

## **FMS – 2004 (Memory Based)**

**Directions (Q. 1–2):** Attempt the questions after reading the following paragraph:

There is no trick to motivating others. It requires a clear, unbiased understanding of the situation at hand, deep insight into the vagaries of human nature at both the individual and the group levels, the establishment of appropriate and reasonable expectations and goals, and the construction of a balanced set of tangible and intangible incentives. It requires, in other words, hard thinking and hard work. And when an organisation is under strain or is in crisis, the challenges—and the stakes—become that much higher. The questions that managers have to grapple with as they try to inspire their people are many and complex: How do you deal with individuals or groups at different motivation levels that vary in different ways? How can you influence the behaviour of a single individual, let alone an organisation of hundreds or thousands? How can you help people feel enthusiastic and committed, especially in difficult times?

1. According to the passage
  - (a) motivating others is not difficult.
  - (b) motivating others is impossible.
  - (c) motivating others is not impossible, but difficult.
  - (d) motivating others is possible and not difficult.
  
2. Which of the following is *not* a true statement?
  - (a) In order to motivate others, managers have to deal with difficult questions.
  - (b) Managers can easily influence the behaviour of hundreds and thousands of people.
  - (c) Managers should know how to deal with people at different motivational levels.
  - (d) It is not easy to help people feel enthusiastic in difficult times.

**Directions (Q. 3–4):** Attempt these questions after reading the following paragraph:

I have found that this constant and consistent communication, while at times sounding like a broken record, is the singlemost reassuring thing I can do for all stakeholders: employees, investors, customers, media, and senior management. When employees hear what's going on from me first, they feel part of the team and, most of all, respected, and that motivates them to come to work every day.

3. According to the paragraph above
  - (a) employees do not expect as much information as the media.
  - (b) investors do not expect as much information as the media.
  - (c) media and employees are not stakeholders.
  - (d) employees, investors and customers are all stakeholders.
  
4. Which of the following is the most appropriate title to describe the paragraph?
  - (a) Be a Broken Record
  - (b) Team Leader
  - (c) Stakeholders
  - (d) Everyday work

**Directions (Q. 5–6):** Attempt these questions after reading the following paragraph. H

onest confrontation is tough. I remember my first meeting with 700 of our senior leaders, when we underwent this very realistic self-appraisal about our customers, our competitive situation and our performance. You cannot do your own interpretation of what's wrong and beat people up: to motivate them to change, you have to show them a mirror. So on the white board, I wrote down comments these managers had themselves made two years earlier about the company, including the comment that HP was too slow and indecisive. I also wrote down things customers had said about us, both good and bad. When confronted with the inescapable facts of what they had said about themselves and what customers had told us, managers accepted the truth.

5. According to the paragraph above
  - (a) it is easy to assess others and punish them.
  - (b) it is not easy to assess others and punish them.
  - (c) it is correct to assess others and punish them.
  - (d) it is not correct to assess others and punish them.
  
6. Choose the most appropriate title to describe the paragraph:
  - (a) Confrontation
  - (b) Realistic Self-appraisal
  - (c) Start with the Truth
  - (d) None of these

**Directions (Q. 7–11):** Each question consists of a sentence; part of each sentence is underlined. Following each sentence are four different ways of wording the underlined part numbered (A) through (D). Select the best alternative.

7. The conductor seemed entirely arbitrary the choice of tempo, so that each successive movement of the piece seemed to have no connection to what had come before.
  - (a) The conductor's choice of tempo seemed entirely arbitrary
  - (b) It seemed the conductor chose the tempo entirely arbitrarily
  - (c) The conductor was entirely arbitrary in his choice of tempo
  - (d) The tempo was chosen entirely by the arbitrary conductor
  
8. Although the conditions in which she lived suggest that she is miserly, her contributions to charities show that she is generous.
  - (a) her charities showed generous contributions.
  - (b) her generousities made large contributions.
  - (c) her contributions to charities showed that she is not generous.
  - (d) her contributions to charities show that she is generous.
  
9. The governor's intolerance of dissent among his aides was intensified by loyalty from all.
  - (a) by him insisting upon total loyalty from all.
  - (b) by his insistence upon total loyalty from all.
  - (c) by all insisting upon his loyalty.
  - (d) by his insisting upon their loyalty.

10. Although he was often incomplete in his work, he was promoted simply because he was with the company longer than any one else.  
 (a) Although work was often incomplete,  
 (b) His work was often incomplete although,  
 (c) Although his work was often incomplete,  
 (d) Although he often completed his work,
11. Though the concert had been enjoyable, it was protracted overly  
 (a) it was overly protracted. (b) it overly protracted.  
 (c) it protracted overly. (d) it got protracted overly.

**Directions (Q. 12–16):** Each question consists of sentences which are divided into four parts, numbered (A) through (D). Only one part in each sentence is not acceptable in standard written English. Identify that part in each of the sentences which contains the error.

12. (a) Her acceptance of speech (b) was well received,  
 (c) eliciting thunderous applause (d) at several points.
13. (a) An oppressive solemnity, (b) and not the festive mood  
 (c) one might have expected (d) characterised the mood by the gathering.
14. (a) All aspiring artists must  
 (b) struggle by the conflict  
 (c) between faith in their own talent  
 (d) and knowledge that very few are great enough to succeed.
15. (a) Despite some bad news, (b) Michel's stature was not diminished  
 (c) and her fans or critics (d) were unanimous in appreciating her work.
16. (a) Jazz is an American art form, (b) which was now flourishing in Europe  
 (c) through the efforts of expatriates. (d) in France, Scandinavia and Germany.

**Directions (Q. 17–22):** Each question consists of a sentence which has one or two blanks, each blank indicating that something has been omitted. Below each sentence are four sets of words, labelled (A) through (D). Choose the word or set of words that when inserted in the sentence, best fits the meaning of the sentence as a whole.

17. Her desire for ..... soon became apparent when she adamantly refused to answer questions about her identity or mission.  
 (a) assistance (b) recognition (c) success (d) anonymity
18. After a period of protracted disuse, a muscle will atrophy, ..... both its strength and the ability to perform its former function.  
 (a) regaining (b) sustaining (c) losing (d) insuring
19. The report issued by the committee was completely ..... extolling in great detail the plan's strengths but failing to mention its .....  
 (a) one-sided ... shortcomings (b) unbiased ... weakness  
 (c) comprehensive ... approval (d) printed ... good points

20. There are many dialects of English with radically different pronunciations of the same word, but the spelling of these words is .....  
 (a) inconsistent (b) abbreviated (c) shortened (d) uniform
21. The plot of the movie was extremely complicated and included many minor characters ..... to the central events.  
 (a) momentous (b) tangential (c) contemporary (d) impervious
22. In order to ..... the deadline for submitting the research paper, the student tried to ..... additional time from the professor.  
 (a) extend ... wheedle (b) accelerate ... obtain (c) postpone ... forego (d) conceal ... procure

**Directions (Q. 23–27):** Each question consists of sentences, which have one or two blanks, each blank indicating that something has been omitted. Below each sentence are four numbered words or sets of words, labelled (A) through (D). Choose the word or set of words that, when inserted in the sentence, best fits the meaning of the sentence as a whole.

23. New concerns about growing religious tension in northern India were ..... this week after at least fifty people were killed and hundreds injured or arrested in rioting between Hindus and Muslims.  
 (a) invalidated (b) restrained (c) fuelled (d) lessened
24. To the dismay of the student body, the school prefect was ..... berated by the principal at a school assembly.  
 (a) ignominiously (b) inconspicuously (c) fortuitously (d) magnanimously
25. A ..... statement is an ..... comparison; it does not compare things explicitly, but suggests, a likeness between them.  
 (a) sarcastic ... unfair (b) blatant ... overt  
 (c) metaphorical ... implied (d) sanguine ... inherent
26. If you are seeking ..... that will resolve all our ailments, you are undertaking an impossible task.  
 (a) a precedent (b) a panacea (c) a contrivance (d) a direction
27. Faced with these massive changes, the government keeps its own counsel; although generally benevolent, it has always been ..... regime.  
 (a) an unpredicable (b) a reticent (c) a sanguine (d) an indifferent

**Directions (Q. 28–32):** In each of the following questions, there is a related pair of words or phrases in capital letters. Four pairs of words or phrases follow each capitalised pair. Select the pair that best expresses a relationship similar to that expressed in the original pair.

28. LUGUBRIOUS : SORROWFUL  
 (a) Euphoric : Cheerful (b) Credible : Incredible  
 (c) Frenzied : Excited (d) Lustrous : Luscious
29. PRIMEVAL : MEDIEVAL  
 (a) Snow : Ice (b) Evolution : Revelation  
 (c) Dinosaur : Dragon (d) Thorn : Rose

30. REMORSE : ABSOLUTION  
 (a) Disdain : Corruption (b) Banter : Passion  
 (c) Serious : Humour (d) Evasion : Suspicion
31. ZEPHYR : GALE  
 (a) Death : Sickness (b) Trickle : Torrent  
 (c) Imprint : Emboss (d) Fossil : Aged
32. IMPLICATE : INCRIMINATION  
 (a) Perjury : Fraud (b) Exonerate : Acquittal  
 (c) Sleaze : Malpractice (d) Embezzlement : Charged

**Directions (Q. 33–38):** Each question consists of a number of sentences which, when properly sequenced, form a coherent paragraph. Choose the most logical order of sentences from among the four choices numbered (a) through (d).

33. I. The men jumped up and rushed to the river.  
 II. They poured it on the glowing bed of charcoal.  
 III. The water gurgled out and the dying embers hissed and sent up little curls of vapour.  
 IV. They quickly came back with pitchers laden with water.  
 (a) IV, I, II, III (b) II, I, IV, III (c) III, II, I, IV (d) I, IV, III, II
34. I. A failure to put the right person at the right place could prove expensive for the organisation.  
 II. All managers are decision makers.  
 III. The rightness of a decision largely depends upon whether or not the manager has utilised the right persons in right ways.  
 IV. The effectiveness of managers is largely reflected in their track record in taking the right decisions  
 (a) IV, III, II, I (b) II, I, III, IV (c) I, II, III, IV (d) II, IV, III, I
35. I. I also believe in the possibility as well as the desirability of applying science to problems arising in social science.  
 II. Believing as I do in social science, I can only look with apprehension upon social pseudo-science.  
 III. I am a rationalist, which means that I believe in discussion and argument.  
 IV. I may say why I have chosen this particular subject.  
 (a) III, IV, I, II (b) IV, III, I, II (c) II, III, I, IV (d) IV, II, I, III
36. I. The investigation was confined to manufacturing firms in the area.  
 II. Those concerned with mining and quarrying, construction, transport, and trade and commerce, were excluded.  
 III. The number of workers employed by the firms in the area ranged from a dozen to approximately 35,000.  
 IV. A long search produced a comprehensive list of 203 manufacturing firms.  
 (a) I, II, IV, III (b) II, III, IV, I (c) IV, III, II, I (d) III, II, IV, I

37. I. Moreover, private sector competitors claim to be moving from aluminium manufacture to specialised uses of the metal.  
 II. The new concern could probably supply the metal to established companies for use as input.  
 III. As we all know, there is still shortage of the metal.  
 IV. All in all, though, the new plant will not threaten existing manufacturers in a big way.  
 (a) I, IV, III, II (b) II, III, IV, I (c) IV, II, III, I (d) III, IV, II, I
38. I. The causes of success or failure are deep and complex, chance plays a part.  
 II. Motivation and opportunity can be supplied in good part by incentive compensation and decentralisation respectively.  
 III. It is not easy to say why one management is successful and another is not.  
 IV. Experience has convinced me, however, that for those who are responsible for a business, motivation and opportunity are very important factors.  
 (a) III, IV, I II (b) IV, III, I II (c) III, I, IV, II (d) I, III, IV, II
39. Imagine that your watch was correct at noon, but then it began to lose 30 minutes each hour. It now shows 4 p.m., but it stopped 5 hours ago. What is the correct time now?  
 (a) 9.30 pm (b) 11 pm (c) 1 am (d) 1.30 am
40. Supply the right letters for the question mark in the following series:  
*ajs, gpy, ?, sbk, yhq*  
 (a) *qzi* (b) *mve* (c) *dmv* (d) *oua*
41. A child is solving a jigsaw puzzle with 306 pieces. Each day that he fits pieces together, there are fewer pieces left to sort. So, he is able to fit an extra piece as each day goes by. On the first day he fits 30 pieces. How many days does it take him to complete the puzzle?  
 (a) 10 days (b) 9 days (c) 8 days (d) None of these
42. In three coloured boxes—red, green and blue—108 balls are placed. There are twice as many in the green and red boxes combined as there are in the blue box and twice as many in the blue box as they are in the red box. How many balls are there in the green box?  
 (a) 18 (b) 36 (c) 45 (d) None of these
43. Find the next term in the alphanumerical series:  
 Z1A; X2D; V6G; T21K; R88N; P445Q; ?  
 (a) N2676T (b) T2676N (c) N2676S (d) T2670N
44. Five ladies—Lata, Asha, Usha, Geeta, and Kavita, and five men—Abhijeet, Kishore, Pankaj, Shankar and Udit, sat on the two long sides of a rectangular table. Ladies sat alternating with and opposite to the men. Shankar sat in a centre position. Geeta sat opposite Abhijeet. Asha sat next to Shankar and three places from Abhijeet. Kavita sat four places to the left of Geeta. Usha sat two places from Asha. Pankaj sat opposite Asha. Kishore sat three places from Kavita.  
 Who sat opposite to Lata?  
 (a) Abhijeet (b) Kishore (c) Pankaj (d) Shankar
45. Given the information in the previous question, who sat opposite Udit?  
 (a) Asha (b) Geeta (c) Kavita (d) Usha

46. In the series of letters following some definite order, determine the next two letters in the correct order?  
A J K T U B I L S V C H M R W D G N Q X E F O ? ?  
(a) YZ (b) PY (c) ZA (d) PZ
47. A player holds 13 cards of 4 suits of which 7 are blacks and 6 are red. There are twice as many diamonds as spades and twice as many hearts as diamonds. How many clubs does he hold?  
(a) 4 (b) 5 (c) 6 (d) 7
48. A florist was asked to make a bouquet worth exactly Rs 1,000 with 100 sticks of roses of three colours— pink, yellow and red. While pink roses cost Rs 0.50 a stick, red roses cost Rs 10.00 per stick and yellow roses cost Rs 50.00 per stick. How many red roses did the florist use in the bouquet?  
(a) 1 (b) 5  
(c) 80 (d) Several combinations possible.

**Directions (Q. 49–54):** Study the table of ABC Company's market share data (in per cent) for 12 years for four products (A, B, C & D) to answer the subsequent questions.

Year/Product	A	B	C	D	All segments (A + B + C + D)
X	64.8	26.9	6.4	83.6	38.9
X-1	64.5	27.5	7.1	82.1	40.5
X-2	69.1	31.1	9.4	84.4	44.5
X-3	70.4	29.5	11.1	87.1	46
X-4	71.7	30.5	14.1	94.1	48.6
X-5	74.5	29.8	14.9	96.3	49.3
X-6	75.9	29	14.7	91.3	49
X-7	76.3	26.9	8.5	87.2	47.9
X-8	71.9	26.2	0.5	88.7	45.3
X-9	73	21.1	0	88.9	43.8
X-10	73	21	0	89	39.9
X-11	73	20.5	0	87	38.9

49. Which of the following observations could be wrong?  
(a) For product A, the company has the largest market share.  
(b) For product B, the most impressive gain was in the year X-8, while the sharpest drop was in X-1.  
(c) The company started manufacturing product C in the year X-7.  
(d) Over the last 12 years, the company has maintained a monopolistic grip in the market for product D.

50. Which of the following observations could be *wrong*?
- The company cannot be the market leader in product B.
  - The worst year for product A was the year X-1.
  - If for each per cent of market share, the company made 2 times more profit in product C than product B and 5 times more profit than product A, then the profits of respective products A, B and C were more or less comparable in the year X-5.
  - Product B is the most important segment influencing the 'all-segment' market share.
51. Which of the following observations could be *right* about a product A?
- The market did not grow at all during the years X-11 to X-9.
  - The company introduced a production-based incentive plan in the year X-6, reflected in the largest ever market share.
  - In recent times, the next dominant player has about 30–35% market share.
  - Over the 12 years, the market share has come down by more than 10%.
52. Which of the following could be *right*?
- If market share for X year for product A amounts to 7.8 lakh units of sales and for product B is 3.4 lakh units, then the size of the total market in terms of units for product B is smaller than product A.
  - If market share of product C in the year X-1 amounts to 52,000 units sold, then the total sales of the product is less than 7 lakh units.
  - If the market share of product D in the year X-4 was 2 lakh and the size of the market shrunk by about 10% the next year, the company sold more units in the next year.
  - In recent two years, across all segments, the company is struggling to maintain its market share of about 47% that it had enjoyed, on an average, in the previous 8 years.
53. If the company is an Indian company, the market share data given in the table is correct, the figures in units given in previous questions are correct and the years refer mostly to the 1990s, then the company is likely to be
- Amul
  - Bajaj Auto
  - Nirma
  - Maruti Udyog
54. If the company is an MNC pharmaceutical company having operations in India, the market share data given in the table is correct, the figures in units given in previous questions are correct and the year X refer to the year 1990, then the company is likely to be
- Aventis
  - Glaxo Smith Kline
  - Ranbaxy
  - Nicholas Piramal
55. If a man and a half can build a wall and a half in a day and a half, how many walls do six men build in six days?
- 3
  - 6
  - 12
  - None of these
56. An octagonal table is marked A to H consecutively and clockwise. A black ball is in corner A, while the white ball is in corner E. The black ball moves one corner at a time clockwise, while the white ball moves anti-clockwise. First, it goes to the next corner. Then, it misses one and goes to the next corner. Then, it misses two, then three, and so on. In how many moves and in which corner will the two balls be together?
- 3 moves, Corner D
  - 4 moves, Corner C
  - 5 moves, Corner F
  - None of these

57. A shopkeeper used only four weights to weigh any article between 1 kg and 40 kg. What are the weights?  
(a) 1, 3, 9, 27 (b) 2, 3, 7, 28  
(c) 7, 8, 10, 15 (d) Several combinations are possible
58. Rashmi leaves office at 6.00 p.m. and catches a 6.30 p.m. local train that arrives in her town at 7.00 p.m. Her father leaves home to pick her up at 7.00 p.m. from the station as she gets off the train. Yesterday, Rashmi left her office early and took a 6.00 p.m. train and arrived at 6.30 p.m. As her father was not there to pick her up, she started walking towards home. Her father left home at the usual time, saw his daughter walking, turned around, picked her up and drove home arriving there 10 min earlier than usual. For how long did Rashmi walk before her father picked her up?  
(a) 10 min (b) 15 min (c) 20 min (d) 25 min
59. One hundred and twenty-five (125) aliens descended on a set of film on extra terrestrial beings. Of these, 40 had two noses, 30 had three legs, 20 had four ears, 10 had two noses and three legs, 12 had three legs and four ears, 5 had two noses and four ears, and 3 had all the three unusual features. How many were there without any of these unusual features ?  
(a) 5 (b) 35 (c) 80 (d) None of these
60. Psychologists studied the relationship between cohesiveness and team performance and found the association to be high. They posited that high team performance is owing to mutual cooperation and trust within members of a cohesive team. Each of the following, if true, either provides support for or cannot weaken the psychologists' assumption about relationship between cohesion and successful team performance *except*.  
(a) Some researchers found that successful work team is headed by a highly intelligent leader admired by all.  
(b) Some researchers found that winning team members rated their colleagues high on competitiveness, process conflict and individualism and low on harmony, rule-boundedness and friendliness.  
(c) Some researchers found that unsuccessful team members rated their fellow members in unfavourable terms.  
(d) Some researchers found that employees who maintain off-the-job socialisation, schmoosing, and networking with their own team members are more productive.
61. Assuming that three of the following four dates in the year 2004 are right, which one would be wrong?  
(a) Sunday, 17th of January (b) Sunday, 21st of February  
(c) Sunday, 19th of March (d) Sunday, 10th of April

62. Before 1990, in the western region of the country called Bharatvarsh, there were no accredited management schools in the north of the province of Indraprastha, except in the provinces of Rajprastha and Rishiprastha. By the end of 2000, there were as many as 64 management schools in this western region starting from the province of Gurgram to the province of Indraprastha on one side and from the province of Faridpur to the province of Rishiprastha on the other. The number of management schools in Bharatvarsha had quadrupled in this decade. Given the above information, which of the following statements is correct?
- Until the year of 1990, there were perhaps 16 management schools in the country of Bharatvarsh.
  - Until the year 1990, there were perhaps 16 accredited management schools in the western region starting from the province of Gurgram to the province of Indraprastha on one side and from the province of Faridpur to the province of Rishiprashta on the other.
  - After 1990, Indraprastha, Rajprastha and Rishiprastha were not the only provinces to have management schools.
  - Upto 1990, Indraprastha, Rajprastha and Rishiprastha were the only provinces of Bharatvarsh to have accredited management schools.
63. Given the information in the previous question, which of the following statements is correct?
- If you go from the province of Indraprastha to Rishiprastha, you have to travel through Rajprastha.
  - Faridpur is in the south of Gurgram.
  - Gurgram cannot be north of Indraprastha.
  - Gurgram is equidistant from Faridpur and Rishiprastha while Rajprastha is closer and Indraprastha is farthest.
64. In a race Guninder was not first. Joginder came in after Harinder; Inderjeet was not ahead of Maninder. Guninder was not in front of Joginder. Inderjeet was not fourth or fifth. Maninder was not first. Who finished first and second in the race?
- Harinder followed by Maninder.
  - Harinder followed by Joginder.
  - Harinder followed by Guninder.
  - Cannot be determined from the clues.
65. Which of the following statements must be *true* in order to establish that *Gruppo Tre* is the all-embracing group that includes *Gruppo Uno*, *Due* and *Quatro*?
- All markets of *Gruppo Quatro* include all markets of *Gruppo Due*.
  - All markets of *Gruppo Tre* include all markets of *Gruppo Uno*.
  - All markets of *Gruppo Quatro* include all markets of *Gruppo Uno*.
  - All markets of *Gruppo Due* include all markets of *Gruppo Uno*.
  - All markets of *Gruppo Tre* includes all markets of *Gruppo Quatro*.
- Statement I is vital.
  - Statement II is vital.
  - Statement III is vital.
  - Either statement IV or statement V is vital.
66. At the Narmada Sarovar Bachhao demonstration, supporters of Ms Patkar outnumbered the police by 9 : 1. The police arrested 135 NSB supporters averaging 5 for every 3 policemen. How many supporters of NSB were there in the demonstration?
- 405
  - 665
  - 1,215
  - None of these

67. In Kaira district, from 1981 to 1990, the amount of milk production per cow per day increased three-fold. From 1991 to 2000, milk production per cow per day increased two-fold. Each of the following, if true, could help to account for this trend except  
 (a) continuous modernisation of dairy technology practices has been slowed down.  
 (b) use of high-yield Australian cows and nutritional diet has sharply decreased.  
 (c) the number of cows required to produce per litre of milk per day has decreased.  
 (d) the number of cows has increased more in the recent decade.
68. In a one-day cricket match, Agarkar, Sehwag, Sachin, Dravid and Ganguly scored an average of 39 runs. Dravid scored 7 more than Ganguly. Ganguly scored 9 fewer than Agarkar. Sehwag scored as many as Dravid and Ganguly combined; and Sehwag and Sachin scored 110 runs between them. How many runs did Sachin score?  
 (a) 47 (b) 51 (c) 53 (d) None of these
69. In 1980, Kerala earned Rs  $x$  in tourist revenue. In 1990, tourist revenue quadrupled and in 2000, it reached  $16x$ . Which of the following, if true, may explain the cause for rise in tourist revenue except  
 (a) The number of hotel rooms has increased 16 times from 1980 to 2000.  
 (b) Average expenditure per tourist has increased 8 times.  
 (c) Average number of tourists has doubled and average stay per tourist has doubled.  
 (d) Average price of tourist services has increased 4 times.
70. Find the next number : 2,743, 2,198, 1,729, 1,332, ?  
 (a) 1,015 (b) 1,001 (c) 999 (d) 317
71. In the metro railway system, every station sells tickets for every other station. Some new stations are added for which 46 sets of additional tickets were required. How many stations were there originally and how many new stations were added?  
 (a) 5 original, 6 new (b) 6 original, 5 new (c) 11 original, 2 new (d) 11 original, 3 new
72. In the cinema set of a movie 125 mechanical aliens were created. Some of these aliens had peculiar features: 40 had two noses, 30 had three legs, 20 had four ears, 10 had two noses and three legs, 12 had three legs and four ears, 5 had two noses and four ears, 3 had all three peculiarities. How many aliens had no such peculiar features?  
 (a) 5 (b) 35 (c) 80 (d) None of these
73. Imagine you are facing an octagonal-shaped object whose faces are numbered. If the figure moves clockwise, you shall see the faces consecutively from 1–8. Imagine that you are facing No. 1 and the object is turning anti-clockwise. In the first move, its position is changed by one face, in the second move by two faces, in the third move by three faces and so on. At the end of eight such movements of this object, what number will you be facing (if you have not moved from your place)?  
 (a) 5 (b) 6 (c) 7 (d) None of these
74. Three cricketers—Balaji, Chetan and Ajit—were discussing their scores and each made three statements of which only two statements were correct. **Balaji:** (i) I did not score the lowest; (ii) The difference between my score and Chetan's was 3; (iii) Chetan scored 12. **Chetan:** (i) I scored less than Ajit; (ii) Ajit scored 10; (iii) Balaji scored 3 more than Ajit. **Ajit:** (i) I scored 9; (ii) I scored 2 less than Balaji; (iii) I scored 1 more than Chetan. What were their scores?  
 (a) Ajit 9, Balaji 10, Chetan 12 (b) Ajit 10, Balaji 12, Chetan 9  
 (c) Ajit 12, Balaji 9, Chetan 10 (d) Cannot be determined from the above clues.

75. Starting from 2002, Delhi became one of the few capital cities in South Asia where all car drivers have to wear seat belts while driving.  
Given the above information as correct, which of the following statements can be properly inferred?  
(a) In Delhi, the law of compulsorily wearing seat belts could be enforced from 2002 as all car manufacturers started providing company-fitted seat belts in their cars.  
(b) Delhi is the first city in India to implement the law of wearing seat belts for all the cars registered in Delhi.  
(c) Some drivers might have worn some kind of seat belts before 2002, but all drivers in Delhi have to wear seat belts after 2002.  
(d) Beginning 2002, cars travelling on Delhi road must have its driver wearing a seat belt.
76. Rampur is 100 km from Sitapur. At 3 p.m. Bharat Express leaves Rampur for Sitapur and travels at a constant speed of 30 kmph. One hour later, Laxman Mail leaves Sitapur for Rampur and travels at a constant speed of 40 kmph. Each train makes one stop only at a station 10 km from its starting point and remains there for 15 mins. Which train is nearer to Rampur when they meet?  
(a) Bharat Express (b) Laxman Mail  
(c) Both are equidistant (d) Cannot be determined from the data.
77. In Delhi, Co-operative Group Housing Society (CGHS) buildings range from two storeys to eight storeys in height. According to the building bye-laws, if a CGHS building has more than four floors, it must have a lift.  
If the above statements are true, which of the following must be true?  
(a) All six storey CGHS building have a lift.  
(b) Some CGHS building of less than five floors do not have a lift.  
(c) Only the residents of fifth to eighth floors enjoy the service of a lift.  
(d) No two-storeyed building has a lift.
78. CBI arrested five doctors, one of whom is the guilty party in leaking the question paper of a medical entrance examination. Each of the suspects gives one statement and it later transpires that just three of the statements are correct. These are the statements:  
Dr. Ranjit : Dr Umesh committed this crime  
Dr. Subhas : I did not do it.  
Dr. Tarun : It was not Dr Vipin.  
Dr. Umesh : Dr Ranjit is lying when he says that I did it.  
Dr. Vipin : Dr Subhash is telling the truth.  
Who committed the crime?  
(a) Either Dr Ranjit or Dr Umesh (b) Dr Subhash  
(c) Dr Tarun (d) Dr Vipin
79. Import of white goods in SKD conditions is increasing at the average yoyo rate of 14% over the past 6 years, though the real growth rate, after allowing for inflation is expected to be around 5%. Which of the following, if true, could help to account for the trend, *except*  
(a) The electrified areas have increased and the voltage fluctuations have also increased.  
(b) The number of domestic manufacturers has decreased and the import tariff has decreased.  
(c) The individual tax advantages have increased and disposable income has increased.  
(d) Consumer preference for local brands has decreased and acceptability of global brands has increased.

80. Four usual dices are thrown on the ground. The total of these faces is 13 as the top faces show 4, 3, 1 and 5 respectively. What is the total of the faces touching the ground?  
 (a) 12 (B) 13 (c) 15 (d) Cannot be determined
81. There is a group of 5 persons A, B, C, D, and E. In the Group there is a Professor of Ancient History, another a Professor of Medieval History, and a third Professor of Modern History. A and D are ladies who have no specialisation in any subject and are unmarried. No lady is an Ancient Historian or a Modern Historian. There is a married couple in the group of which E is the husband. B is the brother of C and is neither a Medieval Historian nor a Modern Historian. Who is the professor of Modern History?  
 (a) A (b) C (c) E (d) None of these
82. A said to B, 'The batsman who is facing the bowler is the younger brother of the two brothers of the daughter of my father's wife.' How is the batsman related to A?  
 (a) Son (b) Cousin (c) Nephew (d) None of these
83. Choose the correct set of words  
 I. Cardiology is to Heart as Zoology is to  
 II. Thermometer is to Temperature as Hygrometer is to  
 III. Virology is to Viruses as Mycology is to  
 (a) Animals, Straians, Fungi (b) Insects, Humidity, Soil  
 (c) Animals, Humidity, Fungi (d) Insects, Straians. Soil
84. Choose the Correct set of Words.  
 I. Lees is to Wine as Scrap is to  
 II. Energy is to Joule as Volume is to  
 III. Pig is to Farrow as Horse is to  
 (a) Food, Litre, Colt (b) Wheat, Kilogram, Mare  
 (c) Biscuit, Capacity, Neigh (d) Water, Solid, Colt
85. Find the next number: 1, 3, -15, 105, -945, 10, 395, ?  
 (a) 1,45,535 (b) 1,35,135 (c) -1,45,535 (d) -1,35,135
86. A tailor had a number of shirt pieces to cut from a roll of fabric. He cut the roll into 10 equal length pieces. He cut at the rate of 45 cuts a min. How many rolls would he cut in 24 min?  
 (a) 32 rolls (b) 54 rolls (c) 108 rolls (d) 120 rolls
87. A mechanical grandfather clock is at present showing 7 hrs 40 min 6 sec. Assuming that it loses 4 sec in every hour, what time will it show after exactly 6½ hours?  
 (a) 2 hr 9 min 40 sec (b) 2 hr 10 min 6 sec (c) 14 hr 9 min 34 sec (d) 14 hr 10 min 32 sec
88. If in a certain code, CERTAIN is coded as XVIGZRM, Sequence is coded as 'HVJFVMXV', how would Mundane be coded?  
 (a) NFMWZMV (b) NFMXZMV (c) NFMWZMX (d) None of these

**Directions (Q. 89–95):** Read the passage and answer the questions given below it. Answers should be based on the author's views or inferences drawn from the given passage.

To remake the world (including Nature), Fourier mobilised: an intolerance (for civilisation), a form (classification), a standard (pleasure), an imagination (the "scene"), a discourse (his book), all of which pretty well define the action of the signifier or the signifier in action. This action continually makes visible on the page a glaring lack, that of science and politics, that is, of the signified. What Fourier lacks (for that matter voluntarily) points is return to what we ourselves lack when we reject Fourier: to be ironic about Fourier is always—even from the scientific point of view—to censure the signifier. Political and domestic (the name of Fourier's system), science and utopia, marxism and Fourierism, are like two nets whose meshes are of different sizes. On the one hand, Fourier allows to pass through all the science that Marx collects and develops; from the political point of view (and above all, since Marxism has given an indelible name to its shortcomings), Fourier is completely *off to one side*, unrealistic and immoral. However, the other, facing net allows pleasure, which Fourier collects, to pass through. Desire and Need pass through, as though the two nets were alternatively superimposed, playing at topping hands. However, the relationship of Desire and Need is not *complementary* were they fitted one into the other, every thing would be perfect), but supplementary; each is the *excess* of the other. The *excess*: what does not pass through. For example, seen from today (i.e., *after* Marx), politics is a necessary purge; Fourier is the child who avoids the purge, who vomits it up.

The vomiting of politics is what Fourier calls Invention. Fourierist invention ('For me, I am an inventor, and not an orator') addresses the absolutely new, that about which nothing has yet been said. The rule of invention is a rule of refusal: to doubt absolutely (more than did Descartes, who, Fourier thought, never made more than a partial and misplaced use of doubt), to be in opposition with everything being done, to treat only of what has not been created, to stand apart from 'literary agitators,' Book People, to preach what opinion holds to be *impossible*. It is in sum for this purely structural reason (*old/new*) and through a simple constraint of the discourse (to speak only where there has not yet been speech) that Fourier is silent about politics. Fourierist invention is a fact of writing, a deploying of the signifier. These words should be understood in the modern sense: Fourier repudiates the writer, i.e. the certified manager of good writing, of literature, he who guarantees decorative union and thus the fundamental separation of substance and form; in calling himself an inventor ('I am not a writer, but an inventor. '), he places himself at the limit of meaning what we today call Text. Perhaps, following Fourier, we should henceforth call *immensely and in detail*, the space of the signifier.

89. According to the passage
- (a) Fourier thought that Descartes made only a partial use of doubt.
  - (b) Descartes thought that Fourier made only a partial use of doubt.
  - (c) the author of the passage made only a partial use of doubt.
  - (d) Descartes made full use of doubt.
90. According to the author of the passage
- (a) desire and need perfectly fit into each other.
  - (b) desire and need do not fit into each other.
  - (c) desire is a necessary purge.
  - (d) Fourier is the child of purge.
91. According to Fourier
- (a) one who creates a text is a writer.
  - (b) one who creates a text is an inventor.
  - (c) a writer calls himself an inventor.
  - (d) a philosopher calls himself an inventor.

92. According to the passage  
(a) political and domestic belong to the same category.  
(b) science and utopia belong to the same category.  
(c) marxism and Fourierism belong to the same category.  
(d) science and utopia belong to different categories.
93. Who among the following is the author of the statement, *'For me, I am an inventor, and not an orator'?*  
(a) The author of the passage  
(b) Karl Marx  
(c) Fourier  
(d) Descartes
94. Which is the most appropriate title for the above passage?  
(a) Philosopher and writer  
(b) Inventor, not writer  
(c) Writer, not inventor  
(d) Inventor and writer.
95. According to the author  
(a) Fourier does not say anything about modern politics.  
(b) Fourier speaks volumes about modern politics.  
(c) the author makes a good commentary on modern politics.  
(d) the author is silent about modern politics.

**Directions (Q. 96–105):** Read the Passage and answer the questions given below it. Answers should be based on the author's views or inferences drawn from the given passage.

So the unpleasant shocks that used to affect other people now affect us. Few of us have not been touched on the shoulder lightly or, in some cases, heavily, by the hand of failure. A dozen or more years ago, failure was for the untalented, or the unlucky. Today, no one is safe. It is a strange irony that while changes in fortune are now more personal, other changes have become less so. Inventions are now corporate, rather than individual. We all could name the inventor of the telephone, the steam engine, the radio and the jet engine. But who invented the fax?

We all accept inventions, innovations and improvements as part of life. But it was not always so. I recall a Bob Newhart monologue from the 1970s that, like his version of Sir Walter Raleigh's bringing tobacco from the New World to the Old, provided a fresh insight into things that we accept as commonplace. The monologue took place against the background of the American motorcar industry being put under pressure by the importation of small European cars, especially the reengined Volkswagen Beetle. The scene he painted was a board meeting of the General Chariot Corporation in Rome. The board is discussing the threat from the smaller, more maneuverable chariots of the Hun. Several improvements to the General Chariot Corporation's products are suggested. These include putting the horses at the back to improve the view of those driving the chariot, and having a specially fitted rope to prevent the toga from flying up in the wind. As well as the intrinsic humour of the concept, the monologue serves to underline that product development, as a process is a relatively new one. Invention, innovation, new product development have now become mechanised within the processes of any business enterprise.

This, of course, applies to services as well as products. Constantly improving products and services is now an intrinsic part of staying in business. There are many reasons for this. One, of course, is global competition. Another is the fact that there are more scientists alive today than ever lived in the history of the world. We have quantity, as well as quality, in the number of potential inventors and discoverers. Most of these

scientists work directly, or indirectly, for corporations, as much university research is corporately funded. This brings us to the twin drivers of modern macroeconomics— the advance of technology, and the globalisation of business. One feeds of the other, as global reach, necessitated by the global forces of competition, facilitates the capacity of corporations to source technical expertise worldwide in order to gain competitive advantage.

The General Chariot Corporation of Rome may have been playing a familiar game of technology catch-up, but the by-product of their improved designs would not have been—as it would today—to put half the employees of the company's Roman division out of work. We all know that technology is replacing jobs. This is for two reasons. Firstly, the elimination of labour obviously reduces costs. Second, the cost of computer-driven technology is falling, whereas the cost of skilled labour is stable, or rising. Lower capital equipment costs makes it even more advantageous to replace job with machinery. This is compounded by global competition causing pressure on prices, which results in global companies searching out the cheapest reliable labour markets for the manufacture of goods, and often for the provision of their support services. This is leading to what is called the Income Revolution, not a terribly original name. The central thrust of my message is that employment as a concept is on its last legs, and people should begin to think of themselves as income generators, not jobholders. This has implication beyond the exchange of money for hours worked, as it includes all people *receiving as well as generating incomes*. This means that the unemployed, and those on welfare support, are included in the new way of considering how we will live in the future. It gives us the opportunity to create an inclusive framework that provides an opportunity for those who traditionally have been seen as dependents, to become contributors.

Before examining those wider issues, it is worth taking a look at a few figures to be able to begin to understand what is happening in our societies now, and thus get some insight into what might happen in the next few years. Let's start with the rapid and potentially devastating polarisation of incomes, and thus society, which has been brought about by the rigorous application of winner-takes-all capitalism as it is developing around the world. This is a global phenomenon, with many of the world's billionaires coming from the explosive economies of South America and the Pacific Rim— countries which still have more than their share of very poor people. Looking globally, in the early 1990s there were 358 billionaires with a combined net worth of \$760 billion. This equals the combined net worth of the poorest 2.5 billion of the world's people. If the Anglo-Saxon model of modern capitalism seems to be winning the economic, if not social argument worldwide, it is worth looking at the spiritual home of the model, the United States. Polarisation of income has been happening in the US for a considerable time. *Business Week* revealed that between 1980 and 1993, the Fortune 500 industrial firms reduced their workforces by almost 4.4 million people. This equated to more than 25 per cent of the previous number of total jobs. During the same period, their sales increased by 1.4 times, and assets by 2.3 times. While over four million people lost their jobs, the resulting sparkling financial performance enabled the firms' chief executive officers at the largest corporations to increase their salaries by 6.1 times to \$3.8 million a year.

Other sources reveal that the effect of global competition and technology replacing jobs, particularly lower skilled jobs, meant that between 1977 and 1989 the income of the top 1 per cent of US families increased by 78 per cent, while the income of the bottom 20 per cent of families decreased by 10.4 per cent. What is worse, those employed in 1989 were working longer hours than those employed in 1977. Furthermore, more families had two breadwinners, as more women entered the workforce. During this period most of the bottom 60 per cent of US families could not keep up with the decline in wages, despite working longer hours and having an extra wage earner. Looking specifically at low-skilled men, the picture is even more miserable. Since 1979 real earnings of men with a minimal 12 years of schooling has dropped by 20 per cent. The initial wage for these workers, when they first enter the labour market, has dropped by 30 per cent.

The United Kingdom, whose economy is the closest in Europe to that of the United States, is also beginning to see a decline in spending power for the worst off. Real incomes for the bottom 20 per cent of the population have grown only 6 per cent since 1979. Taking account of fewer full-time jobs and housing costs, which have rise in real terms, incomes for couples and childless single people—those most likely to be in work—actually fell over the period. Defenders of the system claim that the picture of deprivation and relative poverty is exaggerated. As evidence, they point to the spending figures for poor households, which are higher than those of income received. The reason for this is cited as transfers between family members (the relatively better off helping the poorer), and income from the black economy. But even the defenders of the system can find no answer to the increased number of homeless and those in temporary shelter.

The downward trend in incomes for the worse off in our societies is distressing, particularly as it looks as if it is only just beginning to get into its stride. What makes it worse is that it is a global phenomenon that creates an even more miserable effect in Third World countries. As American, Japanese and European companies continue to move more and more manufacturing and service support jobs to low-wage economies in distant parts of the world, this is often the start of a bartering system to achieve the lowest overall cost, by achieving the lowest labour costs. The massive surplus in world labour means there are always people prepared to go lower in price in order to win the orders. This has been called the race to the bottom. It involves underdeveloped countries fighting each other in seeing who can provide labour cheapest. This is often compounded by their governments paying development grants and subsidies to encourage foreign firms to exploit their surplus labour force, rather than that of another country. For workers in Third World countries the choice is simple. Either accept low wages, long hours, and poor working conditions— often with your children working in worse conditions— or starve, along with your family and extended family. Not much of a choice, and the decision is quickly made.

96. According to the passage
- (a) global competition and technological advancement are not complementary to each other.
  - (b) economic development is encouraged by global competition on the one hand, and technological advancement on the other.
  - (c) technological advancement is the only driver of modern macroeconomics.
  - (d) global competition has driven away modern macroeconomics.
97. According to the author of the passage
- (a) income from employment will not reduce.
  - (b) more and more people will become income generators.
  - (c) employment will be available to more and more people.
  - (d) fewer people will become income generators.
98. Which of the following is *not* a true statement?
- (a) Invention and innovation are seen with less suspicion these days.
  - (b) Invention, innovation and improvements are easily accepted today.
  - (c) Invention, innovation and improvement were seen with more suspicion in earlier days.
  - (d) Invention and innovation were always accepted easily.
99. According to the passage
- (a) most people have experienced failures.
  - (b) few people have experienced failures.
  - (c) some people have experienced failures.
  - (d) not many people have experienced failures.

100. Which of the following statements is implicit in the passage?
- (a) Product innovation has always been the hallmark of business enterprises.
  - (b) Product innovation has never been the hallmark of business enterprises.
  - (c) Product innovation has become imperative for the survival of business enterprises.
  - (d) Product innovation is more important in manufacturing than in services.
101. Technology replaces labour because
- (a) reduction of labour reduces cost.
  - (b) the cost of new technology is constantly falling.
  - (c) the cost of labour is constantly falling.
  - (d) the cost of capital equipment is less than the cost of labour.
102. According to the author of the passage
- (a) income disparities will increase in the new economy.
  - (b) income disparities will reduce in the new economy.
  - (c) income distribution will stabilise in the new economy.
  - (d) the number of poor people will reduce in the new economy.
103. The author of the passage is
- (a) a defender of the new economic order.
  - (b) a critique of the new economic order.
  - (c) neither a defender nor a critique of the new economic order.
  - (d) a sympathiser of black money.
104. Foreign companies continue to relocate manufacturing and service support jobs to other countries because of
- (a) lower wages in these countries.
  - (b) better skills available in these countries.
  - (c) better quality of raw materials available in these countries.
  - (d) better technology available in these countries.
105. According to the author of the passage
- (a) the incomes of the lower sections of the societies will gradually improve.
  - (b) the incomes of the upper sections of the societies will gradually improve.
  - (c) the incomes of the lower sections of the societies will further deteriorate.
  - (d) the income distribution among various sections of the societies will gradually normalise.

**Directions (Q. 106–113):** Read the passage and answer the questions given below it. Answers should be based on the author's views or inferences drawn from the given passage.

Now, I want to return to the phenomena about which, partly by chance and partly through Mayo, I had become curious and with which, partly by reinforcement and partly by choice, I decided to stick. I call this episode my discovery of life space. When I was in philosophy, I was more interested in the 'true' than in the 'real,' the 'good,' or the 'beautiful.' To use traditional subdivisions of philosophy, I was more interested in epistemology (what makes knowledge knowledge) than in metaphysics (what makes the real real), or ethics (what makes the good good), or aesthetics (what makes the beautiful beautiful). These sixty-four dollar questions I decided to consider no longer—at least not until I retired. Mayo told me that philosophy was a good subject to engage in at the beginning and end of one's life. In the middle years, he said, one should live it.

One epistemological distinction still meant a great deal to me. This was the one David Hume made between two kinds of knowledge: one that referred to “relations of ideas” and the other to ‘matters of fact’. Analytical propositions, as they were called in philosophy, such as ‘The sage is wise,’ belonged to the first kind. In such propositions, the predicate (*wise*) was contained in the subject (*sage*), so that nothing new had been added; they were true apart from experience and thus constituted *a-priori* knowledge. Synthetic propositions, on the other hand, such as ‘The rose is red,’ belonged to the second kind of knowledge. In such propositions the predicate (*red*) was not contained in the subject (*rose*). Their truth was contingent upon experience and could not be known apart from experience; they constituted *a-posteriori* knowledge.

Although it was this distinction that had led to Hume’s scepticism about knowledge and Kant’s resolution of it, I felt it was important to maintain this distinction without having to accept wholly either Hume’s or Kant’s epistemological conclusions. The distinction, it seemed to me, neither cast a giant shadow on the status of *a-posteriori* synthetic propositions, as Hume thought, nor did it require the possibility of *a-priori* propositions in order to get out of this dilemma, as Kant thought. Hence, in the best fashion of the day, that is, in terms of the newly emerging analytic philosophy of Whitehead and Russell, I put the propositions of both logic and mathematics in the class of *a-priori* analytic knowledge and the proposition of commonsense and science in the class of *a-posteriori* synthetic knowledge. The criterion for the truth of propositions in the first class was logical consistency; the criterion for the truth of propositions in the second class was some correspondence with the phenomena, a matter which could not be settled apart from verification by observation.

However, I did not keep these two kinds of propositions— analytical and synthetic—totally unrelated. It seemed to me that the development of scientific knowledge required both kinds of propositions so long as they were differentiated from the related to each other. At the time, I was not too clear what this relationship was. It seemed to me that the question was going to be settled by experience, not philosophical dogma. In this case, experience seemed to me to mean having something to do with convenience and utility as well as observation. Thus, I had three different notions of truth in the back of my mind: (1) the notion of consistency; (2) the notion of correspondence to the phenomena; and (3) the notion of convenience and utility. In matters about truth I was a bit of a logician, a bit of a positivist, and a bit of a pragmatist, and so I have remained for the rest of my life. For, to me now the question no longer was which one of these truths was absolute; it was how these different notions about truth worked together to produce knowledge. As the search for an answer to this question lurked behind the scenes throughout my career, I want to describe how it began in my counselling activities with students. When I started interviewing students, I conceived of my mission partly as a research project and partly as a counselling service to them. Helping them was important to me but not my sole objective. I was also interested in the preoccupations of the students and the uniformities I felt I saw in them. These became the phenomena about which I became curious and which I wanted to understand.

The readings that I have previously mentioned helped me. Both Pierre Janet and Sigmund Freud had influenced Mayo. In talking about obsession or compulsion neurosis (Mayo, following Janet, used the word obsession) Mayo contrasted and related the two men’s approaches to psychopathology. He felt that Janet described the phenomena better, whereas Freud showed their historical determination. That is to say, Freud was more concerned with how the obsessive’s thinking got that way, whereas Janet was concerned with its present form. The researches of Janet on mental illness are of course much less well known than those of Freud. Janet’s most important books (1909, 1919 and 1921) have not been translated into English, although *Psychological Healing* (1925) has been. Mayo wrote a book in 1948 about Janet’s work.

As a result, I was somewhat of a maverick in interviewing students; that is, I used the most general ideas underlying the conceptual schemes of both Janet and Freud. I concentrated first on the nature of a student's preoccupations here and now; only if I thought it necessary did I explore his personal history to see what may have influenced him in his present direction. This seemed to me the natural course that most interviews took any way. Many times I would state the form of the student's preoccupations in Janet's terms; I hardly ever stated the dynamics in Freudian terms. Here I felt I was following the principle of doing the least harm—a principle upon which, as Mayo and Henderson told me again and again, the practice of medicine was based. I also found Janet's concepts more congenial than Freud's, because during this period I was antimetaphysical. Freud's way of thinking seemed to me to have too many metaphysical entities circling around in it. I felt that I could study a person's preoccupations and concerns without having to posit an unconscious. Moreover, much of the 'wild' psychoanalytical talk that certain circles indulged in at that time I found distasteful. I was going to stay as close to the phenomena as I could and become well acquainted with them before seeking too quickly for any explanation of them. In constantly comparing Janet and Freud, Mayo performed an inestimable service for me. Although annoying at times—because of course I was still bothered about who was right—the comparison prevented me from going off halfcocked. I had to try to make sense out of both position. It could be said that I experimented with Freud's ideas more upon myself than upon my students. I underwent psychoanalysis for a period of six months after which my analyst died; he had been analysed by both Freud and Jung (and at this period in Boston they were tops). I did not continue with anyone else.

106. Which of the following is *not* a true statement?
- (a) The author of the passage was analysed neither by Freud nor by Jung.
  - (b) The author of the passage did not compare Mayo and Freud.
  - (c) Janet and Freud were compared by Mayo.
  - (d) The author constantly compared Janet and Freud.
107. According to the passage, which of the following sub-division of philosophy deals with knowledge?
- (a) Ontology
  - (b) Aesthetics
  - (c) Epistemology
  - (d) None of these
108. According to the passage
- (a) Mayo was influenced by Russell and Whitehead.
  - (b) the author was not influenced by Janet and Freud.
  - (c) the author was influenced by Janet and Freud.
  - (d) Mayo was influenced neither by Janet nor by Freud.
109. Which of the following is *not* a true statement?
- (a) 'Analytical propositions' refer to the 'relations of ideas'.
  - (b) 'Analytical propositions' constitute '*a-priori* knowledge'.
  - (c) 'Synthetic propositions' refer to the 'relations of facts'.
  - (d) 'Synthetic propositions' constitute '*a-priori* knowledge'.
110. According to the author
- (a) the same person can be a positivist, a logician and a pragmatist at the same time.
  - (b) the same person can never be a positivist, a logician and a pragmatist at the same time.
  - (c) few people can be positivist, logical and pragmatist at the same time.
  - (d) some people do not want to be positivist, logician and pragmatist at the same time.

111. The author of the passage is  
(a) a follower of Kant. (b) a follower of Hume.  
(c) a critique of Hume and Kant. (d) neither a critique nor a follower of Kant or Hume.
112. The author of the passage  
(a) recognises neither analytical nor synthetic propositions.  
(b) dismisses both analytical and synthetic propositions.  
(c) recognises synthetic, but dismisses analytical propositions.  
(d) recognises both analytical and synthetic propositions.
113. Who among the following is a proponent of analytical philosophy?  
(a) Kant (b) Hume (c) Russell (d) None of these

**Directions (Q. 114–125):** Read Passage I and answer the questions given below the passage. Answers should be based on the author's views or inferences drawn from the given passage.

The real change in corporate culture began with the personal computer. With the PC, any employee could have a computer of his or her very own and use it for real work. It simplified applications that were cumbersome with a mainframe, even without taking into account the problem of gaining access. A mainframe required a skilled programmer to do things that a non-technical user eventually could easily do with a spreadsheet on a PC. The forms and macros required to solve problems on PCs were trivial compared to traditional programming in COBOL or other computer languages. Soon, PCs were ubiquitous among managers and professionals. PCs also moved into other arenas. They replaced dedicated word processors and started taking over database management functions that formerly required experts and 'big' computers.

Management Information System (MIS) managers reacted in horror as they saw these rogue computers serving important functions within their corporations. These PCs held vital information in inconsistent and inaccessible formats and were not secure from loss or damage. Eventually, MIS departments connected PCs to their corporate mainframes, but primarily as replacements for dumb terminals. Some users, however, were more creative. They downloaded information from the mainframe so that they could manipulate it for their own uses—if not for anyone else's. PCs also became a conduit for electronic mail and file sharing. The computer organisation basically remained an 'octopus', however, even if some of the tentacles functioned on their own. If the personal computer sparked the revolution in corporate culture, the Local Area Network (LAN) won it. Instead of being subservient to a huge mainframe, each computer in a network could assume an equal role in the stem. And, if each computer was equal to the others, so was each computer user. Aside from the eventual impact on the way applications evolved, the most important role of the network was to flatten organisations, creating a new culture in the process. Corporations everywhere have been cutting out their middle levels of staff, but that wouldn't be possible without the network. It created a way for executives and managers to inspire, direct, and supervise more than the traditional dozen or so reports. Every morning, every worker around the world can receive the same message from the CEO about progress in meeting sales, goals or new benefits. Every assembly worker can learn about important changes in a process. There is little need for a pyramid of management—a pyramid that all too often distorts messages as in the children's game of 'telephone'. It is not a one-way channel either. An individual worker can tell the CEO about a problem that is costing the company money and time, and the CEO can get it fixed in short time instead of having a suggestion crawl up through hierarchies and committees, perhaps for weeks or months.

The flat organisation inevitably encouraged individual contribution and responsibility, but it also fostered teamwork. Teams, however, may be composed of individuals in many departments in many locations, not just people whose desks happen to be close together. The cottages are virtual in many cases, not real. As networks changed corporate cultures, they also changed organisations and processes. Personal computers and sophisticated technical workstations became more powerful, and they assumed more of the burden of the enterprise, soon eclipsing the mainframe in computational power and impact. Not that the mainframe disappeared—it was usually kept to maintain its legacy applications such as accounting and payroll or to become a more sophisticated information server.

Today, it is difficult to distinguish between a personal computer, a server, and a mainframe simply on the basis of their raw computing power. Servers with capability little greater than desktop PCs run huge applications that once required mainframes, if they were practical at all. This type of computing is called *client/server computing*. The client—the individual desktop computer— does much of the work, accessing the server only to get information it needs or to store it for future use or for other users. It allows each person or organisation within a corporation to contribute its part fully, whether that contribution is the product of a single writer or a whole accounting system.

The move to client/server computing liberated users and departments in corporations, but like most liberation movements it created a certain amount of anarchy. The old mainframe systems were easy for their operators to control. They could easily restrict access, prevent changes, and prohibit certain operations. With hundreds of computers sprouting around a company, however, MIS and in effect the company, lost control. The response by MIS was to try to harness the power of all individual computers in a more organised manner. It turned out to be very difficult. Dozens, sometimes thousands of different applications were responsible for functions throughout corporations. Most served one function or user without any thought of sharing work or information with others who might need it. The eventual solution was to create suites of software modules that could serve virtually all of a corporation's needs, operate in concert, and contain the security and controls so vital to running a company, yet users have their own powerful applications. Today's corporate information systems are based on two complementary technologies: client/server computing and relational database managers. Companies such as SAP, Computer Associates, PeopleSoft, and Baan are working to perfect and in all these packages, some for specific industries, some usable for any corporation or organisation. These suites are programs that 'sit' on powerful relational database managers from companies such as Oracle or Informix, accessing and using the data in many ways.

Modern database managers can hold more than simple data, in fact. They can store complex *objects* consisting of both data and programming instructions. These objects could be video, the complete description of a 777 wing, or a program to calculate life insurance risks. Using a relational database is not for the timid, however— hence the need for specialised, prewritten applications such as SAP financial modules. That doesn't mean that there's no need for programming, but it is normally done by specialists with high-level tools provided by vendors. Consulting companies help install these enterprise applications, and this consulting has become a big business for the management consulting arms of the big accounting firms and many other experts. These experts, in fact, are virtually required for a company to install or convert to enterprise systems. The task is too big for in-house MIS people to learn on the job, and the systems generally require significant customisation to meet a specific company's needs. Once installed, however, the systems are relatively easy to use and maintain. They typically include programs that make it easy for business specialists to exploit their capability without programming, simply by interacting with the data in a familiar Windows graphics interface.

114. Personal computer brought about change in the corporate culture because
- (a) an employee could have a computer at home.
  - (b) it made applications simpler.
  - (c) it duplicated mainframe applications.
  - (d) mainframe applications were not cumbersome.
115. According to the passage
- (a) only experts can install enterprise systems.
  - (b) no expert is required to install enterprise systems.
  - (c) enterprise systems need not be customised.
  - (d) enterprise systems are not easy to use.
116. Which of the following is not true?
- (a) Mainframe computer was not user friendly.
  - (b) Personal computers made applications more user friendly.
  - (c) Mainframe computers are not popular among managers and professionals.
  - (d) Personal computers are not popular among managers and professionals.
117. Which of the following is true?
- (a) Modern database managers can hold only simple data.
  - (b) Modern database managers are not capable of storing data and programs at the same time.
  - (c) Modern database managers are capable of storing both data and programs at the same time.
  - (d) Modern database managers are not capable of holding complex data.
118. The Local Area Network received a huge welcome in the corporate culture because
- (a) each of the PCs became subservient to a mainframe.
  - (b) each PC in a network could perform functions similar to the system.
  - (c) each user of the PC in a network had to understand the functions of the system.
  - (D) no user of the PCs in a network understood the functions of the system.
119. Which of the following is not a true statement?
- (a) SAP is a company which creates specific applications based on server computing and relational database managers.
  - (b) PeopleSoft is not a company which creates specific applications based on server computing and relational database managers.
  - (c) Baan does not create specific applications based on server computing and relational database managers.
  - (d) Computer Associates creates company-specific applications based on server computing and relational database managers.
120. Which of the following is true?
- (a) MIS managers were intrigued by the PC in the initial years.
  - (b) The PC received a positive response from the MIS managers in the initial years.
  - (c) The PCs stored data in consistent formats.
  - (d) The information held by the PCs were secure.

121. According to the passage,  
 (a) corporations use only limited computer applications.  
 (b) corporations use a large number of computer applications.  
 (c) corporations use computer applications which conflict with each other.  
 (d) all applications are in sync with each other.
122. Which of the following is *not* a positive outcome of networked systems?  
 (a) Flat organisations.  
 (b) Ability to manage a large number of subordinates.  
 (c) Need for a pyramid of management.  
 (d) Quick two-way communication.
123. Which of the following is a *true* statement?  
 (a) While server computing was a boon to the users, it caused major disturbances.  
 (b) While the mainframe generated chaos, the server restored stability.  
 (c) Both the mainframe and the server computing created chaos in corporations.  
 (d) Server computing is the most anarchic system.
124. The many benefits of the networked system does *not* include  
 (a) Teamwork. (b) Virtual organisations.  
 (c) Powerful workstations. (d) Emotional intelligence.
125. Choose the *true* statement from the following.  
 (a) In terms of computing power, it is easy to distinguish between a personal computer and a server.  
 (b) In terms of computing power, it is difficult to distinguish between a personal computer and a server.  
 (c) The mainframe, the server and the PC have the same computing power.  
 (d) The computing power of a PC is often more than that of a server.

**Directions (Q. 126–127):** Read the following information carefully and answer the questions given below.

A person had left his home at the age of about 14 years. He remembers that the day was Monday. Since then he has been fasting on every Tuesday. Today, he is celebrating his 60th birth anniversary in a five-star hotel with his friends. As today is Tuesday, he is not taking anything except wine. At the end of the party he discloses that it is his 2,400th Tuesday of fasting.

126. Today is 9 Oct. 2001. On which date had he left his home?  
 (a) 10 Oct. 1955 (b) 9 Oct. 1955 (c) 8 Oct. 1955 (d) None of these
127. He was born on  
 (a) Wednesday (b) Tuesday (c) Monday (d) Thursday
128. The unit's digit of a two-digit number is one more than the digit at ten's place. If the number is more than five times the sum of the digits of the number, find the sum of all such possible numbers.  
 (a) 246 (b) 275 (c) 290 (d) 301
129. Let  $20 \times 21 \times 22 \times \dots \times 30 = A$ . If A is divisible by  $10^x$  find the maximum value of x.  
 (a) 3 (b) 4 (c) 5 (d) 6.

130  $f(x) = \log\left(\frac{1+x}{1-x}\right)$

satisfies the equation

(a)  $f(x+2) - 2f(x+1) + f(x) = 0$

(b)  $f(x) + f(x+1) - f(x(x+1)) = 0$

(c)  $f(x_1) f(x_2) = f(x_1 + x_2)$

(d)  $f(x_1) + f(x_2) = f\left(\frac{x_1 + x_2}{1 + x_1 x_2}\right)$

131. Arrange the following in ascending order of values

$\frac{87}{83}, \left(\frac{87}{83}\right)^2, \frac{87}{89}, \left(\frac{87}{89}\right)^2$

(a)  $\frac{87}{89}, \frac{87}{83}, \left(\frac{87}{89}\right)^2, \left(\frac{87}{83}\right)^2$

(b)  $\frac{87}{83}, \frac{87}{89}, \left(\frac{87}{83}\right)^2, \left(\frac{87}{89}\right)^2$

(c)  $\left(\frac{87}{89}\right)^2, \frac{87}{89}, \frac{87}{83}, \left(\frac{87}{83}\right)^2$

(d)  $\left(\frac{87}{83}\right)^2, \frac{87}{83}, \frac{87}{89}, \left(\frac{87}{89}\right)^2$

132. A, B and C are three angles such that  $\tan A + \tan B + \tan C = \tan A \tan B \tan C$ , then which of the following statements is always correct?

(a) ABC is a triangle, i.e.  $A + B + C = \pi$

(b)  $A = B = C$ , i.e. ABC is an equilateral triangle.

(c)  $A + B = C$ , i.e. ABC is right-angled triangle.

(d) None of these.

133. For what value of x is the given function defined?

$f(x) = \sqrt{x-1} + 2\sqrt{1-x} + \sqrt{x^2+1}$

(a)  $x \geq 1$

(b)  $x \leq 1$

(c)  $-\infty < x < \infty$

(d)  $x = 1$

134. If  $a = 1^2, b = 2^3, c = 3^4, \dots, z = (26)^{27}$  and P is the product of all the alphabets, how many zeroes exist in the end of P?

(a) 100

(b) 104

(c) 80

(d) 106

135. If  $\frac{a^3 - b^3}{a^3 + b^3} = \frac{13}{14}$ , find  $\frac{a+b}{a-b}$

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

(b) 1

(c) 2

(d) Cannot be determined

136. Which of the following is true?

I.  $\frac{99}{101} < \frac{97}{99} < \frac{95}{97}$

II.  $\frac{95}{97} < \frac{95}{99} < \frac{99}{101}$

III.  $\left(\frac{95}{97}\right)^2 > \left(\frac{97}{99}\right)^2 > \left(\frac{99}{101}\right)^2$

IV.  $\left(\frac{99}{101}\right)^2 > \left(\frac{97}{99}\right)^2 > \left(\frac{95}{97}\right)^2$

- (a) Only I                      (b) Only II                      (c) Only II and III                      (d) Only II and IV

137. Four horses are tied on the four corners of a square of field of 14m length so that each horse can just touch the other two horses. They were able to graze in the area accessible to them for 11 days. For how many days is the ungrazed area sufficient for them?

- (a) 3 days                      (b) 4 days                      (c) 5 days                      (d) 2 days

138. Which of the following is the lowest?

(a)  $\frac{1}{4^2} + \frac{1}{5^2} + \frac{1}{2^2}$

(b)  $\frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{6^2}$

(c)  $\frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{5^2}$

(d)  $\frac{1}{7^2} + \frac{1}{2^2} + \frac{1}{2^2}$

139. In a society there are 100 members. Each of them has been allotted membership number from 1 to 100. They start a business in which the  $n$ th\*\* member contributed Rs  $(10 \times 2n - 5)$ . After one year the 4th member gets Rs 62 as his share. Find the total profit in the business after one year?

- (a) Rs 8  $(2^{100} - 26)$                       (b) Rs 4  $(2^{99} - 26)$                       (c) Rs 2  $(2^{100} - 26)$                       (d) None of these.

**Directions (Q. 140–141):** Read the following information carefully and answer the questions given below.

A, B and C are three positive integers. And suppose

# (A, B) = A + B; \$ (A, B) = A/B;

$\Delta(A, B) = A \times 5$  and  $\phi(A, B) = (A)B$

Now,

(a) = \$ (# (# (A, B), C), 3)

(b) =  $\phi(\Delta(\Delta(A, B), C), \$ (1, 3))$

(c) =  $\$(3, \# (\# (\$(1, A), \$(1, B)), \$(1, C)))$

(d) = \$ (# (# (A, B), C), 2)

140. Which one of the above is the least value?

- (a) (a)                      (b) (b)                      (c) (c)                      (d) Cannot be said

141. If we arrange (a), (b), (c) and (d) in ascending order of values, which order is correct?  
 (a) a, b, c, d                      (b) c, a, d, b                      (c) a, c, b, d                      (d) c, b, a, d
142. A ladder is inclined to a wall making an angle of  $30^\circ$  with it. A man is ascending the ladder at the rate of 2 m/s. How fast is he approaching the wall?  
 (a) 2 m/s                      (b) 1.5 m/s                      (c) 1 m/s                      (d) None of these
143. If  $a$ ,  $b$  and  $c$  are three positive numbers, then which of the following is *true*?
- I.  $\frac{b+c}{a} + \frac{c+a}{b} + \frac{a+b}{c} > 6$
- II.  $\frac{b+c}{a} + \frac{c+a}{b} + \frac{a+b}{c} < 6$
- III.  $\frac{b+c}{a} + \frac{c+a}{b} + \frac{a+b}{c} = 6$
- (a) Only I is true.                      (b) Only II is true.                      (c) I and III are true.                      (d) II and III are true.

**Directions (Q. 144–146):** Read the following information carefully and answer the questions that follow:  
 Two logicians place cards on their foreheads so that what is written on the card is visible only to the other logician. Consecutive positive integers have been written on the cards. The following conversation ensues:

A : 'I don't know my number.'

B : 'I don't know my number.'

A : 'I don't know my number.'

B : 'I don't know my number.'

... $n$  statements of ignorance later A or B : 'I know my number.'

144. At least how many conversations are needed for A or B to find out their own numbers?  
 (a) One                      (b) Two                      (c) Can't say                      (d) Infinite
145. If there are exactly 10 statements exchanged between A and B, who first knows his number?  
 (a) A                      (b) B  
 (c) Cannot say                      (d) No one knows his number for sure
146. If there are exactly 5 statements of ignorance exchanged between A and B, who first knows the number and what is the number?  
 (a) A, 7                      (b) B, 5                      (c) B, 6                      (d) Cannot say
147. Which of the following is the highest value?  
 (a)  $12^9$                       (b)  $10^{11}$                       (c)  $11^{10}$                       (d) All are same
148. ABC is a triangle; then  $\tan^2 \frac{A}{2} + \tan^2 \frac{B}{2} + \tan^2 \frac{C}{2} =$   
 (a)  $> 1$                       (b)  $< 1$                       (c)  $\geq 1$                       (d)  $\leq 1$
149. Which of the following is a prime number?  
 (a) 889                      (b) 997                      (c) 899                      (d) 1,147

150. What digit exists at units place in  $(483)^{82}$ ?  
 (a) 8 (b) 9 (c) 10 (d) 11
151. In a school, 60% of the students of Class X were boys. 75% of boys passed the Class X exam. 40% of the passed boys got first division. 80% of the total students passed the exam and 50% of the passed students got first division. Which of the following conclusions is *not* correct?  
 (a) 75% of the failed students are boys.  
 (b) 55% of the first-divisioners are girls.  
 (c) Number of passed girls is more than that of boys.  
 (d) If  $x$  students failed,  $2x$  got first division.
152. Which of the following cannot be the difference of two four-digit numbers formed by the four digits 4, 6, 7, 9 where each digit can be repeated?  
 (a) 5,085 (b) 5,095 (c) 5,795 (d) 2,095
153. There is a sequence of 11 consecutive odd numbers. If the average of first 7 numbers is  $X$ , find the average of all the 11 integers?  
 (a)  $X + 3$  (b)  $X + 4$  (c)  $X + 5$  (d)  $X + 7$
154. Find the remainder when  $7^{21} + 7^{22} + 7^{23} + 7^{24}$  is divided by 25.  
 (a) 0 (b) 2 (c) 4 (d) 6
155. A bank offers 10% interest rate compounded annually. A person deposits Rs 10,000 every year in his account. If he does not withdraw any amount, how much balance will his account show after 4 years?  
 (a) Rs. 51,051 (b) Rs. 45,095 (c) Rs. 36,410 (d) Rs. 51,000
156.  $f(a, b)$  is a series of which the first three terms are  $(a + b)^2$ ,  $(a^2 + b^2)$  and  $(a - b)^2$ . We add the first  $n$  terms of the series  $f(a, b)$  and call it  $S(a, b)$ . If  $a = 7$ ,  $b = 3$  then find  $S(7, 3)$  for  $n = 20$ .  
 (a) 5,980 (b) 6,000 (c) 6,960 (d) None of these
157. Thirty trees are planted in a straight line at intervals of 5 m. To water them the gardener needs to bring water for each tree separately from a well, which is 10 m from the first tree in line with the trees. How far will he have to walk in order to water all the trees, beginning with the first tree? Assume that he starts from the well.  
 (a) 4,785 m (b) 4,795 m (c) 4,800 m (d) None of these
158.  $f(x) = 2x$ ; where  $x$  is an integer. If we arrange the values of  $f(x)$  for  $x = 25, 24, 23 \dots$  (continuously decreasing value of  $x$ ), we get an Arithmetic Progression (AP) whose first term is 50. Find the maximum value of the sum of all the terms of the AP.  
 (a) 600 (b) 625 (c) 650 (d) None of these.
159. A watch, which gains uniformly, is 5 min slow at 8 o'clock in the morning on Sunday, and is 5 min 48 sec fast at 8 pm the following Sunday. When did it show the correct time?  
 (a) 7.20 p.m. on Tuesday (b) 9.20 p.m. on Wednesday  
 (c) 7.20 p.m. on Wednesday (d) 9.20 p.m. on Tuesday.

160. A lady went to the market with a few Rs 1 notes and a few 20-paise coins. When she returned she had as many Rs 1 notes as she originally had 20-paise coins and vice versa. She actually came back with about one-third of what she had gone with. How much did she spend in the market?  
 (a) Rs 14.40                      (b) Rs 14.70                      (c) Rs 15.50                      (d) Rs 17.40
161. A person spent half of the money he had. Now, he finds that he has just as many paise as he had rupees and half as many rupees as he had paise in the beginning. If 1% error is allowed what should be your nearest guess about his money in the beginning?  
 (a) Rs 50                      (b) Rs 80                      (c) Rs 90                      (d) Rs 100
162. A four-digit number is formed using digits 1, 2, 3 and 4 without repeating any one of them. What is the sum of all such possible numbers?  
 (a) 66,600                      (b) 66,660                      (c) 66,666                      (d) 60,000
163. How many multiples of 9 can be found which are less than 9,999 and are perfect cubes?  
 (a) 5                      (b) 6                      (c) 7                      (d) 8
164. If  $x + y + z = 1$  and  $x, y, z$  are positive numbers then  $(1 - x)(1 - y)(1 - z) \cdot A^{xyz}$  where  $A$  is a positive integer. Find the most suitable value of  $A$ .  
 (a) 6                      (b) 8                      (c) 9                      (d) 10
165. A student was asked to find the sum of all the prime numbers between 10 and 40. He found the sum as 180. Which of the following statements is *true*?  
 (a) He missed one prime number between 10 and 20.  
 (b) He missed one prime number between 20 and 30.  
 (c) He added one extra non-prime number between 10 and 20.  
 (d) None of these.
166. Rs 125 is divided among four persons in such a way that when Rs 4 is taken from the first person, Rs 4 is given to the second person, the third person's share is divided by 4 and the fourth person's share is multiplied by 4, then all of them have the same amount. Which the following statements is not *correct*?  
 (a) The amount was divided in the ratio 12 : 8 : 5 : 20.  
 (b) At the end their combined money is Rs 80.  
 (c) The combined share of first two persons is half that of the third person.  
 (d) None of these.
167.  $\sqrt{-1}$  is not defined but it is denoted by  $i$ . Clearly,  $i$  is not a real number, so it is called and imaginary number. Now find  $\sum_{n=1}^{100} (i)^n$   
 (a)  $i$                       (b) 1                      (c)  $-1$                       (d) 0
168. The sum of two odd functions is  
 (a) Always an even function.                      (b) Always an odd function.  
 (c) Either even or odd function.                      (d) Not defined.

169. If  $\frac{a+b+c+d+e}{v+w+x+y+z} = N$ , where  $a, b, c, d, e$  are five consecutive even integers and  $v, w, x, y, z$  are five consecutive odd integers. If  $v = n + 1$  and  $n$  represents a natural number, then which of the following is the most suitable value of  $N$ ?
- (a)  $\frac{n+4}{n+5}$                       (b)  $\frac{n+3}{n+4}$                       (c)  $\frac{n+2}{n+3}$                       (d)  $\frac{n+2}{n+2.5}$
170. If  $a, b, c$  are even numbers and  $x, y, z$  are odd numbers, which of the following relationship can't be justified at any cost?
- I.  $\frac{a \times b}{c} = xy$
- II.  $\frac{a \times b}{x} = yz$
- III.  $\frac{xy}{z} = ab$
- (a) Only II                      (b) Only III                      (c) All of three                      (d) Only II & III
171. The number of positive integers less than or equal to 100, which are not divisible by 2, 3 or 5, is
- (a) 24                      (b) 26                      (c) 29                      (d) 32
172.  $N = ab$  is a two-digit number;  $a, b$  are the respective digits. We have following information.
- I.  $N^2 = ccb$  is a three-digit number.
- II. If  $M = ba$  then  $M^2 = bcc$  is a three-digit number.
- III.  $a = 2b$
- To find  $N$ , which of the above information is/ are sufficient?
- (a) Only A alone is sufficient.
- (b) A and C together are sufficient.
- (c) B alone is sufficient.
- (d) Either A and B together or A and C together are sufficient.
173.  $N = a^2 + b^2$  is a three-digit number which is divisible by 5;  $a = 10x + y$  and  $b = 10x + z$ , where  $z$  is a prime number, and  $x$  and  $y$  are natural numbers. If  $a + b = 31$ , find the value of  $N$ .
- (a) 565                      (b) 485                      (c) 505                      (d) 485 or 505

**Directions (Q. 174–75):** Read the following information carefully and answer the questions given below.

A farmer has a land in the shape of a triangle, the sides of which are 50 m, 120 m and 130 m. As it is a hilly area, the farmer can use only some portion in the middle of the field. To maximise his area of cultivation he draws a circle touching all the three sides. Now he plans to use the area covered inside the circle, only because it is more fertile and there exists a tube well in the centre. He draws perpendicular lines on the three sides from the tube well and divides the total cultivable area into three parts. He fixes the smallest portion for vegetables, the largest portion for wheat and the third portion for rice.

174. Find the area in which vegetable is cultivated.  
(a)  $100 \pi \text{ m}^2$                       (b)  $90 \pi \text{ m}^2$                       (c)  $120 \pi \text{ m}^2$                       (d) Cannot be determined
175. If the sides 50 m and 130 m of the triangular field meet at an angle of  $72^\circ$ , then find the area in which wheat is cultivated.  
(a)  $120 \pi \text{ m}^2$                       (b)  $150 \pi \text{ m}^2$                       (c)  $180 \pi \text{ m}^2$                       (d) Cannot be determined

# Answer Key

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