiritual needs and aspirations from the way in which a country is run. I think in those countries where that separation has not taken place, one can see all kinds of distortions of social and ordinary life which are unpleasant. Iran is an obvious example. The country in which that kind of separation has completely fragmented it.

Where Naipaul is right, although I don't share his conclusions about it, but I think where he is right, is in saying that this is a great historical moment. One reason why the 50th anniversary is interesting is that it does seem to represent the end of the first age and the beginning of second age. And to that extent that is true now, if someone was born today, they would be born into a very different set of cultural assumptions and hopes than somebody born 50 years ago. We were entirely sold on the Nehru-Gandhi kind of plan. We grew up and that was the portrait of the nation we had hung on our wall, and to the extent that you never entirely lose those formative ideas, that's still the picture of the country I've got on my wall. But it's clear that for somebody being born now, they are being born into a very different country.

I also think of taking the Naipaul point on what would happen if the BJP were to form a government. Well, what I would like to think is that in order for the BJP or anybody of that persuasion to form a government, they would have to change. There is even some kind of suggestion that it may even be happening a little bit because they are intelligent people. They understand their weaknesses as well as their strengths. Clearly, for a Hinduist party to form the government of the country is not at all unlikely. So I think one does have to engage with that in the same way as many people in the country who, like myself, were not remotely in tune with the Thatcherite revolution but have to engage with it because it was in fact happening, and kept winning elections, and the world was not going to go back. So, of course, both people inside the Hindu political enterprise and people outside it will have to shift. I am optimistic about India's ability to force those changes that are necessary because I do believe it is not fundamentally an intolerant country and will not fundamentally accept intolerant politics.

On the other hand, there has to be reckoning with the fact that these are ideas, which are gaining in popularity. I'll tell you where I would draw the line myself. I think there was a great historical mistake made in Europe about the Nazi Party. People attempted to see whether they could live with it and discovered very rapidly that was a mistake, that appeasement was a great historical mistake. So, it seems to me, the question is: What do we make of this political enterprise? Is it fundamentally democratic or fundamentally anti-democratic? If democratic, then we must all learn to make the best of it. If anti-democratic, then we must fight it very hard.

What happened in India happened before the book (*Satanic Verses*) had actually entered. It happened because of an article in *India Today*, which, I must say, I thought was an irresponsibly written article, because it was written by somebody, who, as a friend, asked me for an early copy of the book, and then presented that book in the most inflammatory sort of way.

This was one of the things that disappointed me, that after a lifetime of having written from a certain sensibility, and a certain point of view, I would have expected people in India to know about it since it was all entirely about India. It was written from a deep sense of connection and affection for India. I would have expected that I had some money in the bank. That is to say, if Salman Rushdie wrote any book, then we know who he is. He is not some idiot who just arrived from nowhere shouting abuse. This is somebody whose work, whose opinions, whose lectures and whose stories we know. I would have hoped that my work would have been judged in the context of what people already knew about me. Instead, it seemed as if everything I had been in my life up to that point suddenly vanished out of the window and this other Rushdie was invented who was this complete bastard who had done this terrible thing. There did not seem to be any attempt to correct that or to combat that. I was surprised and disappointed it did not. It didn't happen here either. It didn't happen anywhere in the world. It was as if the force of history, the force of a historical event was so huge that it erases all that goes before it.

The negative response to the *Satanic Verses*, let us remember that there was also a positive response, was such that it erased my personality and put in its place some other guy who they didn't recognize at all. Anybody who knows anything about these countries, and I do know something about these countries, knows that every cheap politician can put a demonstration in the street in five minutes. That doesn't represent in any sense the people's will. It represents a certain kind of political structure, political organization. It doesn't represent truth.

But I always believed and I still believe that India would come back. I never believe that the loss of India is forever. Because India is not Iran, it's not even Pakistan, and I thought good sense will prevail in India because that's my life experience of Indian people and of the place.

96. The idea of India that inspired the writer's generation was the one dominated or formed by
- a. the Nehru-Gandhi politics.
  - b. the Nehru-Gandhi ideology.
  - c. the Nehru-Gandhi idea regarding India's formative years.
  - d. the Nehruvian idea of socialism.
97. The writer does not share
- a. Naipaul's stand that the 50th anniversary is a historical moment.
  - b. Naipaul's stand that the 50th anniversary is not a historical moment.
  - c. Naipaul's conclusion on the 50th anniversary being a historical moment.
  - d. Naipaul's conclusion on the 50th anniversary not being a historical moment.
98. The writer shows faith in India's basic
- |               |                |               |               |
|---------------|----------------|---------------|---------------|
| a. stability. | b. resilience. | c. fortitude. | d. democracy. |
|---------------|----------------|---------------|---------------|
99. According to the writer,
- a. politicians incite the general public to demonstrate against writers.
  - b. a politician's demonstration does not reflect the people's will.
  - c. Both (a) and (b)
  - d. Neither (a) nor (b)
100. The writer's view of India is determined mainly by
- a. his experience.
  - b. his fondness for the country.
  - c. his love for the resilience of the Indian people.
  - d. his love of writing about India.
101. According to the writer's friend,
- a. we should fight against communal pressure.
  - b. the fact that communal conflagrations haven't occurred in India for half a century, is something to be proud of.
  - c. we can move beyond things, only after we know we are capable of those things.
  - d. we have to identify with the people who were involved in inciting communal passions.
102. What according to the passage prevents us from giving in to violent, terrible urges?
- |                            |                             |
|----------------------------|-----------------------------|
| a. Our education           | b. Our upbringing           |
| c. Our cultural influences | d. The civilising influence |
103. According to the writer, what disqualifies India from being called a democracy?
- |                             |                   |
|-----------------------------|-------------------|
| a. Its communalism          | b. Its corruption |
| c. Its anti-minority stance | d. All of these   |

104. The writer contradicts his assertion of being an 'objective observer' on the basis that
- a. no one can be an 'objective observer'.
  - b. no one is an 'objective observer'.
  - c. he is a subjective observer.
  - d. everybody is a subjective observer.
105. In the first paragraph of the passage, the writer questions
- a. the existence of a political entity called India prior to independence.
  - b. the contention that a political entity called India did not exist.
  - c. the stand that India was an invention.
  - d. the stand that India needs to think in terms of its being a nation-state.
106. According to the writer, the difference between India and Pakistan was that
- a. India survived as a nation-state, Pakistan did not.
  - b. Indians were full of fantastic ideas in 1947.
  - c. Pakistan was born out of another nation.
  - d. the creation of Pakistan suffered from under-imaginativeness.
107. According to the passage, the secret of India's survival lies in
- a. its ability to fight back in the face of tremendous stress and strains.
  - b. the highly fertile imagination of the Indian people.
  - c. a sense of belonging that people feel for it.
  - d. Both (a) and (c)

## Passage – 2

If Western civilization is in a state of permanent crisis, it is not far-fetched to suggest that there may be something wrong with its education. No civilization, I am sure, has ever devoted more energy and resources to organised education, and if we believe in nothing else, we certainly believe that education is, or should be, the key to everything. In fact, the belief in education is so strong that we treat it as the residual legatee of all our problems. If the nuclear age brings new danger; if the advance of genetics engineering opens the doors of new abuses; if commercialism brings new temptations, the answer must be more and better education. The modern way of life is becoming more complex: this means that everybody must become more highly educated. "By 1984," it was said recently, "it will be desirable that the most ordinary of men is not embarrassed by the use of a logarithm table, the elementary concepts of the calculus, and by the definitions and uses of such words as electron, coulomb, and volt. He should further have become able not only to handle a pen, and ruler but also a magnetic tape, valve, and transistor. The improvement of communications between individuals and groups depends on it." Most of all, it appears, the international situation calls for prodigious educational efforts. The classical statement on this point was delivered by Sir Charles (now Lord) Snow in his *Rede Lecture* some years ago: To say that we must educate ourselves or perish, is a little more melodramatic than the facts warrant. To say we have to educate ourselves or watch a steep decline in our lifetime, is about right. According to Lord Snow, the Russians are apparently doing much better than anyone else and will 'have a clear edge', unless and until the Americans and we educate ourselves both sensibly and imaginatively'.

Lord Snow, it will be recalled, talked about 'The Two Cultures and the Scientific Revolution' and expressed his concern that 'the intellectual life of the whole of western society is increasingly being split into two polar groups . . . At one pole we have the literary intellectuals . . . at the other the scientists'. He deplores the 'gulf of mutual incomprehension' between these two groups and wants it bridged. It is quite clear how he thinks this 'bridging' operation is to be done; the aims of his educational policy would be, first, to get as many 'alpha-plus scientists as the country can throw up'; second, to train 'a much larger stratum of alpha professionals' to do the supporting research, high class design and development; third, to train 'thousands upon thousands' of other scientists and engineers; and finally, to train 'politicians, administrators, and entire community, who know enough science to have a sense of what the scientists are talking about'. If this fourth and last group can at least be educated enough to 'have sense' of what the real people, the scientists and engineers, are talking about, so Lord Snow seems to suggest, the gulf of mutual incomprehension between the 'Two Cultures' may be bridged.

These ideas on education, which are by no means unrepresentative of our times, leave one with the uncomfortable feeling that ordinary people, including politicians, administrators, and so forth, are really not much use, they have failed to make the grade: but, at least, they should be educated enough to have a sense of what is going on, and to know what the scientists mean when they talk to quote Lord Snow's example about the Second Law of Thermodynamics. It is an uncomfortable feeling, because the scientists never tire of telling us that the fruits of their labours are 'neutral': whether they enrich humanity or destroy it depends on how they are used. And who is to decide how they are used? There is nothing in the training of scientists and engineers to enable them to take such decision, or else, what becomes of the neutrality of science?

If so much reliance is today being placed in the power of education to enable ordinary people to cope with the problems thrown up by scientific and technological progress, then there must be something more to education than Lord Snow suggests. Can education help us to turn the potentiality into a reality to the benefit of man?

To do so, the task of education would be, first and foremost the transmission of ideas of value, of what to do with our lives. There is no doubt also the need to transmit know-how but this must take second place, for it is obviously somewhat foolhardy to put great powers into the hands of people without making sure that they have a reasonable idea of what to do with them. At present, there can be little doubt that the whole of mankind is in mortal danger, not because we are short of scientific and technological know-how, but because we tend to use it destructively, without wisdom. More education can help us only if it produces more wisdom.

The essence of education, I suggested, is the transmission of values, but values do not help us to pick our way through life unless they have become our own, a part, so to say, of our mental make-up. This means that they are more than mere formulae or dogmatic assertions: that we think and feel with them, that they are the very instruments through which we like and interpret, and experience the world. When we think, we do not just think: we think with ideas. Our mind is not a blank, a tabula rasa. When we begin to think we can do so only because our mind is already filled with all sorts of ideas with which to think. All through our youth and adolescence, before the conscious and critical mind begins to act as a sort of censor and guardian at the threshold, ideas seep into our mind, multitudes of them. These years are, one might say,



our Dark Ages during which we are nothing but inheritors; it is only in later years that we can gradually learn to sort out our inheritance.

First of all, there is language. Each word is an idea. If the language which seeps into us during our Dark Ages is English, our mind is thereby furnished by a set of ideas which is significantly different from the set represented by Chinese, Russian, German, or even American. Apart from words there are the rules of putting them together: grammar, another bundle of ideas, the study of which has fascinated some modern philosophers to such an extent that they thought they could reduce the whole of philosophy to a study of grammar.

All philosophers and others have always paid a great deal of attention to ideas seen as the result of thought and observation; but in modern times all too little attention has been paid to the study of the ideas which form the very instruments by which thought and observation proceed. On the basis of experience and conscious thought small ideas may easily be dislodged, but when it comes to bigger, more universal, or more subtle ideas, it may not be so easy to change them. Indeed, it is often difficult to become aware of them, as they are the instruments and not the result of our thinking just as you can see what is outside you, but cannot easily see that with which you see, the eye itself. And even when one has become aware of them it is often impossible to judge them on the basis of ordinary experience.

We often notice the existence of more or less fixed ideas in other people's minds — ideas with which they think without being aware of doing so. We then call them prejudices, which is logically quite correct because they have merely seeped into the mind and are in no way the result of judgement. But the word prejudice is generally applied to ideas that are patently erroneous and recognisable as such by anyone except the prejudiced man. Most of the ideas with which we think are not of that kind at all. To some of them, like those incorporated in words and grammar, the notions of truth or error cannot even be applied, others are quite definitely not prejudices but the result of a judgement; others again are tacit assumptions or presuppositions which may be very difficult to recognise.

I say, therefore, that we think with or through ideas and that what we call thinking is generally the application of pre-existing ideas to a given situation or set of facts. When we think about, say the political situation we apply to that situation our political ideas, more or less systematically, and attempt to make that situation 'intelligible' to ourselves by means of these ideas. Similarly, everywhere else we evaluate the situation in the light of our value-ideas.

The way in which we experience and interpret the world obviously depends very much indeed on the kind of ideas that fill our minds. If they are mainly small, weak, superficial, and incoherent, life will appear insipid, uninteresting, petty and chaotic. It is difficult to bear the resultant feeling of emptiness, and the vacuum of our minds may only too easily be filled by some big, fantastic notion-political or otherwise — which suddenly seem to illumine everything and to give meaning and purpose to our existence. We feel that education will help solve each new problem or complexity that arises. It needs no emphasis that herein lies one of the great dangers of our times.

When people ask for education they normally mean something more than mere training, something more than mere knowledge of facts, and something more than a mere diversion. Maybe they cannot themselves formulate precisely what they are looking for; but I think what they are really looking for is ideas that could make the world, and their own lives, intelligible to them. When a thing is intelligible you have a sense of

participation; when a thing is unintelligible you have a sense of estrangement. 'Well, I don't know', you hear people say, as an impotent protest against the unintelligibility of the world as they meet it. If the mind cannot bring to the world a set — or, shall we say, a tool box — of powerful ideas, the world must appear to it as a chaos, a mass of unrelated phenomena, of meaningless events. Such a man is like a person in a strange world and without any signs of civilization, without maps or signposts or indicators of any kind. Nothing has any meaning to him; nothing can hold his vital interest; he has no means of making anything intelligible to himself.

108. The writer's contention in the passage is that the crisis in Western civilization can be explained by
  - a. the presence of some flaws in its education.
  - b. some inherent lack of coordination among its various elements.
  - c. some basic misunderstanding in its society.
  - d. the energy it has devoted to education.
109. According to the writer, Lord Snow sees the intellectual life of Western society as split between
  - a. the educated and the uneducated.
  - b. the government servants and the plebeians.
  - c. scientists and literary intellectuals.
  - d. administrators and intellectuals.
110. The writer seems to criticise the belief that
  - a. education gives rise to further complexities as civilization progresses.
  - b. all new problems and complexities can be tackled and solved by more and better education.
  - c. people need to learn more in order to earn more.
  - d. None of these
111. What, according to the author, would be the definition of 'prejudice'?
  - a. Ideas that help people to identify with new situations.
  - b. Fixed ideas with which people think without being aware of doing so.
  - c. Ideas that people cull from experience in order to judge a situation.
  - d. Fixed ideas that see a person through the trials and tribulations of life.
112. According to Lord Snow, which of the following groups needs to be educated enough to at least understand the works of scientists and engineers?
  - a. Politicians, administrators, and the entire community
  - b. Politicians and literary intellectuals
  - c. Politicians and the layman
  - d. All of these
113. In the passage, the writer questions
  - a. the neutrality of science.
  - b. scientists' stand on the neutrality of science.
  - c. scientists' stand on the neutrality of their labours.
  - d. Lord Snow's assertion regarding the potential of intellectuals in society.

114. The author's assertion in the passage is that education's main responsibility is to
- transmit ideas of value.
  - transmit technical knowledge.
  - Both (a) and (b)
  - transmit the values regarding human and societal norms.
115. The author believes that
- the gulf between science and literature needs to be bridged.
  - ideas should be maintained for a holistic view of society and its problems.
  - words are not ideas.
  - None of these
116. Which of the following sentences is not true according to the author?
- Values must be part of one's psyche.
  - Values are merely dogmatic assertions.
  - One identifies with values.
  - Values are the means to interpret and experience the world.
117. Thinking is
- being.
  - knowing.
  - application of pre-existing ideas to a situation.
  - application of fixed ideas to a situation.

### Passage – 3

The highest priced words are ghost-written by gagmen who furnish the raw material for comedy over the air and on the screen. They have a word-lore all their own, which they practise for five to fifteen hundred dollars a week, or fifteen dollars a gag at piece rates. That's sizable rate for confounding acrimony with matrimony, or extracting attar of roses from the otter.

Quite apart from the dollar sign on it, gagmen's word-lore is worth a close look, if you are given to the popular American pastime of playing with words — or if you're part of the 40 per cent who make their living in the word trade.

Gag writers' tricks with words point up the fact that we have two distinct levels of language: familiar, ordinary words that everybody knows; and more elaborate words that don't turn up so often, but many of which we need to know if we are to feel at home in listening and reading today.

To be sure gagmen play hob with the big words, making not sense but fun of them. They keep on confusing bigotry with bigamy, illiterate with illegitimate, monotony with monogamy, osculation with oscillation. They trade on the fact that for many of their listeners, these fancy terms linger in a twilight zone of meaning. It's their deliberate intent to make everybody feel cozy at hearing big words, jumbled up or smacked down. After all, such words loom up over-size in ordinary talk, so no wonder they get the bulldozer treatment from the gagmen.

Their wrecking technique incidentally reveals our language as full of tricky words, some with 19 different meanings, others which sound alike but differ in sense. To ring good punning changes, gag writers have to know their way around in the language. They don't get paid for ignorance, only for simulating it.

Their trade is a hard one, and they regard it as serious business. They never laugh at each other's jokes; rarely at their own. Like comediennes, they are usually melancholy men in private life.

Fertile invention and ingenious fancy are required to clean up 'blue' burlesque gags for radio use. These shady gags are theoretically taboo on the air. However, a gag writer who can leave a faint trace of bluing when he launders the joke is all the more admired — and more highly paid.

A gag that keeps the blue tinge is called a 'double intender', gag-land jargon for double entendre. The double meaning makes the joke funny at two levels. Children and other innocents hearing the crack for the first time take it literally, laughing at the surface humour; listeners who remember the original as they heard it in vaudeville or burlesque, laugh at the artfulness with which the blue tinge is disguised.

Another name for a double meaning of this sort is 'insinuendo'. This is a portmanteau word or 'combo', as the gagmen would label it, thus abbreviating combination. By telescoping insinuation and innuendo, they get insinuendo, on the principle of blend words brought into vogue by Lewis Carroll.

'Shock logic' is another favourite with gag writers. Supposedly a speciality of women comediennes, it is illogical logic more easily illustrated than defined. A high school girl has to turn down a boy's proposal, she writes:

Dear Jerry,

I'm sorry, but I can't get engaged to you. My mother thinks I am too young to be engaged and besides, I'm already engaged to another boy.

Yours regretfully.

Guess who.

Gag writers' lingo is consistently funnier than their gags. It should interest the slang-fancier. And like much vivid jargon developed in specialised trades and sports, a few of the terms are making their way into general use. Gimmick, for instance, in the sense either of a trick devised or the point of a joke, is creeping into the vocabulary of columnists and feature writers.

Even apart from the trade lingo, gagmen's manoeuvres are of real concern to anyone who follows words with a fully awakened interest. For the very fact that gag writers often use a long and unusual word as the hinge of a joke, or as a peg for situation comedy, tells us something quite significant: they are well aware of the limitations of the average vocabulary and are quite willing to cash in on its shortcomings.

When Fred Allens' joke-smiths work out a fishing routine, they have Allen referring to the bait in his most arch and solemn tones: "I presume you mean the legless invertebrate." This is the old minstrel trick, using a long fancy term, instead of calling a worm a worm.

Chico Marx can stretch a pun over 500 feet of film, making it funnier all the time, as he did when he rendered, "Why a duck?"

And even the high-brow radio writers have taken advantage of gagmen's technique. You might never expect to hear on the air such words as lepidopterist and entymologist. Both occur in a very famous radio play by Norman Corvine, 'My client Curly', about an unusual caterpillar which would dance to the tune 'yes, sir, she's my baby' but remained inert to all other music. The dancing caterpillar was given a real New York buildup, which involved calling in the experts on butterflies and insects which travel under the learned names above. Corvine made mild fun of the fancy professional titles, at the same time explaining them unobtrusively.

There are many similar occasions where any one working with words can turn gagmen's trade secrets to account. Just what words do they think outside the familiar range? How do they pick the words that they 'kick around'? It is not hard to find out.

118. According to the writer, a larger part of the American population
  - a. indulges in playing out the role of gag writers.
  - b. indulges in the word trade.
  - c. seeks employment in the gag trade for want of something better.
  - d. looks down on gag writers.
119. The hallmark of gag writers is that they
  - a. ruin good, simple language.
  - b. have fun with words.
  - c. make better sense of words.
  - d. play with words to suit the audience's requirements.
120. According to the passage, the second level of language is important if
  - a. one wants to feel at home reading and listening today.
  - b. one wants to be a gag writer.
  - c. one wants to understand clean entertainment.
  - d. All of these
121. According to the writer, gag writers thrive on
  - a. the double-layered aspect of language.
  - b. audience craze for double entendres.
  - c. vulgar innuendoes.
  - d. commonplace jugglery with language.
122. In gag writers' trade
  - a. long words are abbreviated for effect.
  - b. parts of words are combined to produce a hilarious portmanteau effect.
  - c. long words play a major role.
  - d. Both (b) and (c)

123. When the writer says, "They don't get paid for ignorance, only for simulating it," he means to say
- a. the audience likes to think the gag writers are an ignorant lot.
  - b. gag writers are terrific with insinuations.
  - c. simulating ignorance is the trick that makes gag writers tick.
  - d. None of these
124. Gag writers have influenced
- a. television artistes.
  - b. radio writers.
  - c. circus clowns.
  - d. All of these

### Passage – 4

From ancient times, men have believed that, under certain peculiar circumstances, life could arise spontaneously: from the ooze of rivers could come eels and from the entrails of dead bulls, bees; worms from mud, and maggots from dead meat. This belief was held by Aristotle, Newton and Descartes, among many others, and apparently the great William Harvey too. The weight of centuries gradually disintegrated men's beliefs in the spontaneous origin of maggots and mice, but the doctrine of spontaneous generation clung tenaciously to the question of bacterial origin.

In association with Buffon, the Irish Jesuit priest John Needham declared that he could bring about at will the creation of living microbes in heat-sterilised broths, and presumably, in propitiation, theorised that God did not create living things directly but bade the earth and water to bring them forth. In his *Dictionnaire Philosophique*, Voltaire reflected that it was odd to read of Father Needham's claim while atheists conversely should deny a Creator yet attribute to themselves the power of creating eels. But, wrote Thomas Huxley, 'The great tragedy of science — the slaying of a beautiful hypothesis by an ugly fact — which is so constantly being enacted under the eyes of philosophers, was played, almost immediately, for the benefit of Buffon and Needham.

The Italian Abbé Spallanzani did an experiment. He showed that a broth sealed from the air while boiling never develops bacterial growths and hence never decomposes. To Needham's objection that Spallanzani had ruined his broths and the air above them by excessive boiling, the Abbé replied by breaking the seals of his flasks. Air rushed in and bacterial growth began! But the essential conflict remained. Whatever Spallanzani and his followers did to remove seeds and contaminants was regarded by the spontaneous generationists as damaging to the 'vital force' from whence comes new life.

Thus, doubt remained, and into the controversy came the Titanic figure of Louis Pasteur. Believing that a solution to this problem was essential to the development of his theories concerning the role of bacteria in nature, Pasteur freely acknowledged the possibility that living bacteria very well might be arising anew from inanimate matter. To him, the research problem was largely a technical one: to repeat the work of those who claimed to have observed bacterial entry. For the one that contended that life did not enter from the outside, the proof had to go to the question of possible contamination. Pasteur worked logically. He found during the experiments that after prolonged boiling, a broth would ferment only when air was admitted to it. Therefore, he contended, either air contained a factor necessary for the spontaneous generation of life or

viable germs were borne in by the air and seeded in the sterile nutrient broth. Pasteur designed ingenious flasks whose long S-shaped necks could be left open. Air was trapped in the sinuous glass tube. Broths boiled in these flask tubes remained sterile. When their necks were snapped to admit ordinary air, bacterial growth would then commence — but not in every case. An occasional flask would remain sterile presumably because the bacterial population of the air is unevenly distributed. The forces of spontaneous generation would not be so erratic. Continuous scepticism drove Pasteur almost to fanatical efforts to control the ingredients of his experiments to destroy the doubts of the most sceptical. He ranged from the mountain air of Montanvert, which he showed to be almost sterile, to those deep, clear wells whose waters had been rendered germfree by slow filtration through sandy soil. The latter discovery led to the familiar porcelain filters of the bacteriology laboratory. With pores small enough to exclude bacteria, solutions allowed to percolate through them could be reliably sterilised.

The argument raged on and soon spilled beyond the boundaries of science to become a burning religious and philosophical question of the day. For many, Pasteur's conclusions caused conflict because they seemed simultaneously to support the Biblical account of creation while denying a variety of other philosophical systems. The public was soon caught up in the crossfire of a vigorous series of public lectures and demonstrations by leading exponents of both views, novelists, clergymen, their adjuncts and friends. Perhaps the most famous of these evenings in the theatre — competing perhaps with a great debate between Huxley and Bishop Wiberforce for elegance of rhetoric — was Pasteur's public lecture at the Sorbonne on April 7, 1864. Having shown his audience the swan necked flasks containing sterile broths, he concluded, "And, therefore, gentlemen, I could point to that liquid and say to you, I have taken my drop of water from the immensity of creation, and I have taken it full of the elements appropriated to the development of inferior beings. And I wait, I watch, I question it! — begging it to recommence for me the beautiful spectacle of the first creation. But it is dumb, dumb since these experiments were begun several years ago; It is dumb because I have kept it from the only thing man does not know how to produce: from the germs that float in the air, from life, for life is a germ and a germ is life. Never will the doctrine of spontaneous generation recover from the mortal blow of this simple experiment." And it is not. Today these same flasks stand immutable: they are still free of microbial life.

It is an interesting fact that despite the ringing declaration of Pasteur, the issue did not die completely. And although far from healthy, it is not yet dead. In his fascinating biography of Pasteur, Rene Dubos has traced the later developments which saw new eruptions of the controversy, new technical progress and criticism, and new energetic figures in the breach of the battle such as Bastion, for, and the immortal Tyndall, against, the doctrine of spontaneous generation. There was also new 'sorrow' for Pasteur as he read years later, in 1877, the last jottings of the great physiologist Claude Bernard and saw in them the 'mystical' suggestion that yeast may arise from grape juice. Even at this late date, Pasteur was stirred to new experiments again to prove to the dead Bernard and his followers the correctness of his position.

It seems to me that spontaneous generation is not only a possibility, but a completely reasonable possibility which should never be relinquished from scientific thought. Before men knew of bacteria, they accepted the doctrine of spontaneous generation as the 'only reasonable alternative' to a belief in supernatural creation. But today, as we look for satisfaction at the downfall of the spontaneous generation hypothesis, we must not forget that science has rationally concluded that life once did originate on earth by spontaneous generation. It was really Pasteur's evidence against spontaneous generation that for the first time brought

the whole difficult question of the origin of life before the scientific world. In the above controversy, what was unreasonable was the parade of men who claimed to have 'proved' or who resolutely 'believed in' spontaneous generation on the face of proof — not that spontaneous generation cannot occur — but that their work was shot through with experimental error. The acceptable evidence also makes it clear that spontaneous generation, if it does not occur, must obviously be a highly improbable event under present conditions. Logic tells us that science can only prove an event improbable: it can never prove it impossible — and Gamow has appropriately remarked that nobody is really certain what would happen if a hermetically sealed can were opened after a couple of million years. Modern science agrees that it was highly improbable for life to have arisen in the pre-Cambrian seas, but it concluded, nevertheless, that there it did occur. With this, I think, Pasteur would agree.

Aside from their theoretical implications, these researchers had the great practical result of putting bacteriology on a solid footing. It was now clear how precisely careful one had to be to avoid bacterial contamination in the laboratory. We now knew what 'sterile' meant and we knew that there could be no such thing as 'partial sterilization'. The discovery of bacteria high in the upper atmosphere, in the mud of the deep sea bottom, in the waters of hot springs, and in the Arctic glaciers established bacterial ubiquity as almost absolute. In recognition of this Lord Lister introduced aseptic technique into the practice of surgery. It was the revolution in technique alone that made possible modern bacteriology and the subsequent research connecting bacteria to phenomena of human concern, research, which today is more prodigious than ever. We are just beginning to understand the relationship of bacteria to certain human diseases, to soil chemistry, nutrition, and the phenomenon of antibiosis, wherein a product of one organism (e.g. penicillin) is detrimental to another.

It is not an exaggeration then to say that the emergence of the cell theory represents biology's most significant and fruitful advance. The realisation that all plants and animals are composed of cells which are essentially alike, that cells are all formed by the same fundamental division process, that the total organism is made up of activities and inter-relations of its individual cells, opened up horizons we have not even begun to approach. The cell is a microcosm of life, for in its origin, nature and continuity resides the entire problem of biology.

125. Needham's theory that 'God did not create living things directly' was posited as
- a. an attempt to support his assertion by religious doctrine.
  - b. an attempt to placate his religious peers.
  - c. an attempt at propitiating a possibly offended God or the religious psyche of the time.
  - d. All of these
126. It can be inferred from the passage that
- a. Huxley, Buffon and Needham were contemporaries.
  - b. Buffon, Needham, Voltaire and Huxley were contemporaries.
  - c. Voltaire wrote a treatise on Needham's claim.
  - d. None of these



127. According to the passage,
- a. Pasteur's precursors in the field worked on the basis of spontaneous generation.
  - b. unlike his predecessors, Pasteur worked on logical premises rather than arbitrary and spontaneous discoveries.
  - c. Pasteur stood to benefit largely from the work of his predecessors.
  - d. Pasteur developed the ideas set forth by Voltaire and Needham.
128. Pasteur began his work on the basis of the contention that
- a. either air contained a factor necessary for the spontaneous generation of life or viable germs were borne in by the air and seeded in the sterile nutrient broth.
  - b. after prolonged boiling, a broth would ferment only when air was admitted to it.
  - c. Both (a) and (b)
  - d. Neither (a) nor (b)
129. The porcelain filters of the bacteriology laboratories owed their descent to
- a. Pasteur's homeland.
  - b. the well water of Montanvert that had been rendered germ-free by slow filtration through sandy oil.
  - c. Both (a) and (b)
  - d. None of these
130. What according to the passage was Pasteur's declaration to the world?
- a. Nobody could deny the work done by him.
  - b. Science would forever be indebted to his experiments in bacteriology.
  - c. The doctrine of spontaneous generation would never recover from the mortal blow dealt to it by his experiments.
  - d. Those who refused to acknowledge his experiments would regret their scepticism.
131. What according to the writer, was the problem with the proponents of spontaneous generation?
- a. Their work had no scientific basis.
  - b. Their work was ruined by experimental errors.
  - c. Both (a) and (b)
  - d. Neither (a) nor (b)
132. One of the results of the theoretical cross fire regarding bacteriology was that
- a. partial sterilization as a possibility was ruled out.
  - b. aseptic technique was introduced in surgery.
  - c. the meaning of sterile was clear to all.
  - d. All of these
133. One of the reasons for the conflict caused by Pasteur's experiments was that
- a. they denied the existence of God as the creator.
  - b. they seemed simultaneously to support the Biblical account of creation while denying a variety of other philosophical systems.
  - c. academicians and scientists refused to accept his theories.
  - d. there were too many debates on the topic and this left the people confused.

134. According to the author,
- a. it is an exaggeration to say that cell theory represents biology's most significant and fruitful advance.
  - b. Pasteur could not hold his own against the contenders.
  - c. cell theory rendered null and void all the other bacteriological theories of the time.
  - d. the emergence of the cell theory represents biology's most significant and fruitful advance.

### **Passage – 5**

The end of mutual funds, when it came, was sudden but not unexpected. For over 10 years, mutual fund has been scripting its own growth demise, embarking on a reckless course of high risks, unhealthy pastimes, and unchecked maladies. Ironically but fittingly too, the very hand that had supported and sustained it through the turbulent early period of its existence was the one that, finally wielded the euthanasian syringe. The individual investor it was who had made the mutual fund post-liberalisation, India's most vibrant vehicle for individual investment. The individual investor it was who brought the curtain down on an act that had started with a virtuoso performance, only to putrefy into a show of ineptitude, imprudence, and irresponsibility.

The mutual fund, as we know it, may be dead. It died of many things. But, primarily, of a cancer that ate away at its innards. A cancer that destroyed the value of the investments, the mutual funds was made to service the Rs. 85,000 crore that India's investors had entrusted them with ever since they began life way back in 1964 as The Unit Trust Of India's (UTI), now disgraced Unit Scheme 64(US 64). A cancer that grew from the refusal of the men and women to manage the mutual fund to exercise a mixture of caution and aggression, but to adopt, instead, an indisciplined, unplanned, fire-from-the hip approach to investment. A cancer that ultimately, robbed the mutual funds of the resources they would have to use to pay back their investors, leaving them on Death Row.

Indeed, the scandal that US 64 had been brewing for years, was only one, but not the first, of the warning-bells that pointed to the near emptiness of many a mutual fund's coffers. In quick succession have emerged reports of more and more fund-schemes that have been laid bare, their corpuses empty, their ability to meet their promises of assured returns to investors demolished. At least 37 per cent of the 235 fund schemes in operation in the country have promised investors assured returns of over 15 per cent for 5 years, and repurchase-prices well above their Net Asset Values (NAVs).

According to a study conducted by the Delhi-based Value Research, at least 18 big schemes due for redemption over the next three years will be unable to service their investors, or even return their money at the time of redemption. The shortfall? Rs. 4,685.10 crore. Or 75.87 per cent of the amount handed over by trusting investors to fund managers. Worries Ajai Kaul, 38, president, Alliance Capital Asset Management: "When an assured-returns scheme runs into problems, investors view it as one more let-down by the mutual funds."

Had they but known of the actual practices seen in the offices and hallways of the mutual funds, which have translated into these results, investors would have shown their disgust long ago. Take the case of a

mutual fund company that manages more than a dozen schemes. According to an unwritten, but formalised, principle, each scheme takes it in turn to sell some of its holdings to its sister-schemes, booking fat notional gains and posting NAVs. While investors responded by pouring in even more of their savings, the profits were clearly only on paper. In the offices of another asset management company half way across Mumbai, the demand for cellular-phones peaked six months ago.

Its employees had, suddenly, realised that making their personal deals using information gathered in the course of their professional work, was best done over cell phones so that the company's records wouldn't show the call being made. Obviously, the hot tips went to fatten their — and not investors' — pockets. Earlier, quite a few merchant bankers entered the mutual funds industry to use the corpus to subscribe to the issues they were managing. It took a crash in the primary market — not ethics or investigations — for this practice to stop.

Filled with fear and loathing — and righteous anger — the investor has, therefore, decided to adjure the mutual fund. According to Marketing And Development Research Associates (MDRA) opinion poll of 342 investors conducted last fortnight in the five metros — Bangalore, Kolkata, Chennai, Delhi and Mumbai — mutual funds as an investment instrument now ranks a lowly fourth on safety — after bank deposits, gold, and real estate — and fifth on returns — ahead only of bank deposits and gold. And only 14.20 per cent of the sample will even consider investing in a mutual fund in the future.

Still, it is the species that has died, not its every member. The ones that have survived are the bright performers who beat the market benchmark — the 100 — scrip. The Bombay Stock Exchange (BSE) National Index — by the widest margins within their three genres: growth, income and balance. However, even their star turns have not been able to stave off the stench of death over the business. In fact, an autopsy of the late — and, at the moment not particularly lamented — mutual funds reveal a sordid saga of callousness and calumny.

Sheer disaster stares the mutual funds in the face and a cataclysm could destroy the savings of lakhs of investors too. A Value Research estimate of probable shortfall that 18 assured-returns schemes will face at the time of their scheduled redemptions over the three years adds up to a sense-numbing Rs. 4,685 crore. An independent audit of the 60 assured-returns schemes managed by the public sector mutual funds conducted by Price Waterhouse Coopers at the behest of the Securities and Exchange Board of India (SEBI) estimated a shortfall of between Rs. 2,500 crore and Rs. 3,000 crore. In 1999 alone judging from their present NAVs, the four schemes due for redemption — Canbank Asset Management Company's Cantriple, IndBank Asset Management Company's IndPrakash, SBI Funds Management's Magnum Triple Plus, and BOI Mutual Fund's (BOIMF) Double Square Plus — are heading for a collective shortfall of Rs. 1,639.55 crore.

As of June 30, 1998, the country's 252 fund-schemes managed assets with a market value of Rs. 69,599 crore, with the UTI alone controlling the fate of Rs. 50,000 crore. That is Rs. 11,000 crore less than the money invested in these schemes as of June 30, 1997, which means that the mutual funds have wiped out Rs. 11,000 crore from the investors' hard earned money in the intervening 12 months. Of course, every fund is paying for the sins of the black sheep. For, the villain of the piece was UTI and the 95 funds managed by the public sector banks and institutions, the value of whose corpuses fell from Rs. 66,748 crore to

Rs. 57,350 crore in the past year. In fact, these funds contributed 85.40 per cent of the overall value-loss, with the private sector funds boosting their corpses from Rs. 4,000 crore to Rs. 4,120 crore to lower the extent of the erosion.

For investors, that has translated into an option of either exiting at a loss — or holding on in vain hope. On November 20, 1998, a depressing 77 per cent of the 58 listed fund schemes were quoting at discounts of between 5 per cent and 40 per cent to their NAVs. And what of the NAVs themselves? The units of a shoulder-slumping 15 per cent of the schemes were worth less than their par values. And US 64, of course continued to languish, with an estimated NAV of Rs. 9.68. Even if there are schemes that have performed individually well, that the mutual funds have collectively failed to deliver couldn't be more obvious. So investors' murderous mood can hardly be debated.

Their genesis and growth reveals just what blinded the mutual funds to the possibility of failure. Forty per cent of the banks-and-insurance companies-promoted funds in operation were launched between 1987 and 1993, when the stock markets were bull-dominated. In a period that saw only one bear phase, the BSE Sensitivity Index (the Sensex) climbed by 346 per cent. Being successful with equity investments required no skills; only investible funds. Nor was fund-raising a problem, as investors desperately sought ways to grab a piece of equity boom. Between 1984 and 1989, the mutual funds collected Rs. 13,455 crore as subscriptions, but, in the next five years, they picked up Rs. 45,573 crore.

In January, 1994, the UTI's Mastergain mopped up a stunning Rs. 4,700 crore while the most awaited Morgan Stanley Growth — a showcase for the fabled fund-management metier of the foreign mutual funds — took in Rs. 1,000 crore in just three days. Low entry-barriers — a so called sound track-record, a general reputation of fairness and integrity, an application-fee of Rs. 25,000, a registration fee of Rs. 25 lakh and an annual fee of Rs. 2.50 lakh — made entering the business a snap. Explains Ajay Srinivasan, 34, CEO, Prudential ICICI Mutual Fund: "Mutual funds were misunderstood by investors. Everyone thought they were a one way ticket to a jackpot."

Intoxicated, fund-managers poured in more and more of their corpses into equity, ignoring the downsides, confident that the boom would last forever. In the process, they ignored the very concept of risk-management, blithely ignoring the safety net of fixed-income instruments, and accusing those who advised caution of being cowards. In 1995, for instance, ABN estimated 70 per cent of the money being managed by the mutual funds had been funnelled into equity. Whether they knew it or not, they were breaking away from the trend set by the mutual funds in the US, where the industry began by investing primarily in the money market, with only 25 per cent of their corpus set aside for stocks. Only in the past 15 years, after operating for more than seven decades, have those funds ventured into equity. Unfortunately, their success blinded the fund-managers to the fact that they were riding a wave-not navigating the treacherous seas. As Vivek Reddy, 36, CEO, Kothari-Pioneer Mutual Fund, puts it: "It was the stock market conditions that helped the mutual funds deliver returns, not superior investment skills." Then, the stock markets collapsed and never quite recovered. Between July 1997 and October 1998, the Sensex free-fell from 4306 to 2812 finally nullifying the theory that if you wait long enough, share-prices are always bound to rise. And the mutual fund, unused to a diet of falling equity indices, collapsed too.

The quantum of money mopped up by the mutual fund may suggest that the reports of its extinction have been greatly exaggerated. In 1997-98, Indians entrusted Rs. 18,701 crore to the mutual funds, with new schemes alone mopping up Rs. 12,279 crore. Questions R. G. Sharma, 58, CEO, LIC Mutual Fund: "How do you explain that Dhanvarsha 12 and Dhanvarsha 13, floated in April and September 1998, managed to mop up Rs. 335 crore?" Not quite a loss of faith, would you say? Think again. In those 12 months, those very investors also took away Rs. 16,227 crore in the form of repurchases and redemptions, leaving only Rs. 2,474 crore more in the hands of fund-managers. What's more, since none of the withdrawals could have been made from the new schemes, the old schemes, obviously, gave it all up, effectively yielding Rs. 9,805 crore to angry investors who took away their money. It is the same story this year: in the first quarter of 1998-99, old schemes collected Rs. 2,340 crore, compared to the new schemes' Rs. 1,735 crore but they gave up Rs. 2,749 crore ending up Rs. 409 crore poorer.

Sure, some people are still putting money into the mutual funds. The real reason: money is flowing in from two genres of investors — neither of whom is the quintessential urban. The first comprises people in the semi-urban and rural areas, for whom names like the LIC and GIC still represent safety and assured schemes of income. Importantly, this category investor isn't clued into the financial markets, and is not, accordingly, aware of the problems that confront the mutual funds. Confirms Nikhil Khatau, 38, Managing Director, Sun F & C Asset Management: "That market is fairly stable. "However, as soon as the fundamental problems hit their dividend-paying ability, even the die hard mutual fund investor from India's villages and small towns — who, don't forget, has already been singed by the disappearance of thousands of non-banking finance companies — will swear off their favourite investment vehicle.

The second genre of investor explains why the private sector funds have been successful in soaking up large sums: 31.10 per cent of the total takings in 1997-98, and 10.70 per cent in the first quarter of 1998-99. They are the so called high net worth players — corporates and individuals — who in Khatau's terms, 'are aggressive about managing their wealth, and look closely at comparative performance'. While their fastidiousness has forced them to pick the private sector mutual funds, whose disclosures and performance has both been ahead of their public sector cousins, their interest does not represent every investor's disillusionment.

135. The amount of money entrusted to the care of the mutual funds was  
a. Rs. 75,000 crore.      b. Rs. 80,000 crore.      c. Rs. 85,000 crore.      d. Rs. 82,000 crore.
136. The end of mutual funds was carried out at the hands of  
a. the government.      b. non-banking finance companies.  
c. the individual investors.      d. banks.
137. According to the passage, the flaws of the mutual funds lay in their  
a. post-liberalisation syndrome.      b. imprudent and irresponsible handling.  
c. stagnation.      d. All of these
138. According to the passage, one of the reasons for the failure of the mutual funds was  
a. their indisciplined approach to investment.  
b. their devil-may-care approach to the world of finance.  
c. their ability to deceive investors.  
d. their inability to read the pulse of their investors.

139. According to the writer, one of the fallouts of the end of mutual funds is that
- at least some of the big schemes due for redemption over the next three years will be unable to service their investors.
  - only very few of the big schemes due for redemption over the next three years will be unable to service their investors.
  - none of the big schemes due for redemption over the next three years will be able to service their investors.
  - None of these
140. It can be inferred from the passage that
- money was siphoned away outside the country by the mutual funds.
  - many of the mutual fund offices indulged in malpractice.
  - money invested in the mutual fund schemes were never returned to the investors.
  - a sustained attack by the media exposed the anomalies in the mutual fund industry.
141. The current rank of the mutual fund industry in terms of safety and returns on deposits respectively is
- third and fourth.
  - tenth and twelfth.
  - fourth and fifth.
  - It is not ranked at all.
142. The increase in the number of cell phone subscriptions in the office of an asset management company was due to the fact that
- calls made by employees for personal deals couldn't be lodged in the company's records.
  - employees found it easier to deal with investors without involving the company.
  - the company was scrupulous about maintaining correct records.
  - the company was unscrupulous in granting personal deals to the employees.
143. According to the passage, mutual funds caused a loss of
- Rs. 10,000 crore of the investors' money.
  - Rs. 11,000 crore of the investors' money.
  - Rs. 5,000 crore of the investors' money.
  - Rs. 8,000 crore of the investors' money.
144. On the basis of the passage, it may be said that, in terms of retrieving their money, the investors
- are caught between the devil and the deep blue sea.
  - have a no-exit route.
  - have to make do with little or no gain.
  - will trust the few bright stars in the mutual fund industry.
145. According to the passage, one of the reasons for the euphoria in the mutual fund industry can be attributed to
- the stock market boom in the late eighties and early nineties.
  - failure of the primary market.
  - Both (a) and (b)
  - Neither (a) nor (b)

## Section – IV

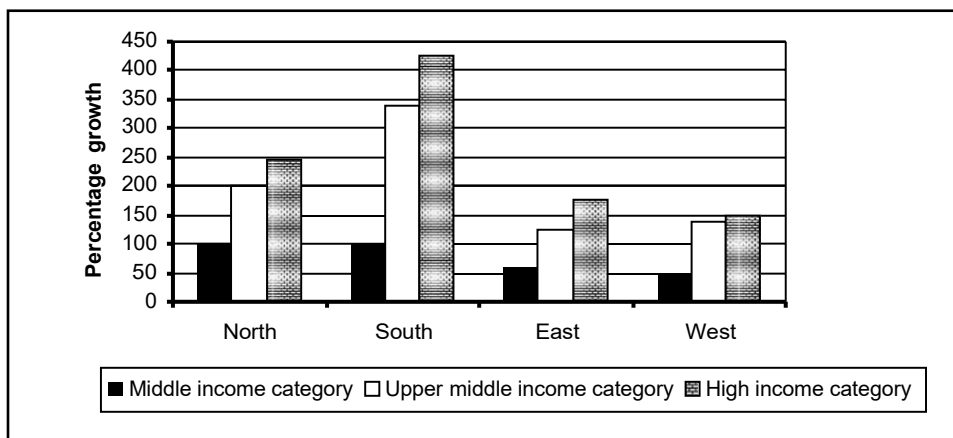
**Direction for questions 146 to 151:** The following table gives the quantity of apples (in tonnes) arriving at New Delhi market from various states in a particular year. The month in which demand was more than supply, the additional demand was met by the stock from cold storage.

Month	State			Cold storage	Total
	HP	UP	J & K		
April	7	0	7	59	73
May	12	1	0	0	13
June	9,741	257	8,017	0	18,015
July	71,497	0	18,750	0	90,247
August	77,675	0	20,286	0	97,961
September	53,912	0	56,602	0	1,10,514
October	12,604	0	79,591	24	92,219
November	3,499	0	41,872	42	45,413
December	1,741	0	14,822	15	16,578
January	315	0	10,922	201	11,438
February	25	0	11,183	77	11,285
March	0	0	683	86	769

146. What was the maximum percentage of apples supplied by any state in any of the months?  
 a. 99%                      b. 95%                      c. 88%                      d. 100%
147. Which state supplied the maximum number of apples?  
 a. UP                      b. HP                      c. J & K                      d. Cold storage
148. Which state supplied the highest percentage of apples from the total apples supplied?  
 a. HP                      b. UP                      c. J & K                      d. Cannot be determined
149. In which of the following periods was the supply greater than the demand?  
 a. August-March                      b. June-October                      c. May-September                      d. Cannot be determined
150. If the yield per tree was 40 kg, then from how many trees were the apples supplied to New Delhi (in millions) during the year?  
 a. 11.5                      b. 12.5                      c. 13.5                      d. Cannot be determined
151. Using the data in question 150, if there were 250 trees per hectare, then how many hectares of land was used?  
 a. 9,400 hectares                      b. 49,900 hectares                      c. 50,000 hectares                      d. 49,450 hectares

**Direction for questions 152 to 157:** Answer the questions based on the following information.

The following bar chart gives the growth percentage in the number of households in middle, upper-middle and high income categories in the four regions for the period between 1987-88 and 1994-95.



	Number of households in 1987–88 (in thousands)	Average household income in 1987–88	Growth in average household income (1994–95 over 1987–88)
Middle income	40	Rs. 30,000	50%
Upper- middle	10	Rs. 50,000	60%
High income	5	Rs. 75,000	90%

152. Which region showed the highest growth in number of households in all the income categories for the period?
  - a. North
  - b. South
  - c. West
  - d. None of these
153. What was the total household income in northern region for upper-middle class?
  - a. Rs. 50 lakh
  - b. Rs. 500 million
  - c. Rs. 300 million
  - d. Cannot be determined
154. What is the percentage increase in total number of households for the northern region(upper-middle) over the given period?
  - a. 100%
  - b. 200%
  - c. 240%
  - d. Cannot be determined
155. What was the average income of the high-income group in 1987-88?
  - a. Rs. 75,000
  - b. Rs. 25,000
  - c. Rs. 2,25,000
  - d. Cannot be determined

**Additional direction for questions 156 and 157:** The numbers of households in each category were equally distributed in all the regions.

156. The ratio of total income for the high-income category to the upper-middle class increased by how much percentage in the given period?
  - a. 20%
  - b. 36%
  - c. 25%
  - d. Cannot be determined
157. The average income for the northern region in 1987-88 was
  - a. Rs. 37,727
  - b. Rs. 37,277
  - c. Rs. 35,000
  - d. Cannot be determined



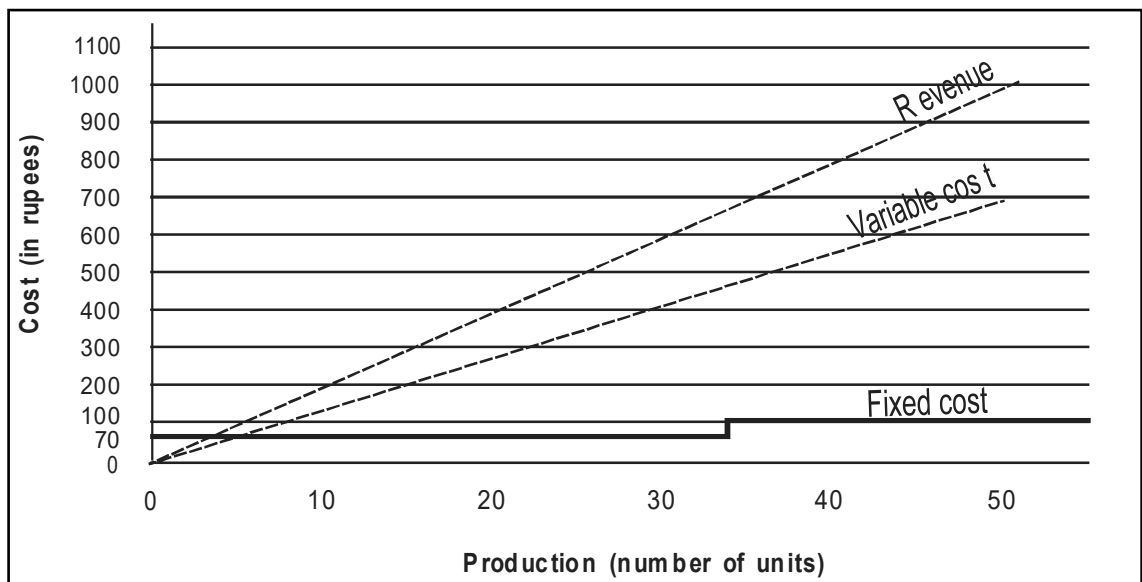
**Direction for questions 158 to 162:** Answer the questions based on the following information.

Krishna distributed 10-acre land to Gopal and Ram who paid him the total amount in the ratio 2 : 3. Gopal invested a further Rs. 2 lakh in the land and planted coconut and lemon trees in the ratio 5 : 1 on equal areas of land. There were a total of 100 lemon trees. The cost of one coconut was Rs. 5. The crop took 7 years to mature and when the crop was reaped in 1997, the total revenue generated was 25% of the total amount put in by Gopal and Ram together. The revenue generated from the coconut and lemon trees was in the ratio 3 : 2 and it was shared equally by Gopal and Ram as the initial amount spent by them were equal.

158. What was the total output of coconuts?  
a. 24,000                      b. 36,000                      c. 18,000                      d. 48,000
159. What was the value of output per acre of lemon trees planted?  
a. 0.24 lakh per acre      b. 2.4 lakh per acre      c. 24 lakh per acre      d. Cannot be determined
160. What was the amount received by Gopal in 1997?  
a. Rs. 1.5 lakh              b. Rs. 3 lakh              c. Rs. 6 lakh              d. None of these
161. What was the value of output per tree for coconuts?  
a. Rs. 36                      b. Rs. 360                      c. Rs. 3,600                      d. Rs. 240
162. What was the ratio of yields per acre of land for coconuts and lemons (in terms of number of lemons and coconuts)?  
a. 3 : 2                      b. 2 : 3                      c. 1 : 1                      d. Cannot be determined

**Direction for questions 163 to 167:** Answer the questions based on the following information.

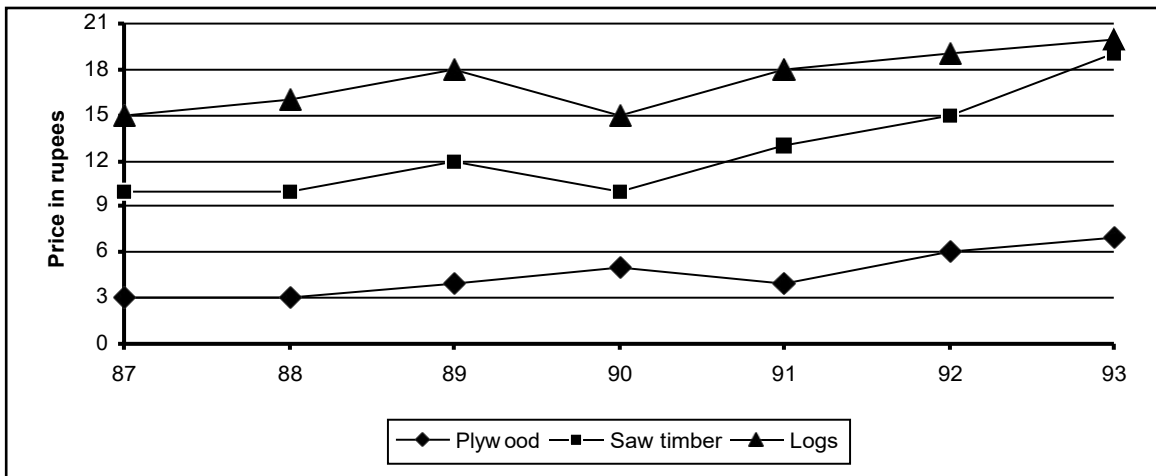
Ghosh Babu has a manufacturing unit. The following graph gives the cost for various number of units. Given: Profit = Revenue – Variable cost – Fixed cost. The fixed cost remains constant up to 34 units after which additional investment is to be done in fixed assets. In any case, production cannot exceed 50 units.



163. What is the minimum number of units that need to be produced to make sure that there was no loss?  
a. 5                                      b. 10                                      c. 20                                      d. Indeterminable
164. How many units should be manufactured such that the profit was at least Rs. 50?  
a. 20                                      b. 34                                      c. 45                                      d. 30
165. If at the most 40 units can be manufactured, then what is the number of units that can be manufactured to maximise profit per unit?  
a. 40                                      b. 34                                      c. 35                                      d. 25
166. If the production cannot exceed 45 units, then what is the number of units that can maximise profit per unit?  
a. 40                                      b. 34                                      c. 45                                      d. 35
167. If the fixed cost of production goes up by Rs. 40, then what is the minimum number of units that need to be manufactured to make sure that there is no loss?  
a. 10                                      b. 19                                      c. 15                                      d. 20

**Direction for questions 168 to 173:** Answer the questions based on the following information.

In the following chart, the price of logs shown is per cubic metre that of plywood and saw timber is per tonne.



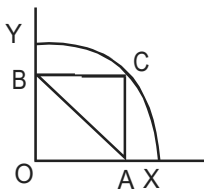
168. What is the maximum percentage increase in price per cubic metre or per tonne over the previous year?  
a. 33.33%                                      b. 85%                                      c. 50%                                      d. Cannot be determined
169. Which product shows the maximum percentage increase in price over the period?  
a. Saw timber                                      b. Plywood                                      c. Logs                                      d. Cannot be determined
170. If  $1 \text{ m}^3 = 750 \text{ kg}$  for saw timber, find in which year was the difference in prices of saw timber and logs the least?  
a. 1989                                      b. 1990                                      c. 1991                                      d. 1992

171. If one cubic metre = 700 kg for plywood and 800 kg for saw timber, find in which year was the difference in the prices of plywood and saw timber (per cubic metre) the maximum?  
 a. 1989                      b. 1990                      c. 1991                      d. 1992
172. If the volume sales of plywood, saw timber and logs were 40%, 30% and 30% respectively, then what was the average realisation in 1993 per cubic metre of sales? (Weight of one cubic metre of saw dust and plywood both = 800 kg)  
 a. 18                      b. 15                      c. 16                      d. 13
173. In the previous question, if in 1994, prices increased by 5%, 1% and 10% while the volume sales break-up was 40%, 30% and 30% for plywood, saw timber and logs respectively, then what was the average realisation?  
 a. 18.95                      b. 16.45                      c. 13.15                      d. 10.25

**Direction for questions 174 to 185:** Each question is followed by two statements, I and II. Answer the questions based on the statements and mark the answer as

- a. if the question can be answered with the help of any one statement alone but not by the other statement.
- b. if the question can be answered with the help of either of the statements taken individually.
- c. if the question can be answered with the help of both statements together.
- d. if the question cannot be answered even with the help of both statements together.

174. Find the length of AB if  $\angle YBC = \angle CAX = \angle YOX = 90^\circ$ .



- I. Radius of the arc is given.
- II.  $OA = 5$

175. Is  $n$  odd?

- I.  $n$  is divisible by 3, 5, 7 and 9.
- II.  $0 < n < 400$

176. Find  $2 \otimes 3$ , where  $2 \otimes 3$  need not be equal to  $3 \otimes 2$ .

- I.  $1 \otimes 2 = 3$
- II.  $a \otimes b = \frac{(a+b)}{a}$ , where  $a$  and  $b$  are positive.

177. Radha and Rani appeared in an examination. What was the total number of questions?

- I. Radha and Rani together solved 20% of the paper.
- II. Radha alone solved  $\frac{3}{5}$  of the paper solved by Rani.

178. What is the price of tea?
- Price of coffee is Rs. 5 more than that of tea.
  - Price of coffee is Rs. 5 less than the price of a cold drink which cost three times the price of tea.
179. What is the value of 'a'?
- Ratio of a and b is 3 : 5, where b is positive.
  - Ratio of 2a and b is  $\frac{12}{10}$ , where a is positive.
180. In a group of 150 students, find the number of girls.
- Each girl was given 50 paise, while each boy was given 25 paise to purchase goods totalling Rs. 49.
  - Girls and boys were given 30 paise each to buy goods totalling Rs. 45.
181. There are four envelopes —  $E_1$ ,  $E_2$ ,  $E_3$  and  $E_4$  — in which one was supposed to put letters  $L_1$ ,  $L_2$ ,  $L_3$  and  $L_4$  meant for persons  $C_1$ ,  $C_2$ ,  $C_3$  and  $C_4$  respectively, but by mistake the letters got jumbled up and went in wrong envelopes. Now if  $C_2$  is allowed to open an envelope at random, then how will he identify the envelope containing the letter for him?
- $L_2$  has been put in  $E_1$ .
  - The letter belonging to  $C_3$  has gone in the correct envelope.
182. There are four racks numbered 1, 2, 3, 4 and four books numbered 1, 2, 3, 4. If an even rack has to contain an odd-numbered book and an odd rack contains an even-numbered book, then what is the position of book 4?
- Second book has been put in third rack.
  - Third book has been put in second rack.
183. Find the value of X in terms of 'a'.
- Arithmetic mean of X and Y is 'a' while the geometric mean is also 'a'.
  - $\frac{X}{Y} = R$ ;  $X - Y = D$ .
184. There are two concentric circles  $C_1$  and  $C_2$  with radii  $r_1$  and  $r_2$ . The circles are such that  $C_1$  fully encloses  $C_2$ . Then what is the radius of  $C_1$ ?
- The difference of their circumference is k cm.
  - The difference of their areas is m sq. cm.
185. A circle circumscribes a square. What is the area of the square?
- Radius of the circle is given.
  - Length of the tangent from a point 5 cm away from the centre of the circle is given.

# CAT 1998 Actual Paper

## Answers and Explanations

1	d	2	b	3	c	4	a	5	a	6	b	7	d	8	b	9	d	10	c
11	a	12	b	13	b	14	a	15	c	16	b	17	d	18	b	19	c	20	c
21	b	22	a	23	b	24	c	25	a	26	b	27	a	28	a	29	d	30	b
31	b	32	b	33	d	34	b	35	d	36	a	37	b	38	b	39	a	40	c
41	a	42	c	43	b	44	a	45	b	46	a	47	c	48	d	49	d	50	a
51	b	52	c	53	c	54	b	55	a	56	c	57	c	58	a	59	b	60	b
61	c	62	b	63	d	64	a	65	d	66	a	67	a	68	c	69	b	70	a
71	c	72	c	73	a	74	b	75	a	76	c	77	d	78	a	79	b	80	d
81	c	82	b	83	d	84	a	85	a	86	b	87	b	88	c	89	a	90	c
91	c	92	b	93	c	94	c	95	a	96	b	97	c	98	b	99	c	100	a
101	c	102	d	103	b	104	b	105	a	106	d	107	d	108	a	109	c	110	b
111	b	112	a	113	c	114	a	115	d	116	b	117	c	118	b	119	b	120	a
121	a	122	d	123	c	124	b	125	c	126	b	127	b	128	a	129	b	130	c
131	b	132	a	133	b	134	d	135	c	136	c	137	b	138	a	139	a	140	b
141	c	142	a	143	b	144	a	145	a	146	a	147	c	148	c	149	c	150	b
151	d	152	b	153	d	154	b	155	a	156	b	157	a	158	b	159	a	160	a
161	b	162	d	163	b*	164	a	165	b	166	b	167	b	168	c	169	b	170	b
171	d	172	d	173	c	174	d	175	c	176	a	177	d	178	c	179	d	180	a
181	a	182	a	183	a	184	c	185	b										

Scoring table

Section	Question number	Total questions	Total attempted	Total correct	Total wrong	Net Score	Time Taken
EU	1 to 50	50					
QA + AR	51 to 95	45					
RC	96 to 145	50					
DI + DS	146 to 185	40					
Total		185					

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

24. c (A) states that Alex had never been happy with his origins. (C) states what he would rather have been. (B) states what he tries to do to rectify the facts, and (D) shows his wife's reaction to his actions.
25. a (B) states the influence of Indian colours and cuts on Western styles. (A) states that it is seen most on the beaded evening wear. (D) tells us the most popular colours and (C) states how the international fashion scene has been affected by the Indian outfits.
26. b (D) introduces the point of emergence of theocratic states. (B) states how it benefits the politicians. (C) shows how the politicians act and (A) concludes the paragraph.
27. a (C) introduces the subject of the passage. (A) describes him. (B) shows why he was in that place, and (D) describes his mental state.
28. a (A) shows the director walking into the room. (C) tells us that the managers stared at him. (B) states Mitch's reaction, and (D) states what he finally did.
29. d (A) states the influence of Third Reich. (D) elaborates on the events that accompanied the Third Reich. (C) states that while speaking out against Hitler, Americans favoured isolationist policies, and (B) elaborates on such policies.
30. b (A) introduces *Of Studies* as the main idea of the passage. (B) states that the essay requires complete attention of the reader. (C) states Bacon's stand on studies, and (D) continues with the same.
31. b (C) relates logic to reasoning. (A) states what reasoning means. (B) states what logical reasoning covers, and (D) states how we can understand arguments and draw inferences correctly.
32. b If Sita is not sick, it follows that she is careless. One of the either/or conditions hold good.
33. d Ram does not eat hamburgers, so it follows that he does not get a swollen nose. When X, then Y. Not Y, hence not X.
34. b If the employees have confidence in the management, it follows that they are hostile. The first of the either/or condition is false, so the second one has to be true.
35. d None of the given options relates logically to the given statements.
36. a As all irresponsible parents do not shout, it follows that the children cavort. When X, then Y. X, hence Y.
37. b If only strong have biceps and no faith is strong, it follows that no faith has biceps. In A, X and Y need not overlap. In B, the Sona and crazy set need not overlap. In D there is no logical conclusion at all.
38. b In (C) and (D) the first two statements do not logically lead to the third. In C, we do not know if the hand and the head set overlap. D leads to an unpredictable conclusion. The icicles which are cycles are at least men. In B, if no teeth is yellow, no girl can be yellow, since all girls are teeth.
39. a If no sun is not white, it implies that all sun is white. All moon is sun, so it follows that all moon is white. B and C lead to undefined conclusions. In D, there is a possibility that X and Y sets can intersect.
40. c If all Ts are square and all squares are rectangular, it follows that all Ts are rectangular. Also, if idiots are bumbler and bumbler fumble, it follows that idiots fumble. In B, there is a possibility that fat and huge sets need not intersect. D plays with words and leads to uncertain conclusion again.
41. a As the passage says that efficiency won't be content to reign in the shop, but will follow us home, it implies that efficiency can become all-pervading. (b) is not the focus of the questions. (c) goes beyond the scope of the argument.
42. c As each project is being stalled for some reason or the other and no consensus has been reached on any of the projects, we can infer that the projects will be stalled for an indefinite period. (a) is stated in the argument, and (b) is likely to be a conclusion.
43. b The passage states that designations are forgotten during the meetings and even a sales engineer can question the CEO on company policies. The company's ulterior motive is not the focus of the argument, so (a) and (c) are ruled out.
44. a The passage states that the rape of Indian architectural wealth can be attributed to the blend of activist disunity and local indifference. (b) may not be true as Indians may be gullible. (c) and (d) are stated in the passage.
45. b The moral police feel that *Fire* would influence the Indian psyche and ruin the moral fabric of the nation, which it should not be allowed to do. (a) is not true, as Indian audiences may be discriminating. (c) is not an inference, it is true to a certain extent.
46. a The passage states that the rich have never felt secure against the poor and their aggressiveness stemmed from fear of the poor. (b) refutes the conclusion in the argument.
47. c The passage states that the second kind of traveller visits only such monuments as the time at his disposal allows him to contemplate without irreverent haste. The preference of the writer is not the focus of the argument, hence (a) is wrong. (b) is too caustic.
48. d None of the given options is supported by the passage. (c) may not be true in the immediate temporal context of the argument. (b) is clear from the argument, it is not an inference. (a) is, of course, wrong.
49. d The passage supports none of the given options. (c) does not seem to be true in light of facts presented in the passage. (b) is stated anyway in the passage. What the director aimed at does not seem to be the focus of the argument, which discusses a general consequence.

50. a The Indian middle-class, what it wants and what it buys has been the focus of economic policies since the mid-80s. (b) infers far beyond what can be reasonably inferred from the argument.

51. b In one day, A would do  $\frac{1}{3}$  of the job, B would do  $\frac{1}{4}$  of the job and C would do  $\frac{1}{6}$  of the job.

Hence, if all three of them work simultaneously, in one

day they would do  $\left(\frac{1}{3} + \frac{1}{4} + \frac{1}{6}\right) = \frac{3}{4}$  of the job.

Hence, to complete the entire job together they would

take  $\frac{4}{3}$  days.

#### Shortcut:

A can complete the job in 3 days. So A, B and C combined will take less days than A alone to finish the job. So straightway option (b).

52. c If  $n^3$  is odd, then  $n$  should also be odd. Hence,  $n^2$  should also be odd, not even. So only I and II are true.

53. c We can see that there are two types of cost: (i) Transportation cost (viz. hiring truck) and (ii) storing cost. It can be seen that the daily production is far less than the capacity of the truck. So a truck can be hired to carry multiple days production at one go. So as long as the storing cost is less than the cost of hiring the truck (i.e. Rs. 1,000), it makes sense to store the production. When the storing cost exceeds Rs. 1,000, it is best that the entire lot be sent to the market. The cost pattern is as given in the following table:

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

\* In spite of the fact that storing is cheaper than hiring truck on the last day, we have to do with the latter option because everything that is manufactured has to be sent to the market.

So according to this table, if the truck is hired on 2nd, 4th, 6th and 7th days, total cost = Rs. 6,150. But is this

the most cost-effective scheme? It can be seen that we are hiring truck on two consecutive days (6th and 7th). Hence, since everything that is manufactured has to be sent to the market, we have yet another option of hiring the truck on the 5th day and sending the 6th and 7th days production together on the last day. In that case, the cost on 5th day would be Rs. 1,000 (i.e. Rs. 200 more than the present cost), the cost on the 6th day would be  $(120 \times 5) = \text{Rs. } 600$  (i.e. Rs. 400 less than the present cost) and the cost on the 7th day would be Rs. 1,000 (the same as the present cost). Hence, we can say that the total cost would actually come down by  $(+200 - 400 = -200)$  Rs. 200.

Hence, this becomes the most cost-effective scheme. So we should hire trucks on 2nd, 4th, 5th and 7th days.

54. b If the storage cost is reduced to Re 0.8 per cubic feet, then the cost pattern is as given in the following table.

Units produced	Units to be stored	Cost of storing (Rs.)	Cost of sending to the market (Rs.)	Should you hire truck?	Cost incurred (Rs.)
150	150	120	1,000	No	120
180	(150 + 180) = 330	264	1,000	No	264
120	(330 + 120) = 450	360	1,000	No	360
250	(450 + 250) = 700	560	1,000	No	560
160	(700 + 160) = 860	688	1,000	No	688
120	(860 + 120) = 980	784	1,000	No	784
150	(980 + 150) = 1130	904	1,000	Yes**	1,000
Total cost					3,776

\*\* In spite of the fact that storing is cheaper than hiring truck on the last day, we have to do with the latter option because everything that is manufactured has to be sent to the market.

Hence, the most cost-effective scheme would be sending the entire production on the 7th day.

55. a Let there be  $x$  bacteria in the first generation i.e.  $n_1 = x$ .

$\therefore n_2 = 8x$ , but only 50% survives

$$\Rightarrow n_{2,\text{survived}} = \frac{8x}{2} = 4x$$

$n_3 = 8(4x)$ , but only 50% survives

$$n_{3,\text{survived}} = 4^2x$$

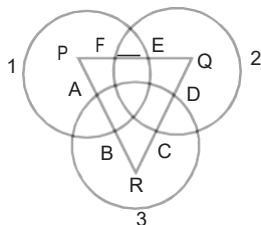
Similarly,

$$n_{7,\text{survived}} = 4^{7-1}x = 4096 \text{ million}$$

$$\therefore x = 1 \text{ million.}$$



56. c  $PQ = PE + FQ - FE$   
 $= \text{radius of circle 1} + \text{radius of circle 2} - FE$   
 $= 20 + 20 - 12 = 28$   
 Similarly,  $QR = 20 + 20 - CD = 40 - 10 = 30$   
 and  $PR = 20 + 20 - AB = 40 - 5 = 35$   
 So perimeter of  $\triangle PQR = 28 + 30 + 35 = 93$



57. c Since both 2 and 1 are positive,  $(2 \# 1) = 2 + 1 = 3$ .  
 $(1 \nabla 2) = (1 \times 2)^{1+2} = 2^3 = 8$ .

Thus, the given expression is equal to  $\frac{3}{8}$ .

58. a Let us first simplify the numerator. Since 1 is positive,  $(1 \# 1)$  is  $1 + 1 = 2$  which again is positive. Then  $(1 \# 1) \# 2 = 2 \# 2 = 2 + 2 = 4$

Now note that  $\log_{10} 0.1$

$$= \log_{10} 10^{-1} = -1$$

Then  $10^{1.3} \log_{10} 0.1 = 10^{1.3} \times (-1)$  is negative.

$$\text{So } 10^{1.3} \nabla \log_{10} 0.1 = 1$$

Hence, the numerator is equal to  $4 - 1 = 3$

$$\text{Since } 1 \times 2 = 2 \text{ is positive, } (1 \nabla 2) = (1 \times 2)^{1+2} = 2^3 = 8.$$

So the denominator = 8. Hence, the answer is  $\frac{3}{8}$ .

59. b The best possible way to solve this is to check each of the given answer choices. In options (a), (c) and (d), either both X and Y are positive or both X and Y are negative. Since we have  $(-Y)$  in the numerator of our expression and  $(-X)$  in the denominator, X and Y will never be both positive and neither will XY be positive. Hence, both the numerator and the denominator of our expression will be 1 and the value will always be 1. Hence, the only possible answer choice is (b).

60. b Since MPB is a three-digit number, and also the square of a two-digit number, it can have a maximum value of 961 viz.  $31^2$ . This means that the number BE should be less than or equal to 31.  $\Rightarrow$  B can be 0, 1, 2 or 3.

Since the last digit of MPB is also B, it can only be 0 or 1 (as none of the squares end in 2 or 3). The only squares that end in 0 are 100, 400 and 900. But for this to occur the last digit of BE also has to be 0. Since E and B are distinct integers, both of them cannot be 0. Hence, B has to be 1. BE can be a number between 11 and 19 (as we have also ruled out 10), with its square also ending in 1.

Hence, the number BE can only be 11 or 19.  $11^2 = 121$ . This is not possible as this will mean that M is also equal to 1. Hence, our actual numbers are  $19^2 = 361$ . Hence,  $M = 3$ .

61. c The maximum and the minimum five-digit numbers that can be formed using only 0, 1, 2, 3, 4 exactly once are 43210 and 10234 respectively. The difference between them is  $43210 - 10234 = 32976$ .

$$62. b \quad \begin{array}{cc} & t & u \\ \hline & \text{Ten's place} & \text{Unit's place} \end{array}$$

$$u > t$$

Case (i):  $t = 1$

u can be 2, 3, 4, 5  $\Rightarrow$  4 possibilities

So total possible number that can be formed

$$= 4 \times 3 \times 2 \times 1$$

Case (ii):  $t = 2$

u can be 3, 4, 5  $\Rightarrow$  3 possibilities

So total possible number that can be formed

$$= 3 \times 3 \times 2 \times 1$$

Case (iii):  $t = 3$

u can be 4, 5  $\Rightarrow$  2 possibilities

So total possible number that can be formed

$$= 2 \times 3 \times 2 \times 1$$

Case (iv):  $t = 4$

u can be 5  $\Rightarrow$  1 possibility

So total possible number that can be formed

$$= 1 \times 3 \times 2 \times 1$$

Hence, total possible number =  $(4 + 3 + 2 + 1) \times 3 = 60$

63. d Since A and B are moving in opposite directions, we will add their speeds to calculate the effective speeds. In other words, in the first hour they would effectively cover a distance of  $(4 + 2) = 6$  km towards each other. In the second hours, they would effectively cover a distance of  $(4 + 2.5) = 6.5$  km towards each other. In the third hour,  $(4 + 3) = 7$  km. In the fourth hour,  $(4 + 3.5) = 7.5$  km and so on. We can see that the distances that they cover in each hour are in AP, viz. 6, 6.5, 7, 7.5 ... with  $a = 6$  and  $d = 0.5$ . Since they have to effectively cover a distance of 72 km, the time taken to cover this much distance would be the time taken to meet each other. So the sum of the first n terms of our AP has to be 72.

If we are to express this in our equation of sum of first

$$n \text{ terms of the AP, we will get } S = \frac{n}{2} \times [2a + (n - 1)d].$$

Substituting our values, we will get

$$72 = \frac{n}{2} \times [12 + 0.5(n - 1)]$$

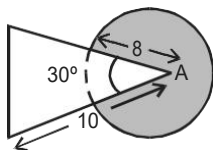
Solving this, we get  $n = 9$  hr. In 9 hr A would have covered  $(9 \times 4) = 36$  km.

So B would also have covered  $(72 - 36) = 36$  km.

Hence, they would meet mid-way between A and B.

64. a If P is true, then both Q and R have to be true. For S to be true, either Q or R must be false. Hence, if P is true, S cannot be true.

65. d



It can be seen that if the length of the rope is 8 m, then the cow will be able to graze an area equal to (the area of the circle with radius 8m) – (Area of the sector

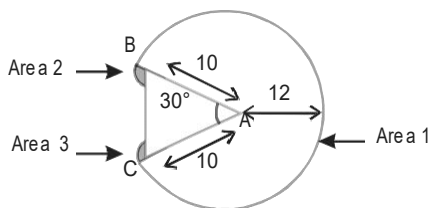
of the same circle with angle  $30^\circ$ ) =  $\pi(8)^2 - \frac{30}{360}\pi(8)^2$

$$= 64\pi - \frac{1}{12}(64\pi) = 64\pi\left(\frac{11}{12}\right) = \frac{176\pi}{3} \text{ sq.m}$$

**Shortcut:**

Area grazed without restriction is  $64\pi \text{ m}^2$  it should be less than  $64\pi \text{ sq.m.}$  with restriction. So choice (d).

66. a



If the length of the rope is 12 m, then the total area that can be grazed by the cow is as depicted in the diagram. Area 1 is (the area of the circle with radius 12) – (Area of the sector of the same circle with angle  $30^\circ$ )

$$\text{So area 1} = \pi(12)^2 - \frac{30}{360}\pi(12)^2 = 132\pi$$

Since the length of the rope is higher than the sides of the triangle (viz. AB and AC), if the cow reaches point B or C, there would still be a part of the rope  $(12 - 10) = 2 \text{ m}$  in length. With this extra length available the cow can further graze an area equivalent to some part of the circle with radius = 2 m from both points, i.e. B and C. This is depicted as area 2 and area 3 in the diagram. Hence, the actual area grazed will be slightly more than  $132\pi$ . The only answer choice that supports this is (a).

67. a Since C and D cannot be together, they can occupy either of the following seats: (1st and 3rd), (1st and 4th) or (2nd and 4th). In the last two cases, since B cannot be in the 3rd place, A will have to be there. Thus, we can see that A can never be in the 1st place. Hence, statement (a) is false.

68. c Since neither A nor B can be at 3rd place, this place has to be occupied by either D or C. And if either of them occupies this place, the other one has to occupy the 1st place (since D and C cannot be together). Hence, C can only occupy either 1st or 3rd place.

69. b If A and B are together, but C and D are not, then the only places that A and B can occupy are 2nd and 3rd. And since B cannot be at 3rd place, A has to be at 3rd place.

70. a Let the cost of the turban be T.  
Total payment for one year = Rs. 90 + T. So the payment for 9 months should be  $\frac{3}{4}(90 + T)$ . But this is equal to  $(65 + T)$ . Equating the two, we get  $T = \text{Rs. } 10$ .

71. c Let R be the radius of each circle. Then  $\frac{\pi R^2}{2\pi R} = \frac{2\pi R}{\pi R^2}$

which implies that  $\frac{R}{2} = \frac{2}{R}$ , i.e.  $R^2 = 4$ , i.e.  $R = 2$ .

Then the length of the square is 8. Thus, the area of the square is 64, while the area covered by each coin is  $\pi 2^2 = 4\pi$ . Since there are four coins, the area covered by coins is  $4(4\pi) = 16\pi$ .

Hence, the area not covered by the coins is  $64 - 16\pi = 16(4 - \pi)$ .

72. c The time taken by the white spots on all three wheels to simultaneously touch the ground again will be equal to the LCM of the times taken by the three wheels to complete one revolution. The first wheel complete 60 revolutions per minute. This means that to complete one revolution, it takes

$$\left(\frac{60}{60}\right) = 1 \text{ s.}$$

Similarly, the second wheel takes  $\left(\frac{36}{60}\right) = \frac{3}{5} \text{ s}$  to complete one revolution.

Similarly, the third wheel takes  $\frac{24}{60} = \frac{2}{5} \text{ s}$  to complete one revolution.

$$\text{Hence, LCM of } 1, \frac{3}{5}, \frac{2}{5} = \frac{\text{LCM}(1, 3, 2)}{5} = \frac{6}{5} = 1.2 \text{ s}$$

73. a Since 899 is divisible by 29, so you can directly divide the remainder of 63 by 29, so  $\frac{63}{29}$  will give 5 as a remainder, option (a).

74. b Note that the difference between the divisors and the remainders is constant.  
 $2 - 1 = 3 - 2 = 4 - 3 = 5 - 4 = 6 - 5 = 1$   
In such a case, the required number will always be [a multiple of LCM of (2, 3, 4, 5, 6) – (The constant difference)].  
LCM of (2, 3, 4, 5, 6) = 60  
Hence, the required number will be  $60n - 1$ .  
Thus, we can see that the smallest such number is  $(60 \times 1) - 1 = 59$   
The second smallest is  $(60 \times 2) - 1 = 119$   
So between 1 and 100, there is only one such number, viz. 59.

75. a For, if any one of them collects the maximum number of coins, the remaining three should collect the minimum number of coins. To have distinct, even, at least 10 coins; they will have to collect 10, 12, 14 coins. So if the three of them collect  $(10 + 12 + 14) = 36$  coins, the fourth one has to collect  $(100 - 36) = 64$  coins which has to be the maximum by any one person.

76. c Since A has collected 54 coins out of 100, he should obviously be the person who collected the maximum number of coins. For the difference between him and the second highest person to be minimum, the second highest person should collect the maximum number of coins possible under the given conditions. And for this to happen, the remaining two should collect the minimum number of coins. So if the two of them collect 10 and 12 coins, i.e. 22 coins between themselves, the third person would have to collect  $(100 - 54 - 22) = 24$  coins. Hence, the difference between him and the highest person should at least be  $(54 - 24) = 30$ .

77. d If A has collected 54 coins, the remaining three of them should collect  $(100 - 54) = 46$  coins between themselves.

Let us assume that C has collected 10 coins. So B will collect  $(2 \times 10) + 2 = 22$ . So A will collect  $(46 - 10 - 22) = 14$  coins, which is a possible combination.

Let us now assume that C picks up 12 coins. So B should pick up  $(2 \times 12) + 2 = 26$ . So A will have to collect  $(46 - 12 - 26) = 8$  coins.

This combination is not possible. It can be concluded that C cannot pick up more than 10 coins and hence B has to pick up 22 coins to satisfy the given condition.

78. a Amar does not wear red shirt.  
Akbar does not wear green shirt.  
Anthony does not wear blue shirt.  
Since Akbar and Anthony wear same colour, it can neither be green nor blue.  
Hence, option (a) is false.

79. b If two of them wear the same colour, the following six combinations will exist: since Amar does not wear red, he can either wear blue or green. In either case, the remaining two will have to wear red, Akbar does not wear green, and Anthony does not wear blue. This gives the combinations 1 and 2 below. Similarly, the other combinations can be worked out.

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

Using this we can evaluate the statements. (I) is true as we can see that in all the cases, if Amar wears

blue, Akbar does not wear green. (II) needs not be false always, as in combination 4, we can see that Amar does not wear blue but Akbar wears blue. (III) is also not necessarily false as in combinations 1 and 3, both Amar and Akbar do not wear blue. Statement (IV) is necessarily false since if Amar wears green and Akbar does not wear red, then combination 4 is the only combination possible and hence Anthony should wear green. So only one of the four statements must always be false.

80. d HCF of 60, 84 and 108 is 12. Hence, 12 students should be seated in each room. So for subject A we

would require  $\left\lceil \frac{60}{12} \right\rceil = 5$  rooms, for subject B we

would require  $\left\lceil \frac{84}{12} \right\rceil = 7$  rooms and for subject C we

would require  $\left\lceil \frac{108}{12} \right\rceil = 9$  rooms. Hence, minimum number of rooms required to satisfy our condition  $= (5 + 7 + 9) = 21$  rooms.

81. c Let us find some of the smaller multiples of 125. They are 125, 250, 375, 500, 625, 750, 875, 1000 ...

A five-digit number is divisible by 125, if the last three digits are divisible by 125. So the possibilities are 375 and 875, 5 should come in unit's place, and 7 should come in ten's place. Thousand's place should contain 3 or 8. We can do it in 2! ways. Remaining first two digits, we can arrange in 2! ways. So we can have  $2! \times 2! = 4$  such numbers.

There are: 23875, 32875, 28375, 82375.

82. b To maximise the value of the wealth, we must carry more of the one whose value per kilogram is more.

Value per kilogram of ruby  $= \left\lceil \frac{4}{0.3} \right\rceil = \text{Rs. } 13.33 \text{ crore,}$

and value per rupee of each emerald

$= \left\lceil \frac{5}{0.4} \right\rceil = \text{Rs. } 12.5 \text{ crore.}$

It is obvious that we should carry entire 12 kg of ruby.

This would amount to  $\left\lceil \frac{12}{0.3} \right\rceil = 40$  rubies.

83. d Since the number of coins are in the ratio 2.5 : 3 : 4, the values of the coins will be in the ratio

$(1 \times 2.5) : (0.5 \times 3) : (0.25 \times 4)$   
 $= 2.5 : 1.5 : 1 \text{ or } 5 : 3 : 2$

Since they totally amount to Rs. 210, if the value of each type of coins are assumed to be 5x, 3x and 2x,

the average value per coin will be  $\frac{210}{10x}$ .

So the total value of one-rupee coins will be

$5 \times \left\lceil \frac{210}{10x} \right\rceil = \text{Rs. } 105$

So the total number of one-rupee coins will be 105.

84. a Let the number of chocolates be  $c$ .  
Number of apples has to be more than  $3c$ , let's say  $3c + k$ ,  $k$  is a positive integer.

	Chocolate	Biscuits	Apple
No.	$c$	$2c$	$3c + k$
Cost per piece	1	0.5	2
Total cost	$c$	$c$	$6c + 2k$

Total spend =  $8c + 2k$

for  $c = 4$ ,  $k = 2$

Total spend = 34

Hence (a) is the answer.

The cost of each chocolate is Re 1. So the cost of apple should be Rs. 2 and that of one biscuit should be Re 0.5. Thus, if he eats  $x$  chocolates, he has to eat  $2x$  biscuits. Hence, the total value of chocolates will be Rs.  $x$  and that of biscuits will be  $(0.5)(2x) = \text{Rs. } x$ . Hence, we see that the value of chocolates is to the value of biscuits will always be  $1 : 1$ . As per our assumption he will have to eat more than  $(x + 2x) = 3x$  apples and hence the total value of the apples will be more than  $(2)(3x) = 6x$ . In other words, the ratio of value chocolates to apples or biscuits to apples will be more than  $1 : 6$ . In other words, if the value of chocolates and biscuits is Re 1 each, then the value of apples has to be more than Rs. 6, or the combined value will be more than Rs. 8. This means that the

value of apples will always constitute more than  $\frac{6}{8}$  or

$\frac{3}{4}$  of the entire bill. It can further be observed that the

total value of chocolates and biscuits together will always be an even integer and so will be the value of apples. This means that the combined value of all three of them has to be even and not odd. So Rs. 33 cannot be the answer. Also Rs. 8 cannot be the answer as, if we take the value of chocolates and biscuits to be minimum, i.e. Re 1 each, then the value of apples can be a minimum of Rs. 8. Hence, the total value will always be Rs. 10 or higher. The only option possible is Rs. 34. To verify this let us find two even numbers

(one of them higher than  $\frac{3}{4}$  of 34) which adds 34.

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

#### For questions 85 and 86:

Let CP = 100

Current gain = 20

$\Rightarrow$  SP = 120

CP = Cost of A + Cost of B + other  
= 30% + 50% + 20%

85. a Since cost of German mark (A) increase by 30%  
New cost of A =  $30 + 30\%$  of  $30 = 39$   
Similarly  
New cost of B =  $50 + 22\%$  of  $50 = 61$   
New CP =  $39 + 61 + 20 = 120$   
New SP =  $120 + 10\%$  of  $120 = 132$

$$\text{Maximum profit} = \frac{12}{120} = 10\%$$

86. b New cost of A =  $30 + 20\%$  of  $30 = 36$   
New cost of B =  $50 - 12\%$  of  $50 = 44$   
New CP =  $36 + 44 + 20 = 100$   
Gain = 20%

87. b Ms Maharashtra was wearing white. Since Ms West Bengal was not the runner-up, she was not wearing green and neither was Ms Andhra Pradesh. Hence, it was Ms Uttar Pradesh who was wearing green saree. So red could have either been worn by Ms West Bengal or by Ms Andhra Pradesh. Now participants wearing yellow saree and white saree were at the ends, but Ms West Bengal did not occupy any of these positions. Hence, it can be concluded that Ms Andhra Pradesh sat at one of the ends and wore yellow, while Ms West Bengal wore red.

88. c From the previous answer it can be concluded that Ms Maharashtra and Ms Andhra Pradesh occupied the seats at the end. So Ms West Bengal and Ms Uttar Pradesh, should occupy middle two seats. So the answers could be either (b) or (c). It can further be concluded that since Ms Andhra Pradesh wore yellow, she was the winner and since Ms Uttar Pradesh wore green, she was the runner-up. So these two cannot sit together. Option (b) would contradict this. Hence, (c) is the only option left.

89. a From answer to question 87, it can be seen that Ms Andhra Pradesh had worn the yellow saree.

90. c From answer to question 87, it can be seen that Ms Uttar Pradesh was the runner-up.

91. c Since the distance travelled was the same both ways and also it was covered in the same time, the average speed will be the same uphill and downhill. Hence, statement (a) is false. Statement (b) need not be true. It would be true and had the speeds (and not average speed) been the same both ways. But it is clearly indicated that he varied his pace throughout. Now it has to be noted that the journey uphill and the journey downhill started at the same time, i.e. 6 a.m. and also ended at the same time 6 p.m. (though on different days). So if we were to assume a hypothetical case in which one person starts downhill at 6 a.m. and other one starts uphill at 6 a.m., along the same path, then there would be a point on the path where they would meet (i.e. they would reach at the same time), irrespective of their speeds. Our case is similar to that, except for the fact that here, we have only one person moving both ways. So there has to be a point on the path, where he reached at the same time on both days.

92. b Since 2 has a cyclicity of 4,  
i.e.  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 16$ ,  $2^5 = 32$ ,  $2^6 = 64$  ..., the last digits (2, 4, 8, 6) are in four cycles.

$\therefore$  On dividing  $\frac{51}{4}$ , we get the remainder as 3.

$\therefore$  The last digit has to be  $2^3 = 8$

**Shortcut:**

Since cyclicity of the power of 2 is 4, so  $2^{51}$  can be written in  $2^{4(12)+3}$  or unit digit will be  $2^3 = 8$ .

93. c Let the capacity of each cup be 100 ml. So 300 ml of alcohol is taken out from the first container and poured into the second one. So the first vessel will have 200 ml of alcohol and the second one will have 500 ml of water and 300 ml of alcohol. So the ratio of water to alcohol in the second vessel is 5 : 3.

Hence, proportion of alcohol in B = 3 : 8

Now if 300 ml of mixture is removed from the second

container, it will have  $\left(300 \times \frac{5}{8}\right) = 187.5$  ml of water

and  $\left(300 \times \frac{3}{8}\right) = 112.5$  ml of alcohol. Now if this mixture

is poured in the second vessel, that vessel would have  $(200 + 112.5) = 312.5$  ml of alcohol and 187.5 ml of water. Hence, ratio of alcohol to water in this container =  $312.5 : 187.5 = 5 : 3$

Hence, proportion of water = A = 3 : 8

Hence, we find that A = B

**Note:** This result will be independent of the capacity of the cup.

94. c The number formed by the last 3 digits of the main number is 354. The remainder is 2 if we divide 354 by 8. So the remainder of the main number is also 2 if we divide it by 8.

95. a It can be seen that each of the 26 players played 25 matches. Since none of the matches ended in a draw, the scores for each of the players has to be even (since a win gives 2 points). So the highest score possible for a player would be 50 and the lowest would be 0. Since all 26 of them had different scores varying between 0 and 50, the scores should indeed be all the even numbers between 0 and 50. And since the ranks obtained by players are in alphabetical order, it can be concluded that A scored 50, B scored 48, C scored 46 and so on and Z scored 0. Now the only way A can score 50 is, if he wins all his matches, i.e. he defeats all other players. Now B has scored 48. So he has lost only one of his matches, which incidentally is against A. He must have defeated all other players. Similarly, C has scored 46 matches. So he must have lost two matches, (i.e. to A and B) and defeated all other players. So we conclude that a player whose name appears alphabetically higher up in the order has defeated all the players whose name appear alphabetically lower down.

Hence, M should win over N.

96. b The Nehru-Gandhi ideologies led to the formation of the idea of India that inspired the writer's generation. This answer is given in the tenth paragraph. Don't be misled by (c); the writer mentions 'formative ideas', not 'formative years'. (a) and (d) are again imprecise answers.
97. c The writer agrees that the 50th anniversary is a great moment, but does not share Naipaul's conclusions about it. Refer to the tenth paragraph. Hence, (a), (b) and (d) are not correct.

98. b The writer believes that India will come back and does not feel that India's loss is forever. Refer to the last paragraph. (a), (c) and (d) are inaccurate observations.

99. c The writer feels that the politicians incite the general public to demonstrate against writers and also that it does not reflect the people's will. Refer to the penultimate paragraph.

100. a Whatever he says about India is based on his experience, as is shown by the last line of the passage. There is insufficient evidence in the passage to support (b), (c) and (d) as the answer.

101. c The writer's friend says that we can move beyond things only after we know we are capable of those things. The answer is given vividly in the sixth paragraph. (a) and (b) are not mentioned in the passage. (d) is not an exact representation of the writer's views.

102. d The passage states that the civilizing influence prevents us from giving in to violent, terrible urges. (d) is again stated explicitly in the sixth paragraph. (a), (b) and (c) may be partially true.

103. b The writer fears the long-term damage to democracy that the corruption can bring about, as it is a subversion of democracy, and says that it will harm India too as corruption is everywhere in India. The answer is given in the seventh paragraph. Hence, (a) and (c) are imperfect answers.

104. b The writer says that no one is an objective observer. The answer is given in the eighth paragraph. Hence, (a), (c) and (d) are imperfect answers.

105. a The writer says that there never had been a political entity called India prior to 1947. (a) is the best representation of the writer's views. (b), (c) and (d) do not give the exact picture.

106. d The writer feels that the difference lies in the fact that Pakistan was under-imagined. The answer is given in the second paragraph. (a), (b) and (c) are not substantiated by the passage.

107. d The writer feels that the strength of the nationalist idea is shown by its ability to survive great stress that it is placed under and in the sense of belonging that the people feel for it. Refer to the third paragraph. (b) has not been stated in the passage.

108. a The writer says that if Western civilisation is in a state of a permanent crisis, something is wrong with its education. The opening statement confirms (a). There is insufficient evidence to support (b), (c) and (d) as the answer.

109. c Lord Snow seems to see the intellectual life of the Western society as split between scientists and literary intellectuals. The answer is given in the second paragraph. (a), (b) and (d) are not stated in the passage.

110. b The writer does not agree that education can help in tackling all new problems and complexities. The answer is given in the penultimate paragraph. The views expressed in (a) and (c) find no mention in the passage.
111. b He defines prejudice as fixed ideas with which people think, without being aware of doing so. Refer to the ninth paragraph. (a), (c) and (d) are imprecise definitions of prejudice.
112. a Lord Snow says that the politicians, administrators and the entire community needs to be educated to understand the works of scientists and engineers. Refer to the second paragraph. (b) and (c) are partially correct answers.
113. c The writer does not agree with the scientists' stand on the neutrality of their labours. (c) can be amply inferred from the third paragraph. (a), (b) and (d) are imprecise answers.
114. a The author feels that the main purpose of education is to transmit ideas of value. (a) is clearly given in the fifth paragraph. (b) and (d) are not supported by the passage.
115. d (a) is not stated anywhere in the passage. (b) and (c) also find no explicit mention in the passage.
116. b The author says that values are more than mere dogmatic assertions. Refer to paragraph 6, line 3. (a), (c) and (d) are stated in the same paragraph.
117. c According to the passage, thinking is application of pre-existing ideas to a situation. Refer to paragraph 10, line 2. In light of (c), it will be a folly to mark (a), (b) or (d).
118. b The writer says that a large part of the American population indulges in word trade. Refer to the second paragraph. (a), (c) and (d) cannot be even remotely inferred from the passage.
119. b The hallmark of gag writers is that they have fun with words. Refer to paragraph 4, line 1. (a), (c) and (d) are not stated in the passage.
120. a The second level of language is important if one wants to be comfortable listening and reading. (a) is stated in the third paragraph. (b) and (c) are not stated in the passage.
121. a The writer says that the gag writers thrive on the double layered aspect of the language. The middle portion of the passage amply demonstrates (a). (b), (c) and (d) may be isolated aspects of the trade.
122. d In gag writing, both, long words as well as combining of parts of words to produce a hilarious effect are important. (a) cannot be inferred from the passage. (b) and (c) can be inferred from the fourth paragraph as well as various examples in the passage.
123. c Gag writers simulate ignorance. The answer is given in the fifth paragraph. (b) is an isolated observation and (a) is not true.
124. b According to the passage, radio artistes have taken advantage of the techniques of gag writers. (a) and (c) are not mentioned in the passage.
125. c The theory has been suggested to be an attempt at appeasing the religious psyche of that time by stating that God indirectly created life. (c) is stated in the second paragraph. (a) and (b) are misleading answers.
126. b All four have been referred to as working or writing at the same time. This is evident in the second paragraph. (a) is only partially right. (c) is not true.
127. b Pasteur did not work on arbitrary or spontaneous discoveries. He worked on logical premises. This is evident in the fourth paragraph. (a) is certainly not true, considerable differences of opinion existed even then. (c) and (d) are nor true either.
128. a Pasteur based his work on the belief that either air contained a factor necessary for the spontaneous generation of life or viable germs were borne in by the air and seeded in the sterile nutrient broth. (b) is only an observation, not the hypothesis. (a) is stated in the fourth paragraph.
129. b The well water of Montanvert led to the discovery of the porcelain filters. (a) is nowhere stated in the paragraph. (b) is clear from the fourth paragraph.
130. c Pasteur declared that his experiments had dealt a mortal blow to the spontaneous generation doctrine. The conclusion of the fifth paragraph makes (c) a clear choice. (a), (b) and (d) are rather extreme.
131. b The writer feels that the works of the proponents of spontaneous generation was ruined by experimental errors. (b) is mentioned in the seventh paragraph. (a) is clearly not true.
132. a This cross fire ruled out the possibility of partial sterilisation. (b) is clear from the penultimate paragraph. (b) is not directly stated in the passage and (c) sounds vague.
133. b Pasteur's experiments supported the Biblical version of creation of life, but denied many other philosophical systems. (b) is explicitly given in the fifth paragraph. Given (b), the other choices (a), (c) and (d) seem extreme.
134. d The author says that the cell theory represents biology's most significant and fruitful advance. Refer last paragraph, line 1. (a) is thus wrong and (b) and (c) are not supported by the passage.
135. c Rs. 85,000 crore has been entrusted to the care of mutual funds. (c) is stated in the second paragraph.
136. c The individual investors led the move for the end of mutual funds. Refer to the first paragraph. (a), (b) and (d) are wrong choices.

137. b The mutual funds were flawed in their imprudent and irresponsible handling. Refer to the end of the first paragraph. (a) and (c) are not valid reasons.
138. a The indisciplined attitude of the mutual funds in their approach to investment led to their fall. Refer to the second paragraph. The claims in (b), (c) and (d) are not completely substantiated by the passage.
139. a The passage states that at least 18 of the big schemes due for redemption over the next 3 years will be unable to service their investors. Refer to the fourth paragraph. (b) plays with words 'only very few' and (c) is not correct.
140. b The passage shows the facts that lead to the inference that many of the mutual funds offices indulged in malpractices. Refer to the fifth and sixth paragraphs. (a), (c) and (d) are not stated in the passage.
141. c Mutual fund industry ranks fourth on safety and fifth in terms of returns on deposits. Refer to the seventh paragraph. (a), (b) and (d) are thus wrong.
142. a More cellphones were subscribed as calls made on them could not be lodged in the company records. Refer to the fifth and sixth paragraphs. (b), (c) and (d) are not stated in the passage.
143. b Mutual funds have caused a loss of Rs. 11,000 crore of the investors' money. Refer to the tenth paragraph. (a), (c) and (d) are wrong.
144. a Investors have the option of either exiting at a loss or holding on in vain hope. Refer to the eleventh paragraph. (b), (c) and (d) are not very perfect choices.
145. a The stock market boom in the late eighties and early nineties led to the initial euphoria in the mutual funds industry. Refer to the passage from the twelfth paragraph onwards. (b) is clearly not true.
146. a If we were to take the highest quantity supplied from various states in different months, we will get the following table:

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

Hence, we find that the highest percentage of apples supplied by any state is 99% (J & K in February).

147. c If we were to add the quantity of apples supplied by various states, it can be found that HP supplied 2,31,028 tonnes, UP supplied 258 tonnes, and J & K supplied 2,62,735 tonnes. Thus, it was J & K that supplied the maximum number of apples.
148. c If J & K supplied the highest quantity of apples, it is obvious that it would supply the highest percentage of total apples supplied as well.
149. c It is given that in case demand is more than the supply, additional demand is met by taking the stock from the cold storage. So it can be figured out that in all those months when supply was greater than the demand, no stock would have been used from the cold storage. Looking at the table, we can find that during the period May to September, no stock was taken from the cold storage, and hence supply should have been greater than the demand.
150. b Total quantity of apples supplied to Delhi during the year was  $(231028 + 258 + 262735)$   
 $= 494021$  tonnes  $= 494021000$  kg  
 If one tree yields 40 kg of apple, then the number of trees required to yield 49,40,21,000 kg  

$$= \frac{494021000}{40} = 1,23,50,525 \text{ trees}$$

$$= 12.5 \text{ million trees (approximately)}$$
151. d If there are 250 trees per hectare, then area required to have 12350525 =  $\frac{12350525}{250}$   
 $= 49402 = 49450$  (approximately)
152. b It can be seen from the graph that the southern region showed the highest growth in number of households in all the income categories for the period.
153. d We only know the total number of households for all four regions combined. Nowhere have they given the region-wise break-up of this value. In the light of this, the given question cannot be answered.
154. b It is very clear from the graph that the percentage increase in total number of households for the northern region for upper middle income category is 200%.
155. a As seen from the table, the average income of high-income group in 1987-88 is Rs. 75,000.
156. b The total income of high income category in 1987-88 is Rs.  $(5000 \times 75000)$ .  
 The total income of upper-middle class category in 1987-88 is Rs.  $(10000 \times 50000)$ .  
 Hence, the current ratio of their total incomes  $= 3 : 4 = 0.75$   
 Since the number of households in each category were equally distributed in all regions, we can have the following table for high income category.

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

The average household income for high-income category increased by 90%. Hence, average household income for this category in 1994-95 =  $(75000 \times 1.9) = \text{Rs. } 1,42,500$

Hence, the total income for high-income category in 1994-95 =  $(17375 \times 142500) = \text{Rs. } 2,476 \text{ million}$

The same table can be drawn for upper-middle class category as follows:

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

The average household income for upper-middle class category increased by 60%. Hence, the average household income for this category in 1994-95 =  $(50000 \times 1.6) = \text{Rs. } 80,000$

Hence, the total income for high-income category in 1994-95 =  $(30125 \times 80000) = \text{Rs. } 2,410 \text{ million}$

Hence, the ratio of total income for these two

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

Hence, percentage increase in ratio

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

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

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

Hence, the average income for northern region

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

158. b It is said that Gopal and Ram invested equal amounts initially. Let the amount paid by both of them to Krishna be  $2x$  and  $3x$  respectively. Gopal further invested Rs. 2 lakh. Hence, we can say  $(2x + 2) = 3x$  or  $x = 2$  lakh. Hence, the initial amounts paid by Gopal and Ram to Krishna is 4 lakh and 6 lakh. So Gopal and Ram together put in  $(6 + 6) = 12$  lakh initially (note that this includes Rs. 2 lakh put in by Gopal later). The total revenue generated is 25% of 12 lakh = 3 lakh.

The revenue from coconut and lemon trees are in the ratio 3 : 2. Hence, 3 lakh when divided in the ratio 3 : 2 gives Rs. 1,80,000 from coconut and Rs. 1,20,000 from lemons. And since each coconut costs Rs. 5, the total output of coconut would be

$$\left( \frac{180000}{5} \right) = 36000$$

159. a Lemon and coconut trees were planted on equal areas of land, viz. 5 acres each. The value of lemon output per acre of land =  $\left( \frac{120000}{5} \right) = 0.24$  lakh per

$$\left( \frac{120000}{5} \right)$$

acre.

160. a The total revenue of Rs. 3,00,000 was divided equally by Gopal and Ram. Hence, the amount received by

$$\text{Gopal in 1997} = \frac{1}{2} \times 300000 = \text{Rs. } 1.5 \text{ lakh}$$

161. b The ratio of the number of trees of coconut and lemon was 5 : 1. Since the number of lemon trees is 100, the number of coconut trees is 500. So they totally obtained a revenue of Rs. 1,80,000 from 500 coconut trees.

$$\text{Hence, the value per tree} = \left( \frac{180000}{500} \right) = \text{Rs. } 360.$$



162. d We have not been given the cost of one lemon. In the light of this fact, we cannot find the number of lemons produced and hence the required ratio cannot be determined.

163.b\* Profit = Revenue – Variable Cost – Fixed Cost = Revenue – (Variable Cost + Fixed Cost). If we consider (Fixed Cost + Variable cost) as total cost, then as long as the revenue is higher than the total cost, there is a profit. In case the revenue is less than the total cost there would be a loss. If we are to compile the data given in the question it would be as follows:

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

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

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

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

165. b Let us verify for the given options.

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

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

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

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

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

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

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

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

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

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

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

169. b

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

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

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

(Note: 1 tonne =  $\frac{4}{3}$  = 1.33 cubic m)

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

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

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

(Note: One tonne of plywood =  $\frac{10}{7}$  cubic m = 1.43

cubic m and one tonne of saw timber =  $\frac{5}{4}$  cubic m = 1.25 cubic m.

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

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

172. d Note that one tonne =  $\frac{4}{3}$  m<sup>3</sup> = 1.33 m<sup>3</sup>, for both plywood

and saw timber.

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

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

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

Now the sales volume of plywood, saw timber and logs are in the ratio 4 : 3 : 3. So the average realisation per cubic metre of sales is indeed the weighted average.

This is given as

$$\frac{[(4 \times 5.26) + (3 \times 14.28) + (3 \times 20)]}{(4 + 3 + 3)}$$

= Rs. 12.4

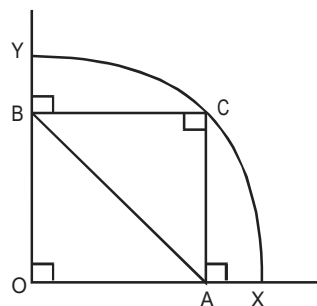
= Rs. 13 (Approximately)

173. c The only change would be the accounting for price increase. This is given as

$$\frac{(4 \times 5.26 \times 1.05) + (3 \times 14.28 \times 1.01) + (3 \times 20 \times 1.10)}{(4 + 3 + 3)}$$

= Rs. 13.15

174. d



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

175. c LCM of 3, 5, 7, 9 = 315. Hence, all the multiples of 315 will be divisible by 3, 5, 7 and 9. These may be even or odd. Hence, the statement I in itself is not sufficient to answer the question.

The statement II however suggests that the number is 315 itself (as it is the only multiple that lies between 0 and 400). Hence, n is indeed odd. We require both the statements together to answer this.

176. a It is clear that statement II alone is enough to answer the question. This statement gives the value of the function  $a \otimes b$ , so we can find the value of  $2 \otimes 3$ .

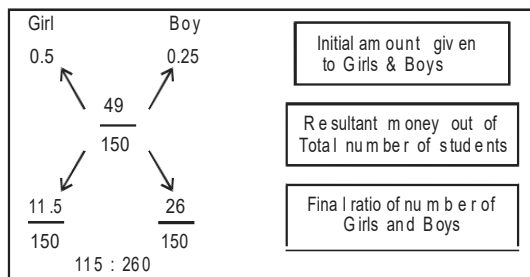
$$\text{So } 2 \otimes 3 = \frac{(2+3)}{2} = 2.5$$

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

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

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

180. a



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

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

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

183. a Statement II is not required at all as no way can we express X in terms of 'a'. Statement I implies that  $X + Y = 2a$  and  $XY = a^2$ . Solving these two, we can say that  $X = a$ . Hence, statement I alone is sufficient.

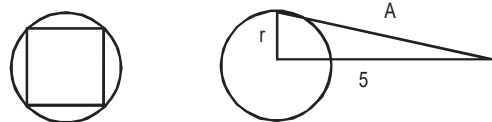
184. c The information given in the question implies that  $r_1 > r_2$ .

Statement I suggests that  $(r_1 - r_2) = \frac{k}{(2\pi)}$ . Hence, this statement alone does not give the value of  $r_1$ .

Statement II implies that  $(r_1^2 - r_2^2) = \frac{m}{\pi}$ .

Hence, again this statement alone is not sufficient to answer the question. But in the second equation, we have  $(r_1^2 - r_2^2)$  as  $(r_1 + r_2)(r_1 - r_2)$  and then substitute the value of  $(r_1 - r_2)$  from the first equation, we will get the value of  $(r_1 + r_2)$ . Now we have two equations in  $r_1$  and  $r_2$ , which can be solved simultaneously to get the value of  $r_1$ . Hence, both the statements when together taken can answer the question.

185. b



Statement I itself is sufficient to answer the question. As, if we know the radius of the circle we can find out the length of the diagonal of the square (which will be the diameter) and if we know the diagonal of a square we can find the length of its sides and hence the area. Again the second statement in itself can answer the question. As, from the data that is given we can find the radius of the circle and hence the area of the square (as given before). This can be explained from the diagram given. Since the tangent makes a right angle with the radius at the circumference, the triangle is a right-angled triangle. Hence,  $A^2 = 5^2 + r^2$ . Hence, knowing the value of A, we can find out r. Hence, both statements in itself can answer the question. Therefore, the answer is (b).

