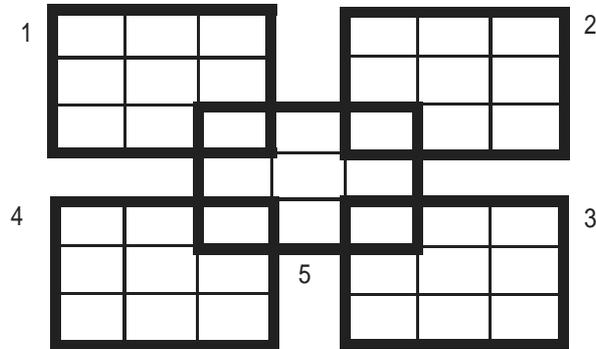


SECTION I

Number of Questions: 50

DIRECTIONS for Questions 1 to 4: Number of students of MCGS School playing different games in 2003.



The above 5 big rectangles (with bold outline) represents the number of students in MCGS School playing 5 different games — Basket ball, Volleyball, Football, Hockey and Athletics (numbered 1 to 5 in the figure and in that order). Each of the big rectangles is further divided into 9 smaller rectangles. For the rectangles 1 to 4, the smaller rectangles for each the big rectangles represents as many students as the number of the rectangle. For example, each small rectangle in big rectangle 2 represents 2 students.

These five are the only games played by the students at MCGS school and all 120 students played at least one game in 2003.

- How many students of MCGS school played the game of Athletics in 2003?
 - 10
 - 30
 - 40
 - Data insufficient
- How many students of MCGS school played more than one game in 2003?
 - 0
 - 10
 - 20
 - Data insufficient
- What is the ratio of students playing only Hockey to those playing Volleyball in 2003?
 - 2 : 1
 - 16 : 9
 - 9 : 4
 - None of these
- If 50% of those playing Hockey also played one other game, how many students of MCGS school played both Hockey and Volleyball in 2003?
 - 8
 - 10
 - 18
 - Data insufficient

DIRECTIONS for Questions 5 to 8: The table given below shows the status of the portfolio of KP Mutual Fund. The fund consists of varying quantities of equity shares of different companies as given in the table below. The Market / Fair value reflects the total of the average market value of shares for that company. The total net asset value (NAV) of the fund is the sum of the market value of equity shares of all companies in the portfolio of the fund. The percentage to NAV shows the contribution of the equity shares for that company to the total asset value of the fund. The rating column shows the safety of the equity share for that company. The safest one is rated as AAA, then AA+, AA and AA–, in that order.

Name of the Instrument	Rating	Quantity	Market/Fair Value (Rs. In Lakhs)	% to NAV
Reliance Industries Ltd.	AAA	240	6626.32	10.80
Hindustan Petroleum Corporation Ltd.	AAA	500	5103.96	8.32
Hindalco Industries Ltd.	AAA	47	5083.23	8.28
Rural Electrification Corporation Ltd.	AAA	25,000	2565.29	4.18
State Bank of India	AAA	1,000,110	2395.80	3.90
Associated Cement Companies Ltd.	AA	65	2022.39	3.29
Indian Railway Finance Corporation Ltd.	AAA	1,100,050	1676.99	2.73
National Aluminium Company Ltd.	AAA	465,518	1659.16	2.70
Grasim Industries Ltd.	AAA	1,500,000	1608.71	2.62
ICICI Bank Ltd.	AAA	1,500	1556.61	2.54
Bank of Baroda	AA+	1,200	1331.60	2.17
Gujarat Ambuja Cements Ltd.	AA+	10	1026.75	1.67
Bharat Petroleum Corporation Ltd.	AAA	50	514.47	0.84
Lafarge India Ltd.	AA–	5	516.54	0.84
Indian Railway Finance Ltd.	AAA	50	512.71	0.84
Industrial Development Bank of India	AA+	500	498.87	0.81

- How many companies (among the data given) have a safety rating higher than or equal to AA+ and which have a percentage to NA greater than 2.00%?
 - 10
 - 11
 - 12
 - None of these
- Value per equity share for a company is defined as the ratio of the market/fair value to the quantity of the equity shares for that company. Which company has the second highest value per equity share from the given data?
 - Hindalco Industries Ltd.
 - Lafarge Ltd.
 - Gujarat Ambuja Cement Ltd.
 - None of these
- If value Index (VI) is defined as the ratio of the quantity of equity shares to that of percentage to NAV, which company has the worst (highest numerical value) VI, among those for which data is given?
 - Grasim Industries
 - Indian Railway Finance Corporation Ltd.
 - State Bank of India
 - None of these

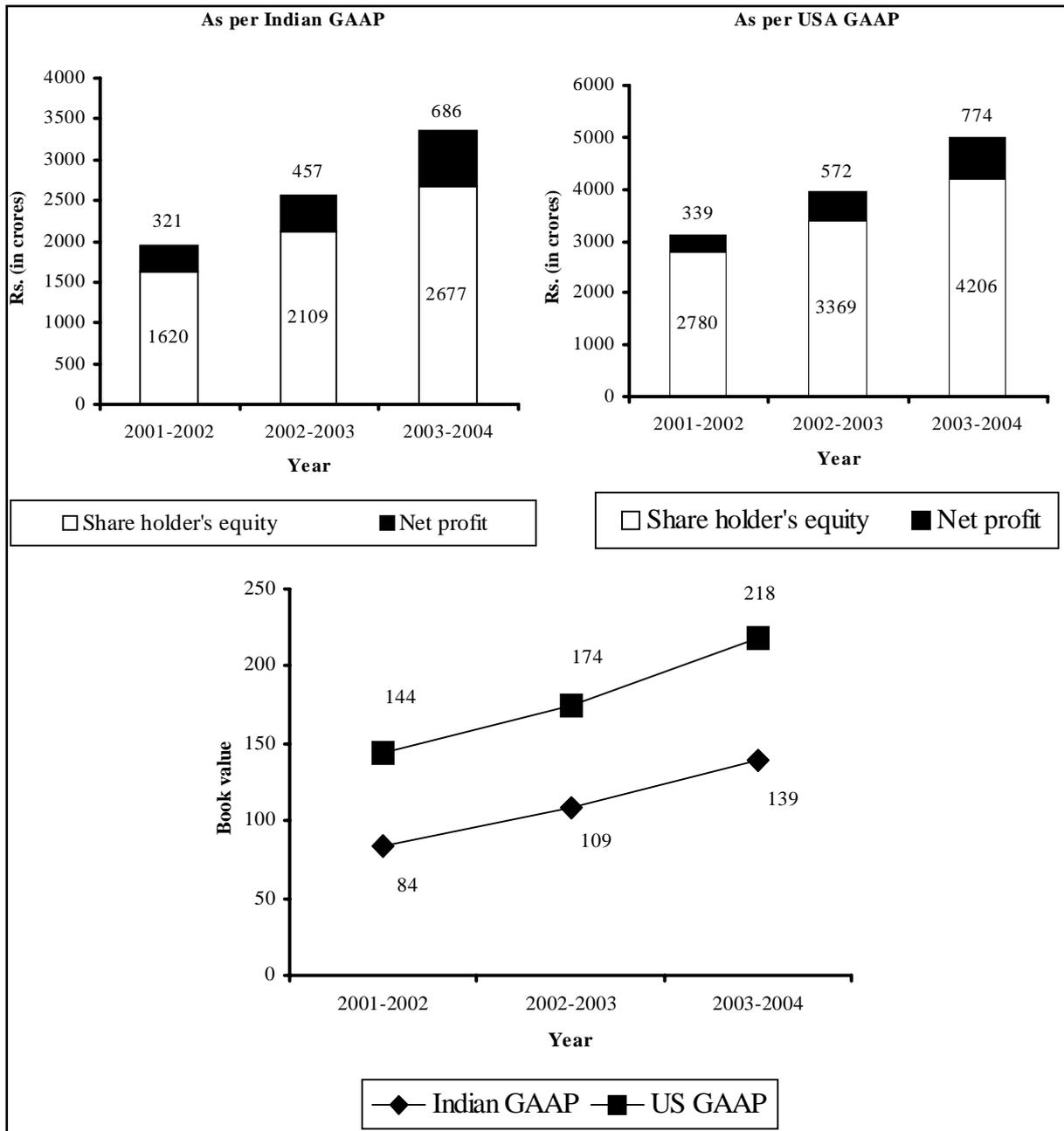
- The superiority Index (SI) of 2 companies is defined as

$$SI = \frac{\text{Market / Fair Value of company 1}}{\text{Market / Fair Value of company 2}} \times \frac{\text{Quantity of company 2}}{\text{Quantity of company 1}}$$

The company that has an SI more than 1 as compared to another company is considered to be a company superior to that other company which, among the companies given, is the top 3 superior companies in the list above?

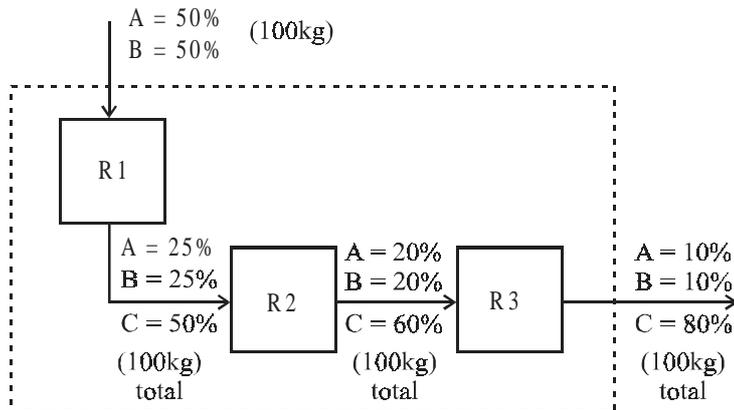
1. Hindalco Industries Ltd., Lafarge India Ltd., Gujarat Ambuja Cements Ltd.
2. Hindalco Industries Ltd., Bharat Petroleum Corporation Ltd., Indian Railway Finance Ltd.
3. Bharat Petroleum, India Railway Finance Ltd., Gujarat Ambuja Cements Ltd.
4. None of these

DIRECTIONS for Questions 9 to 12: The data below shows the financial performance of CRBC Bank for the period 2001-02 to 2003-04. The data shows the growth in net profit and share holder's equity during this period. The line chart also shows the book value per equity share during this period. The values for each parameter is given for both accounting principles — Indian GAAP and US GAAP.



9. What is the approximate compounded annual growth rate in the book value per equity share of CRBC Bank during the given period 2001-02 to 2003-04, as per Indian GAAP?
1. 35% 2. 29% 3. 23% 4. 20%
10. What is the approximate percentage change in difference in net profit between Indian and US GAAP in 2003-04 as compared to the same difference in the previous year for CRBC Bank?
1. 30.5% 2. 26.5% 3. 23.5% 4. 19.5%
11. Which year showed the highest net profit as a percentage of the shareholder's equity and as per which accounting principle for CRBC Bank?
1. 2003-04, US GAAP 2. 2003-04, Indian GAAP
3. 2002-03, Indian GAAP 4. None of these
12. If the number of equity shares is given by the ratio of shareholder's equity to that of the book value per equity share, find the approximate difference in the number of shares of CRBC Bank as per Indian GAAP and US GAAP in the year 2003-04.
1. No difference 2. 25.0 lakh 3. 60.0 lakh 4. 100.0 lakh

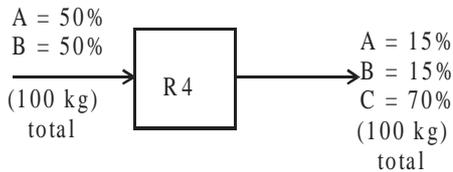
DIRECTIONS for Questions 13 to 16: In a certain chemical plant, there are 3 reactors R1, R2 and R3 producing products at each stage (from each reactor). The plant uses 2 raw materials A and B. The product is C (which contains a fixed percentage of A and B as well in each stage)



Cost of A = Rs 10/kg
 Cost of B = Rs 20/kg
 Cost of C = Rs 50/kg
 Processing cost in R1 = Rs 3/kg of Input
 Processing cost in R2 = Rs 2/kg of Input
 Processing cost in R3 = Rs 3/kg of Input.

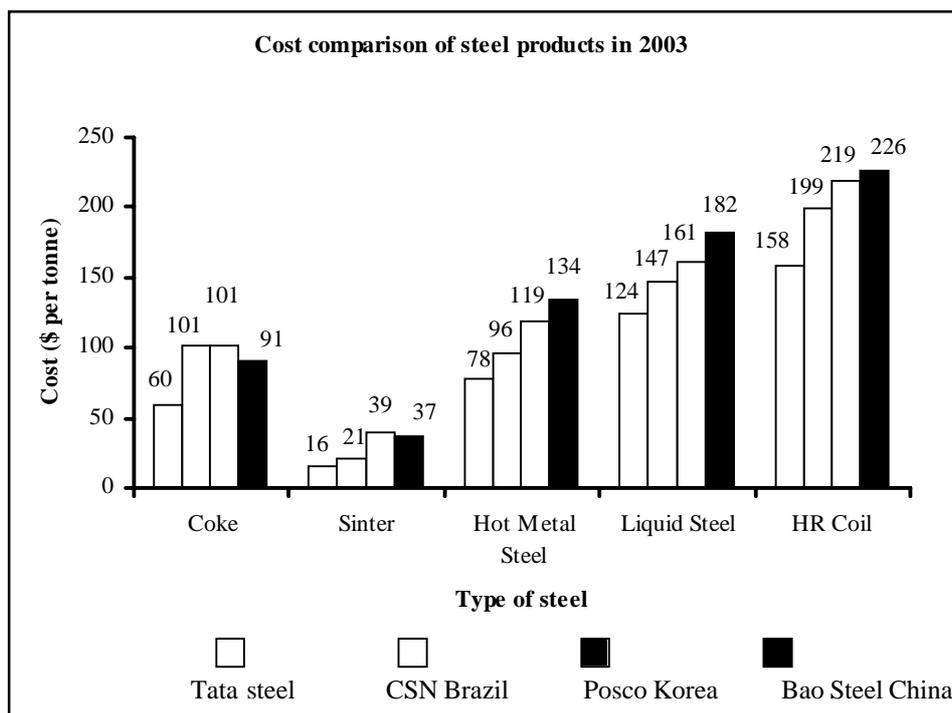
13. Calculate the range of the profit percentage earned in the entire process of this chemical plant (that is, at the end of reactor R3).
1. 80 – 85% 2. 90 – 95% 3. 85 – 90% 4. 95 – 100%

14. Maximum profit is seen across which reactor among the three given?
 1. R1 2. R2 3. R3 4. Both (1) and (2)
15. Calculate the profit earned in R2 if a total input of 900 kg of A, B and C is changed in R2 (as compared to 100 kg shown in the figure).
 1. Rs. 1191.3 2. Rs. 1213.4 3. Rs. 1191.6 4. Rs. 1291.6
16. If the entire chemical plant of 3 reactors is replaced by a single reactor which has zero processing cost



- The new arrangement is more profitable than the earlier plant by what percentage?
 1. 70% 2. 75% 3. 80% 4. 85%

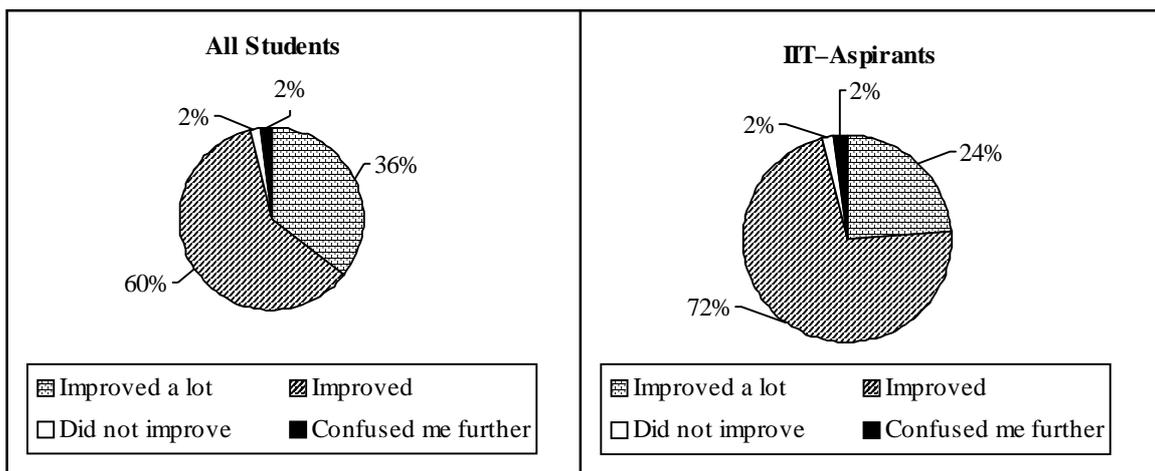
DIRECTIONS for Questions 17 to 21: The bar chart below given the cost comparison of different steel products produced by 4 different steel manufacturers across the globe in the year 2003 – Tata Steel (India), CSN (Brazil), Posco (Korea) and Bao Steel (China). The five varieties of steel are — Coke, Sinter, Hot Metal Steel, Liquid Steel, and HR Coil. Each of these manufacturers produce only these 5 varieties of steel.



17. By what percentage is the cost of Hot Metal Steel higher for Posco (Korea) as compared to CSN (Brazil) in 2003?
 1. 22% 2. 24% 3. 28% 4. 32%

18. What is the ratio of the average steel price (across the 5 varieties) of Tata Steel (India) to that of Posco (Korea) in 2003?
 1. 0.5 2. 0.68 3. 0.75 4. 1.0
19. Gross profit margin is defined as difference between selling price and cost price as a percentage of the cost price. If Tata Steel (India) earns a gross profit margin of 12% in 2003 on each of the 5 varieties of steel manufactured, what is the selling price of HR coil steel in the same year?
 1. \$180.12 per tonne 2. \$176.96 per tonne 3. \$173.8 per tonne 4. Data insufficient
20. Which variety of steel (out of the 5 given) has the second highest difference in value per tonne between the lowest price and the highest price from the given manufacturers in 2003?
 1. HR Coil 2. Liquid Steel 3. Hot Metal Steel 4. Coke
21. If the given four manufactures constitute 77% of the value of steel produced in the world, find the total value of steel produced in the world in 2003.
 1. \$ 483 million 2. \$ 885 million 3. \$ 668 million 4. Data insufficient

DIRECTIONS for Questions 22 to 25: A sample set of 61 science stream students of class 12th were exposed to a radically new teaching methodology towards preparation for IIT–entrance examination. Out of this sample size, 73.77% students were IIT–aspirants while the rest were non–IIT–aspirants. Also 47.54% of this sample had studied the topic earlier, while the rest were studying this topic for the first time. The rating (four types in all) on effectiveness of the methodology among all the students and IIT–aspirants are given below.



(Note: Number of students in any category is a whole number)

22. How many non–IIT–aspirants rated the methodology as ‘improved a lot’ among the given sample?
 1. 7 2. 9 3. 11 4. 14
23. What is the ratio of students who rated the methodology as ‘improved’ among IIT–aspirants to that among all the students (in the sample)?
 1. 1.18 2. 1.15 3. 0.92 4. 0.86

ADDITIONAL DIRECTIONS for Questions 24 to 25: Among those studying the topic for the first time, 63% rated the methodology as ‘improved a lot’. Among those who had studied the topic earlier, only 7% rated the methodology as ‘improved a lot’.

24. Find the difference in the number of students who rated the methodology as ‘improved a lot’ among those studying the topic for the first time and those who had studied it earlier.
 1. 34 2. 29 3. 18 4. Data insufficient
25. Find the ratio of the IIT–aspirants who rated the methodology as ‘improved a lot’ and who had studied the topic earlier to that who rated the methodology as ‘improved’ and who were studying the topic for the first time.
 1. 0.5 2. 1.25 3. 1.33 4. Data insufficient

DIRECTIONS for Questions 26 to 35: Each of the following questions consist of a questions and two statements, I and II.

Choose

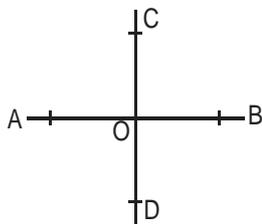
- (1) If one of the two statements (I or II) alone is sufficient but the other statement alone is not
- (2) If each statement alone is sufficient to answer the question asked.
- (3) If statements I and II together are sufficient to answer the question but neither statement alone is sufficient.
- (4) If even statements I and II together are not sufficient to answer the question.

26. What is the value of the positive integer x ?

I. $x^2 - 3x - 10 \geq 0$

II. $x^2 - 4x + 4 \leq 0$

27. OC is perpendicular to AB. Which is closer to C — A or B?



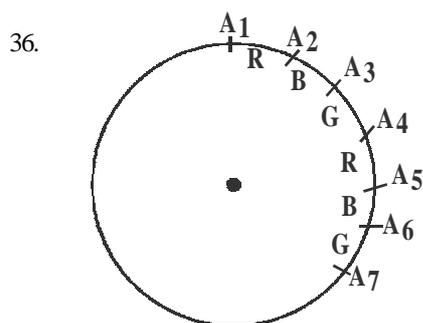
- I. OA is less than OB.
- II. ACBD is not a parallelogram.

28. If p and q are positive integer and $pq = 24$, then what is the value of p ?

I. $\frac{q}{6}$ is an integer

II. $\frac{p}{2}$ is an integer

29. If X and Y are integers and $Y = |X + 3| + |4 - X|$, does Y equal 7?
 I. $X < 4$
 II. $X > -3$
30. Is X an even integer? [Where 'n' and 'p' are integers.]
 I. $X = (n + p)^2$
 II. $X = 2n + 10p$
31. Only one value of x satisfies an equation. If it is given that x is an integer, what is the value of x ?
 I. $\frac{1}{5} < \frac{1}{x+1} < \frac{1}{2}$
 II. $(x-3)(x-4) = 0$
32. In an election there are only two candidates, P and Q , then what is the total number of votes polled in the election?
 I. P gets 58% votes.
 II. The difference of the votes of P and Q is 160.
33. What is distance between the two banks of a river?
 I. One boat covers the distance in 10 min lesser than the other boat in still water.
 II. The speed of the faster boat is 3 km/hr more than that of the slower.
34. How long will the tank take to fill up half?
 I. Two taps can fill up $(1/3)$ rd of the tank in 4 hr.
 II. One tap can empty the half of the tank in 12 hr.
35. What is the time taken by a boy to cover 30 km?
 I. The boy travels at 10km/ hr for the first 15 km.
 II. Boy's speed in the second half of the journey is half of the first half.



A circle is divided into 'n' parts and the parts are being overwritten with Red (R), Blue (B) and Green (G) colour pencil (in that order) in the fashion as shown in the above figure. Let the process starts at A_1 in the clockwise manner. If $A_n A_1$ is overwritten with Red pencil, then 'n' can be equal to

1. 1257 2. 2357 3. 1438 4. 2876

DIRECTIONS for Questions 37 and 38: Answer the questions based on the following information.



Shown above is n (>50) lamppost arranged as given. A boy runs to and fro between A_1 and A_n counting each post he get past. If the boy starts running from A_1 , then

37. Which of the following count will always come on a fixed lamppost for any integral value of m ?
1. $2mn - m$ 2. $2mn + m$ 3. $2mn - n$ 4. $2mn + n$
38. The count $100n$ will come on the lamppost
1. A_{47} 2. A_{48} 3. A_{49} 4. A_{50}
39. Let A be as competent as B and C together and B as competent as C and A together. Which the following inference(s) can be made?
- I. C is fully incompetent to deal with the situation.
 II. A and B are alone fully competent to deal with the situation.
 III. A and B are together fully competent to deal with the situation but not alone.
1. I only 2. I and II 3. I and III 4. None of these

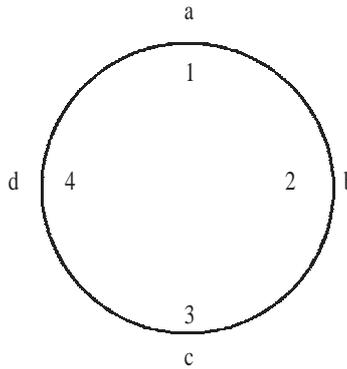
DIRECTIONS for Questions 40 to 42: A, B, C and D are four towns – all inter connected by roads of same length equal to 1 mile. A car is going from one town to another without immediately returning back by the same road. (that is, the car cannot take the route ACA).

40. If the car starts from town A and after covering 100 miles, it is again at town A, then the least number of times the car would have passed through town D is
1. 0 2. 1 3. 2 4. 3
41. If the car starts from town A and after covering 101 miles, it is again at town A, then the least number of times the car would have passed through town D is
1. 0 2. 1 3. 2 4. 3
42. If the car starts from town A and after covering $(30 + i)$ miles (where $i = 1$ or 2), it is at town B, then the least number of times the car would have passed through town D is
1. 0 2. $(i - 1)$ 3. i 4. None of these

DIRECTIONS for Questions 43 to 44: A man divides his property among his 4 sons – A, B, C and D, who get 10%, 20%, 30%, and 40% of the property respectively. Each son divides his portion of the property equally among his three brothers and hence their share of properties changes. So, after each such round, each son has one-third of the sum of the share of other three brothers at the beginning of that round.

43. If this process is continued for 5 rounds, then the share of A will be approximately
1. 26% 2. 27% 3. 28% 4. 29%
44. If this process is continued for infinite number of rounds (large number of times), then the share of D will be nearly
1. 25% 2. 28% 3. 31% 4. 33%

DIRECTIONS for Questions 45 to 47: Answer the questions based on the following information.



A process consists of interchanging the letters at the position given within brackets, for example, (1, 2) means that letters in positions 1 and 2 are interchanged. The whole process may be an interchange of one or more pairs of letters.

45. If a process is a combination of (1, 2); (2, 3); (3, 4) and (4, 1) in succession, which letter will be at the position 3 when the process is executed 100 times successively?
1. a 2. b 3. c 4. d
46. If a process is a combination of (1, 2); (2, 4); (3, 4) in succession, which letter will be at the position 1 when the process is executed 100 times successively?
1. a 2. b 3. c 4. d
47. If a process is a combination of (1, 2); (2, 3); (3, 4); (4, 2); (4, 1); (3, 1); (3, 2); (2, 4) and (1, 4) in succession, the intermediate processes are redundant except the exchange of letters at the positions
1. (1, 2) 2. (1, 3) 3. (1, 4) 4. (3, 4)

DIRECTIONS for Questions 48 to 50: A_1, A_2, A_3 and A_4 are four friends who went to a restaurant, three at a time. Each one went to the restaurant three times and each one paid the bill once. The bill paid by A_1, A_2, A_3 and A_4 was Rs. 300, 400, 500 and 600 respectively while they ate the food costing Rs. 500, 300, 600 and 400 respectively. At a time, each one ate the food costing either Rs. 100 or 200.

48. When A_1, A_2, A_3 went together, then the bill was paid by
1. A_1 2. A_2 3. A_3 4. Cannot be determined.
49. When A_1, A_2, A_4 went together, then the bill was paid by
1. A_1 2. A_2 3. A_4 4. Cannot be determined.
50. When A_2, A_3, A_4 went together, then the bill was paid by
1. A_2 2. A_3 3. A_4 4. Cannot be determined