CAT 2001 Question Paper

Common Admission Test · Indian Institutes of Management

Time Allowed: 2 Hours **150 Questions**

General Instructions

(i) This paper contains **150 questions** from **CAT 2001**. The original examination was a **paper-based test** with a **120-minute** duration.

(ii) The question groups appear in their original sequence: **Quantitative Ability** (50 questions); **Verbal Ability and Reading Comprehension** (50 questions); **Data Interpretation** (50 questions).

(iii) Each question has **four choices**. Select the single best answer, using the shared passage, table or diagram wherever indicated.

(iv) Read the directions for every question group carefully. Question numbers continue across the paper.

(v) Passages and questions may continue onto the following page. Read each question and all its choices before answering.

Quantitative Ability · Questions 1-50

1. A student took five papers in an examination, where the full marks were the same for each paper. His marks in these papers were in the proportion of 6 : 7 : 8 : 9 : 10. In all papers together, the candidate obtained 60% of the total marks. Then the number of papers in which he got more than 50% marks is

(A) 2
(B) 3
(C) 4
(D) 5

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2. A square, whose side is 2 m, has its corners cut away so as to form an octagon with all sides equal. Then the length of each side of the octagon, in metres, is

(A) $\frac{\sqrt{2}}{\sqrt{2}+1}$
(B) $\frac{2}{\sqrt{2}+1}$
(C) $\frac{2}{\sqrt{2}-1}$
(D) $\frac{\sqrt{2}}{\sqrt{2}-1}$

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3. Let x, y and z be distinct integers. x and y are odd and positive, and z is even and positive. Which one of the following statements cannot be true?

(A) $y(x-z)^2$ is even
(B) $y^2(x-z)$ is odd
(C) $y(x-z)$ is odd
(D) $z(x-y)^2$ is even

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4. If x > 5 and y < -1, then which of the following statements is true?

(A) (x + 4y) > 1
(B) x > -4y
(C) -4x < 5y
(D) None of these

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5. A red light flashes three times per minute and a green light flashes five times in 2 min at regular intervals. If both lights start flashing at the same time, how many times do they flash together in each hour?

(A) 30
(B) 24
(C) 20
(D) 60

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6. Of 128 boxes of oranges, each box contains at least 120 and at most 144 oranges. X is the maximum number of boxes containing the same number of oranges. What is the minimum value of X?

(A) 5
(B) 103
(C) 6
(D) Cannot be determined

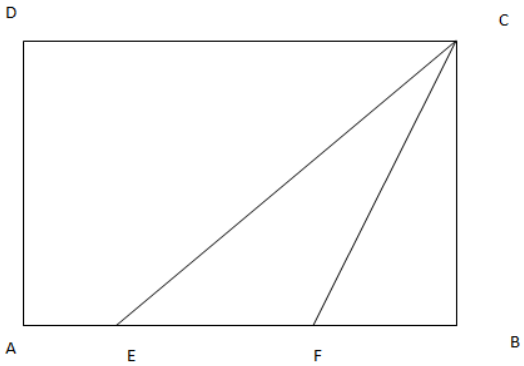
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7. A certain city has a circular wall around it, and this wall has four gates pointing north, south, east and west. A house stands outside the city, 3 km north of the north gate, and it can just be seen from a point 9 km east of the south gate. What is the diameter of the wall that surrounds the city?

(A) 6 km
(B) 9 km
(C) 12 km
(D) None of these

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8. In the given diagram, ABCD is a rectangle with AE = EF = FB. What is the ratio of the areas of CEF and that of the rectangle?



(A) $\frac{1}{6}$

(B) $\frac{1}{8}$

(C) $\frac{1}{9}$

(D) None of these

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9. A can complete a piece of work in 4 days. B takes double the time taken by A, C takes double that of B, and D takes double that of C to complete the same task. They are paired in groups of two each. One pair takes two-thirds the time needed by the second pair to complete the work. Which is the first pair?

(A) A and B

(B) A and C

(C) B and C

(D) A and D

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10. In a four-digit number, the sum of the first 2 digits is equal to that of the last 2 digits. The sum of the first and last digits is equal to the third digit. Finally, the sum of the second and fourth digits is twice the sum of the other 2 digits. What is the third digit of the number?

(A) 5

(B) 8

(C) 1

(D) 4

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11. Two men X and Y started working for a certain company at similar jobs on January 1, 1950. X asked for an initial monthly salary of Rs. 300 with an annual increment of Rs. 30. Y asked for an initial monthly salary of Rs. 200 with a rise of Rs. 15 every 6 months. Assume that the arrangements remained unaltered till December 31, 1959. Salary is paid on the last day of the month. What is the total amount paid to them as salary during the period?

(A) Rs. 93,300

(B) Rs. 93,200

(C) Rs. 93,100

(D) None of these

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12. Anita had to do a multiplication. In stead of taking 35 as one of the multipliers, she took 53. As a result, the product went up by 540. What is the new product?

(A) 1050

(B) 540

(C) 1440

(D) 1590

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13. A college has raised 75% of the amount it needs for a new building by receiving an average donation of Rs. 600 from the people already solicited. The people already solicited represent 60% of the people the college will ask for donations. If the college is to raise exactly the amount needed for the new building, what should be the average

donation from the remaining people to be solicited?

(A) Rs. 300
(B) Rs. 250
(C) Rs. 400
(D) 500

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14. x and y are real numbers satisfying the conditions $2 < x < 3$ and $-8 < y < -7$. Which of the following expressions will have the least value?

(A) x^2y
(B) xy^2
(C) $5xy$
(D) None of these

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15. m is the smallest positive integer such that for any integer $n \geq m$, the quantity $n^3 - 7n^2 + 11n - 5$ is positive. What is the value of m?

(A) 4
(B) 5
(C) 8
(D) None of these

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16. A ladder leans against a vertical wall. The top of the ladder is 8 m above the ground. When the bottom of the ladder is moved 2 m farther away from the wall, the top of the ladder rests against the foot of the wall. What is the length of the ladder?

(A) 10 m
(B) 15 m
(C) 20 m
(D) 17 m

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17. Three friends, returning from a movie, stopped to eat at a restaurant. After dinner, they paid their bill and noticed a bowl of mints at the front counter. Sita took one-third of the mints, but returned four because she had a momentary pang of guilt. Fatima then took one-fourth of what was left but returned three for similar reason. Eswari then took half of the remainder but threw two back into the bowl. The bowl had only 17 mints left when the raid was over. How many mints were originally in the bowl?

(A) 38
(B) 31
(C) 41
(D) None of these

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18. If 09/12/2001(DD/MM/YYYY) happens to be Sunday, then 09/12/1971 would have been a

(A) Wednesday
(B) Tuesday
(C) Saturday
(D) Thursday

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19. In a number system the product of 44_{10} and 11_{10} is 3414. The number 3111 of this system, when converted to the decimal number system, becomes

(A) 406
(B) 1086
(C) 213
(D) 691

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20. At his usual rowing rate, Rahul can travel 12 miles downstream in a certain river in 6 hr less than it takes him to travel the same distance upstream. But if he could double his usual rowing rate for this 24 miles round trip, the downstream 12 miles would then take only 1 hr less than the upstream 12 miles. What

is the speed of the current in miles per hour?

(A) $\frac{7}{3}$ (B) $\frac{4}{3}$

(C) $\frac{5}{3}$ (D) $\frac{8}{3}$

21. Every 10 years the Indian Government counts all the people living in the country. Suppose that the director of the census has reported the following data on two neighbouring villages Chota Hazri and Mota Hazri. Chota Hazri has 4,522 fewer males than Mota Hazri. Mota Hazri has 4,020 more females than males. Chota Hazri has twice as many females as males. Chota Hazri has 2,910 fewer females than Mota Hazri. What is the total number of males in Chota Hazri?

(A) 11,264 (B) 14,174

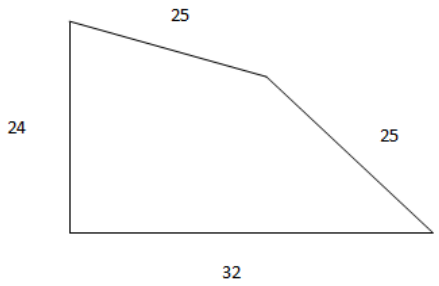
(C) 5,632 (D) 10,154

22. Three classes X, Y and Z take an algebra test. The average score in class X is 83. The average score in class Y is 76. The average score in class Z is 85. The average score of all students in classes X and Y together is 79. The average score of all students in classes Y and Z together is 81. What is the average for all the three classes?

(A) 81 (B) 81.5

(C) 82 (D) 84.5

23. Two sides of a plot measure 32 m and 24 m and the angle between them is a perfect right angle. The other two sides measure 25 m each and the other three angles are not right angles. What is the area of the plot?



(A) 768 m^2 (B) 534 m^2

(C) 696.5 m^2 (D) 684 m^2

24. All the page numbers from a book are added, beginning at page 1. However, one page number was added twice by mistake. The sum obtained was 1000. Which page number was added twice?

(A) 44 (B) 45

(C) 10 (D) 12

25. Shyama and Vyom walk up an escalator (moving stairway). The escalator moves at a constant speed. Shyama takes three steps for every two of Vyom's steps. Shyama gets to the top of the escalator after having taken 25 steps, while Vyom (because his slower pace lets the escalator do a little more of the work) takes only 20 steps to reach the top. If the escalator were turned off, how

many steps would they have to take to walk up?

(A) 40
(B) 50
(C) 60
(D) 80

26. At a certain fast food restaurant, Brian can buy 3 burgers, 7 shakes, and one order of fries for Rs. 120 exactly. At the same place it would cost Rs. 164.5 for 4 burgers, 10 shakes, and one order of fries. How much would it cost for an ordinary meal of one burger, one shake, and one order of fries?

(A) Rs. 31
(B) Rs. 41
(C) Rs. 21
(D) Cannot be determined

27. If a, b, c and d are four positive real numbers such that abcd = 1, what is the minimum value of (1 + a)(1+b)(1+c)(1+d)?

(A) 4
(B) 1
(C) 16
(D) 18

28. There's a lot of work in preparing a birthday dinner. Even after the turkey is in the oven, there's still the potatoes and gravy, yams, salad, and cranberries, not to mention setting the table. Three friends — Asit, Arnold and Afzal — work together to get all of these chores done. The time it takes them to do the work together is 6 hr less than Asit would have taken working alone, 1 hr less than Arnold would have taken alone, and half the time Afzal would have taken working alone. How long did it take them to do these chores working together?

(A) 20 min
(B) 30 min
(C) 40 min
(D) 50 min

29. Euclid has a triangle in mind. Its longest side has length 20 and another of its sides has length 10. Its area is 80. What is the exact length of its third side?

(A) $\sqrt{260}$
(B) $\sqrt{250}$
(C) $\sqrt{240}$
(D) $\sqrt{270}$

30. For a Fibonacci sequence, from the third term onwards, each term in the sequence is the sum of the previous two terms in that sequence. If the difference in squares of 7th and 6th terms of this sequence is 517, what is the 10th term of this sequence? It is known that all the terms of the Fibonacci sequence are natural numbers

(A) 147
(B) 76
(C) 123
(D) Cannot be determined

31. Fresh grapes contain 90% water by weight while dried grapes contain 20% water by weight and the remaining proportion being pulp. What is the weight of dry grapes available from 20 kg of fresh grapes?

(A) 2 kg
(B) 2.4 kg
(C) 2.5 kg
(D) None of these

32. Train X departs from station A at 11 a.m. for station B, which is 180 km so far. Train Y departs from station B at 11 a.m. for station A. Train X travels at an average speed of 70 km/hr and does not stop anywhere until it arrives at station B. Train Y travels at an average speed of 50 km/hr, but has to stop for 15

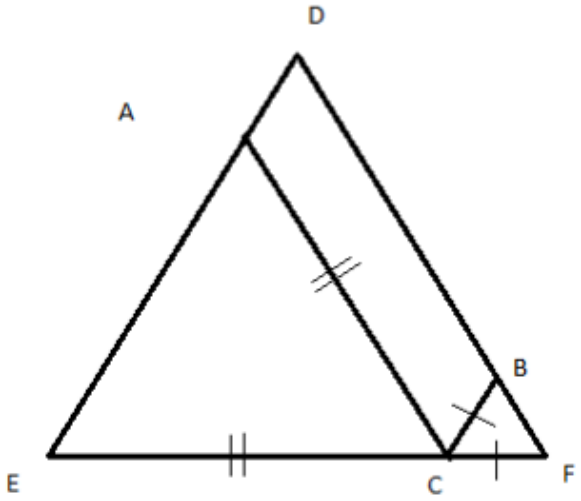
min at station C, which is 60 km away from station B enroute to station A. Ignoring the lengths of the trains, what is the distance, to the nearest kilometre, from station A to the point where the trains cross each other?

(A) 112 km
(B) 118 km
(C) 120 km
(D) None of these

33. A set of consecutive positive integers beginning with 1 is written on the blackboard. A student came along and erased one number. The average of the remaining numbers is $\frac{602}{17}$. What was the number erased?

(A) 7
(B) 8
(C) 9
(D) None of these

34. In triangle DEF shown below, points A, B and C are taken on DE, DF and EF respectively such that EC = AC and CF = BC. If angle D equals 40 degress , then angle ACB is ?



(A) 140
(B) 70
(C) 100
(D) None of these

35. The owner of an art shop conducts his business in the following manner: every once in a while he raises his prices by X%, then a while later he reduces all the new prices by X%. After one such updown cycle, the price of a painting decreased by Rs. 441. After a second up-down cycle the painting was sold for Rs. 1,944.81. What was the original price of the painting?

(A) Rs. 2,756.25
(B) Rs. 2,256.25
(C) Rs. 2,500
(D) Rs. 2,000

36. Three runners A, B and C run a race, with runner A finishing 12 m ahead of runner B and 18 m ahead of runner C, while runner B finishes 8 m ahead of runner C. Each runner travels the entire distance at a constant speed. What was the length of the race?

(A) 36 m
(B) 48 m
(C) 60 m
(D) 72 m

37. Let x and y be two positive numbers such that $x + y = 1$. Then the minimum value of $(x + \frac{1}{x})^2 + (y + \frac{1}{y})^2$ is

(A) 12

(B) 20

(C) 12.5

(D) 13.3

Questions 38 to 39

Directions for the following two questions: Answer the questions based on the following information.

The batting average (BA) of a Test batsman is computed from runs scored and innings played — completed innings and incomplete innings (not out) in the following manner:

r_1 = Number of runs scored in completed innings

n_1 = Number of completed innings

r_2 = Number of runs scored in incomplete innings

n_2 = Number of incomplete innings

$$BA = \frac{r_1 + r_2}{n_1}$$

To better assess a batsman's accomplishments, the ICC is considering two other measures MBA_1 and MBA_2 defined as follows:

$$MBA_1 = \frac{r_1}{n_1} + \frac{n_2}{n_1} * max[0, (\frac{r_2}{n_2} - \frac{r_1}{n_1})]$$

$$MBA_2 = \frac{r_1 + r_2}{n_1 + n_2}$$

38. Based on the above information which of the following is true?

(A) $MBA_1 \leq BA \leq MBA_2$

(B) $BA \leq MBA_2 \leq MBA_1$

(C) $MBA_2 \leq BA \leq MBA_1$

(D) None of these

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39. An experienced cricketer with no incomplete innings has BA of 50. The next time he bats, the innings is incomplete and he scores 45 runs. It can be inferred that

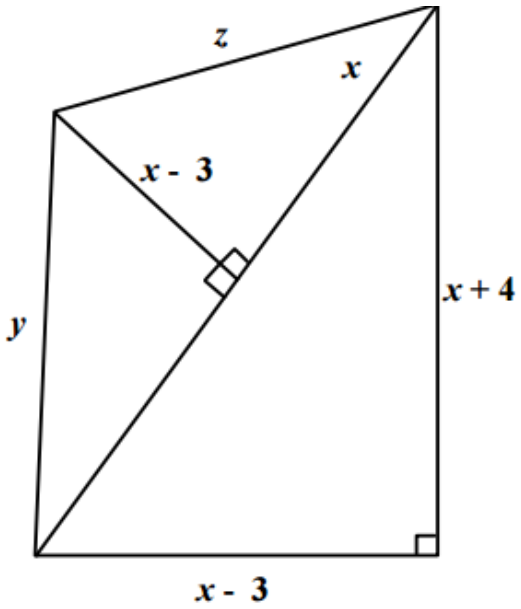
(A) BA and MBA_1 will both increase

(B) BA will increase and MBA_2 will decrease

(C) BA will increase and not enough data is available to assess change in MBA_1 and MBA_2

(D) None of these

40. Based on the figure below, what is the value of x, if y = 10?



(A) 10
(B) 11
(C) 12
(D) None of these

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41. A rectangular pool of 20 m wide and 60 m long is surrounded by a walkway of uniform width. If the total area of the walkway is 516 m^2 , how wide, in metres, is the walkway?

(A) 4 m
(B) 2 m
(C) 3 m
(D) 3.5 m

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42. Let b be a positive integer and $a = b^2 - b$. If $b \geq 4$, then $a^2 - 2a$ is divisible by

(A) 15
(B) 20
(C) 24
(D) All of these

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43. Ashish is given Rs. 158 in one-rupee denominations. He has been asked to allocate them into a number of bags such that any amount required between Re 1 and Rs. 158 can be given by handing out a certain number of bags without opening them. What is the minimum number of bags required?

(A) 11
(B) 12
(C) 13
(D) None of these

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44. In some code, letters a, b, c, d and e represent numbers 2, 4, 5, 6 and 10. We just do not know which letter represents which number. Consider the following relationships: I. a + c = e, II. b - d = d and III. e + a = b Which of the following statements is true?

(A) b = 4, d = 2
(B) a = 4, e = 6
(C) b = 6, e = 2
(D) a = 4, c = 6

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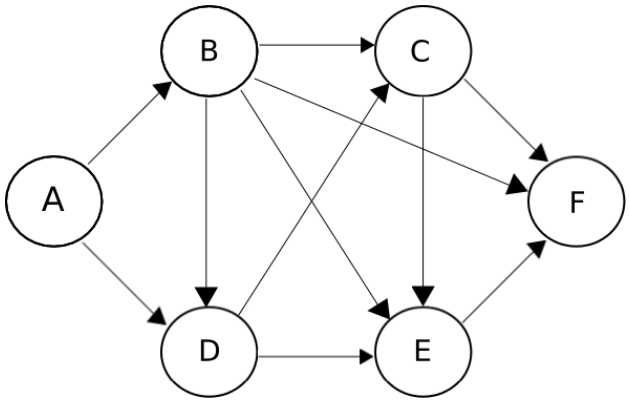
45. Ujakar and Keshab attempted to solve a quadratic equation. Ujakar made a mistake in writing down the constant term. He ended up with the roots (4, 3). Keshab made a mistake in writing down the coefficient of x. He got the roots as (3, 2). What will be the exact roots of the original quadratic equation?

(A) (6, 1)
(B) (-3, -4)
(C) (4, 3)
(D) (-4, -3)

46. A change-making machine contains one-rupee, two-rupee and five-rupee coins. The total number of coins is 300. The amount is Rs. 960. If the numbers of one-rupee coins and two-rupee coins are interchanged, the value comes down by Rs. 40. The total number of five-rupee coins is

(A) 100
(B) 140
(C) 60
(D) 150

47. The figure below shows the network connecting cities A, B, C, D, E and F. The arrows indicate permissible direction of travel. What is the number of distinct paths from A to F?



(A) 9
(B) 10
(C) 11
(D) None of these

48. Let n be the number of different five-digit numbers, divisible by 4 with the digits 1, 2, 3, 4, 5 and 6, no digit being repeated in the numbers. What is the value of n?

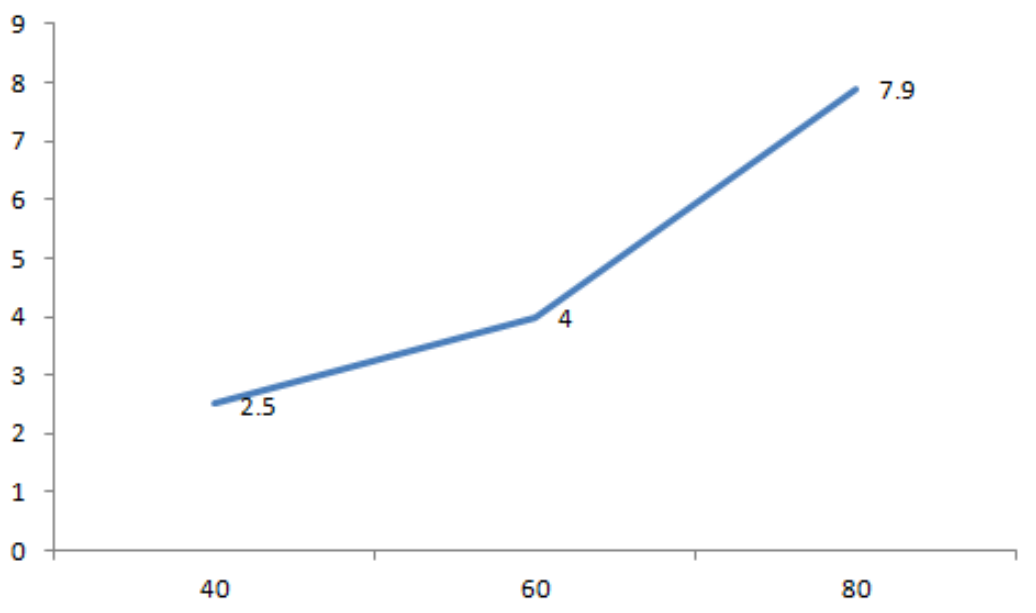
(A) 144
(B) 168
(C) 192
(D) None of these

Questions 49 to 50

Directions for the following two questions: Answer the questions based on the following information.

The petrol consumption rate of a new model car 'Palto' depends on its speed and may be described by the graph below.

The axis represents the speed and the Y axis represents the Fuel Consumption (Liters per hour)



49. Manasa makes a 200 km trip from Mumbai to Pune at a steady speed of 60 km/hr. What is the volume of petrol consumed for the journey? [CAT 2001]

(A) 12.5 L

(B) 13.33 L

(C) 16 L

(D) 19.75 L

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50. Manasa would like to minimize the fuel consumption for the trip by driving at the appropriate speed. How should she change the speed? [CAT 2001]

(A) Increase the speed

(B) Decrease the speed

(C) Maintain the speed at 60 km/hr

(D) Cannot be determined

Questions 51 to 55

Directions for the following five questions: Answer the questions based on the following information.

For the word given at the top of each table, match the dictionary definitions on the left (A, B, C, D) with their corresponding usage on the right (E, F, G, H). Out of the four possibilities given in the boxes below the table, select the one that has all the definitions and their usages correctly matched.

51. EXCEED

Dictionary definition		Usage	
A.	To extend outside of or enlarge beyond used chiefly in strictly physical relations	E.	The mercy of God exceeds our finite minds
B.	To be greater than or superior to	F.	Their accomplishments exceeded our expectation.
C.	Be beyond the comprehension of	G.	He exceeded his authority when he paid his brother's gambling debts with money from the trust.
D.	To go beyond a limit set by (as an authority or privilege)	H.	If this rain keeps up, the river will exceed its banks by morning.

(A) A - H, B - F, C - E, D - G

(B) A - H, B - E, C - F, D - G

(C) A - G, B - F, C - E, D - H

(D) A - F, B - G, C - H, D - E

52. INFER

Dictionary definition		Usage	
A.	To derive by reasoning or implication	E.	We see smoke and infer fire.
B.	To surmise	F.	Given some utterance, a listener may infer from it all sorts of things which neither the utterance nor the utterer implied.
C.	To point out	G.	I waited all day to meet him. From this you can infer my zeal to see him.
D.	To hint	H.	She did not take part in the debate except to ask a question inferring that she was not interested in the debate.

(A) A - G, B - E, C - H, D - F

(B) A - F, B - H, C - E, D - G

(C) A - H, B - G, C - F, D - E

(D) A - E, B - F, C - G, D - H

53. Mellow

Dictionary definition		Usage	
A.	Adequately and properly aged so as to be free of harshness	E.	He has mellowed with age.
B.	Freed from the rashness of youth	F.	The tones of the old violin were mellow.
C.	Of soft and loamy consistency	G.	Some wines are mellow.
D.	Rich and full but free from stridency	H.	Mellow soil found in the Gangetic plains.

(A) A - E, B - G, C - F, D - H
(B) A - E, B - F, C - G, D - H
(C) A - G, B - E, C - H, D - F
(D) A - H, B - G, C - F, D - E

54. Relief

Dictionary definition		Usage	
A.	Removal or lightening of something distressing	E.	A ceremony follows the relief of a sentry after the morning shift.
B.	Aid in the form of necessities for the indigent	F.	It was a relief to take off the tight shoes.
C.	Diversion	G.	The only relief I get is by playing cards.
D.	Release from the performance of duty	H.	Disaster relief was offered to the victims

(A) A - F, B - H, C - E, D - G
(B) A - F, B - H, C - G, D - E
(C) A - H, B - F, C - G, D - E
(D) A - G, B - E, C - H, D - F

55. Purge

Dictionary definition		Usage	
A.	Remove a stigma from the name of	E.	The opposition was purged after the coup.
B.	Make clean by removing whatever is superfluous, foreign	F.	The committee heard his attempt to purge himself of a charge of heresy.
C.	Get rid of	G.	Drugs that purge the bowels are often bad for the brain.
D.	To cause evacuation of	H.	It is recommended to purge water by distillation.

(A) A - E, B - G, C - F, D - H
(B) A - F, B - E, C - H, D - G
(C) A - H, B - F, C - G, D - E
(D) A - F, B - H, C - E, D - G

56. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph. A. Although there are large regional variations, it is not infrequent to find a large number of people sitting here and there and doing nothing. B. Once in office, they receive friends and relatives who feel free to call any time without prior appointment. C. While working, one is struck by the slow and clumsy actions and reactions, indifferent attitudes, procedure rather than outcome orientation, and the lack of consideration for others. D. Even those who are employed often come late to the office and leave early unless they are forced to be punctual. E. Work is not intrinsically valued in India. F. Quite often people visit ailing friends and relatives or go out of their way to help them in their personal matters even during office hours. [CAT 2001]

(A) ECADBF
(B) EADCFB
(C) EADBFC
(D) ABFCBE

57. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph. A. But in the industrial era destroying the enemy's productive capacity means bombing the factories which are located in the cities. B. So in the agrarian era, if you need to destroy the enemy's productive capacity, what you want to do is burn his fields, or if you're really vicious, salt them. C. Now in the information era, destroying the enemy's productive capacity means destroying the information infrastructure. D. How do you do battle with your enemy? E. The idea is to destroy the enemy's productive capacity, and depending upon the economic foundation, that productive capacity is different in each case. F. With regard to defence, the purpose of the military is to defend the nation and be prepared to do battle with its enemy. [CAT 2001]

(A) FDEBAC
(B) FCABED
(C) DEBACF
(D) DFEBAC

58. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph. A. Michael Hofman, a poet and translator, accepts this sorry fact without approval or complaint. B. But thanklessness and impossibility do not daunt him. C. He acknowledges too — in fact, he returns to the point often — that best translators of poetry always fail at some level. D. Hofman feels passionately about his work and this is clear from his writings. E. In terms of the gap between worth and rewards, translators come

somewhere near nurses and street-cleaners. [CAT 2001]

(A) EACDB
(B) ADEBC
(C) EACBD
(D) DCEAB

59. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph. A. Passivity is not, of course, universal. B. In areas where there are no lords or laws, or in frontier zones where all men go armed, the attitude of the peasantry may well be different. C. So indeed it may be on the fringe of the unsubmissive. D. However, for most of the soil-bound peasants the problem is not whether to be normally passive or active, but when to pass from one state to another. E. This depends on an assessment of the political situation. [CAT 2001]

(A) BEDAC
(B) CDABE
(C) EDBAC
(D) ABCDE

60. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph. A. The situations in which violence occurs and the nature of that violence tends to be clearly defined at least in theory, as in the proverbial Irishman's question: "Is this a private fight or can anyone join in?" B. So the actual risk to outsiders, though no doubt higher than our societies, is calculable. C. Probably the only uncontrolled applications of force are those of social superiors to social inferiors and even here there are probably some rules. D. However, binding the obligation to kill, members of feuding families engaged in mutual massacre will be genuinely appalled if by some mischance a bystander or outsider is killed. [CAT 2001]

(A) DABC
(B) ACDB
(C) CBAD
(D) DBAC

61. Fill in the Blanks: But _____ are now regularly written not just for tools, but well-established practices, organisations and institutions, not all of which seem to be _____ away.

(A) reports ... withering
(B) stories ... trading
(C) books ... dying
(D) obituaries ... fading

62. Fill in the Blanks: The Darwin who _____ is most remarkable for the way in which he _____ the attributes of the world class thinker and head of the household.

(A) comes ... figures
(B) arises ... adds
(C) emerges ... combines
(D) appeared ... combines

63. Fill in the Blanks: Since her face was free of _____ there was no way to _____ if she appreciated what had happened.

(A) make-up ... realise
(B) expression ... ascertain
(C) emotion ... diagnose
(D) scars ... understand

64. Fill in the Blanks: In this context, the _____ of the British labour movement is particularly _____.

(A) affair ... weird
(B) activity ... moving
(C) experience ... significant
(D) atmosphere ... gloomy

65. Fill in the Blanks: Indian intellectuals may boast, if they are so inclined, of being _____ to the most elitist among the intellectual _____ of the world.

(A) subordinate ... traditions
(B) heirs ... cliques
(C) ancestors ... societies
(D) heir ... traditions

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66. Pick the word from the alternatives given that is most inappropriate in the given context. Specious: A specious argument is not simply a false one but one that has the ring of truth.

(A) Deceitful
(B) Fallacious
(C) Credible
(D) Deceptive

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67. Pick the word from the alternatives given that is most inappropriate in the given context. Obviate: The new mass transit system may obviate the need for the use of personal cars.

(A) Prevent
(B) Forestall
(C) Preclude
(D) Bolster

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68. Pick the word from the alternatives given that is most inappropriate in the given context. Disuse: Some words fall into disuse as technology makes objects obsolete.

(A) Prevalent
(B) Discarded
(C) Obliterated
(D) Unfashionable

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69. Pick the word from the alternatives given that is most inappropriate in the given context. Parsimonious: The evidence was constructed from very parsimonious scraps of information.

(A) Frugal
(B) Penurious
(C) Thrifty
(D) Altruistic

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70. Pick the word from the alternatives given that is most inappropriate in the given context. Facetious: When I suggested that war is a method of controlling population, my father remarked that I was being facetious.

(A) Jovian
(B) Jovial
(C) Jocular
(D) Joking

Questions 71 to 75

The Union Government's present position vis-a-vis the upcoming United Nations conference on racial and related discrimination worldwide seems to be the following: discuss race please, not caste; caste is our very own and not at all as bad as you think. The gross hypocrisy of that position has been lucidly underscored by Kancha Ilaiah. Explicitly, the world community is to be cheated out of considering the matter on the technicality that caste is not, as a concept, tantamount to a racial category. Internally, however, allowing the issue to be put on agenda at the said conference would, we are patriotically admonished, damage the country's image. Somehow, India's virtual beliefs elbow out concrete actualities. Inverted representations, as we know, have often been deployed in human histories as balm for the forsaken — religion being the most persistent of such inversions. Yet, we would humbly submit that if globalising our markets is thought as good for the 'national' pocket, globalising our social inequities might not be so bad for the mass of our people. After all, racism was as uniquely institutionalised in South Africa as caste discrimination has been within our society; why

then can't we permit the world community to express itself on the latter with a fraction of the zeal with which, through the years, we pronounced on the former?

As to the technicality about whether or not caste is admissible into an agenda about race (that the conference is also about 'related discriminations' tends to be forgotten), a reputed sociologist has recently argued that where race is a 'biological' category caste is a 'social' one. Having earlier fiercely opposed implementation of the Mandal Commission Report, the said sociologist is at least to be complemented now for admitting, however tangentially, that caste discrimination is a reality, although, in his view, incompatible with racial discrimination. One would like quickly to offer the hypothesis that biology, in important ways that affect the lives of many millions, is in itself perhaps a social construction. But let us look at the matter in another way.

If it is agreed — as per the position today at which anthropological and allied scientific determinations rest — that the entire race of homo sapiens derived from an originary black African female (called 'Eve'), then one is hard put to understand how, on some subsequent ground, ontological distinctions are to be drawn either between races or castes. Let us also underline the distinction between the supposition that we are all god's children and the rather more substantiated argument about our descent from 'Eve', lest both positions are thought to be equally diversionary. It then stands to reason that all subsequent distinctions are, in modern parlance, 'constructed' ones, and like all ideological constructions, attributable to changing equations between knowledge and power among human communities through contested histories here, there, and elsewhere.

This line of thought receives, thankfully, extremely consequential buttress from the findings of the Human Genome Project. Contrary to earlier (chiefly 19th-century colonial) persuasions on the subject of race, as well as, one might add, the somewhat infamous Jensen offerings in the 20th century from America, those finding deny genetic difference between 'races'. If anything, they suggest that environmental factors impinge on gene-function, as a dialectic seems to unfold between nature and culture. It would thus seem that 'biology' as the constitution of pigmentation enters the picture first only as a part of that dialectic. Taken together, the originary mother stipulation and the Genome findings ought indeed to furnish ground for human equality across the board, as well as yield policy initiatives towards equitable material dispensations aimed at building a global order where, in Hegel's stirring formulation, only the rational constitutes the right. Such, sadly, is not the case as everyday fresh arbitrary grounds for discrimination are constructed in the interests of sectional dominance.

71. When the author writes 'globalising our social inequities', the reference is to

(A) going beyond an internal deliberation on social inequity.

(B) dealing with internal poverty through the economic benefits of globalisation.

(C) going beyond an internal delimitation of social inequity.

(D) achieving disadvantaged people's empowerment, globally.

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72. According to the author, 'inverted representations as balm for the forsaken'

(A) is good for the forsaken and often deployed in human histories.

(B) is good for the forsaken, but not often deployed historically for the oppressed.

(C) occurs often as a means of keeping people oppressed.

(D) occurs often to invert the status quo.

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73. Based on the passage, which broad areas unambiguously fall under the purview of the UN conference being discussed? A. Racial prejudice B. Racial pride C. Discrimination, racial or otherwise D. Caste-related discrimination E. Race-related discrimination

(A) A and E
(B) C and E
(C) A, C and E
(D) B, C and D

74. According to the author, the sociologist who argued that race is a 'biological' category and caste is a 'social' one,

(A) generally shares the same orientation as the author's on many of the central issues discussed.

(B) tangentially admits to the existence of caste discrimination.

(C) admits the incompatibility between the people of different race and caste.

(D) admits indirectly that both caste-based prejudice and racial discrimination exist.

75. An important message in the passage, if one accepts a dialectic between nature and culture, is that

(A) the results of the Human Genome Project reinforces racial differences.

(B) race is at least partially a social construct.

(C) discrimination is at least partially a social construct.

(D) caste is at least partially a social construct.

Questions 76 to 80

Studies of the factors governing reading development in young children have achieved a remarkable degree of consensus over the past two decades. The consensus concerns the causal role of 'phonological skills in young children's reading progress. Children who have good phonological skills, or good 'phonological awareness' become good readers and good spellers. Children with poor phonological skills progress more poorly. In particular, those who have a specific phonological deficit are likely to be classified as dyslexic by the time that they are 9 or 10 years old.

Phonological skills in young children can be measured at a number of different levels. The term phonological awareness is a global one, and refers to a deficit in recognising smaller units of sound within spoken words. Development work has shown that this deficit can be at the level of syllables, of onsets and rimes, or phonemes. For example, a 4-year old child might have difficulty in recognising that a word like valentine has three syllables, suggesting a lack of syllabic awareness. A five-year-old might have difficulty in recognizing that the odd work out in the set of words fan, cat, hat, mat is fan. This task requires an awareness of the sub-syllabic units of the onset and the rime. The onset corresponds to any initial consonants in a syllable words, and the rime corresponds to the vowel and to any following consonants. Rimes correspond to rhyme in single-syllable words, and so the rime in fan differs from the rime in cat, hat and mat. In longer words, rime and rhyme may differ. The onsets in val:en:tine are /v/ and /t/, and the rimes correspond to the selling patterns 'al', 'en' and' ine'.

A six-year-old might have difficulty in recognising that plea and pray begin with the same initial sound. This is a phonemic judgement. Although the initial phoneme /p/ is shared between the two words, in plea it is part of the onset 'pl' and in pray it is part if the onset 'pr'. Until children can segment the onset (or the rime), such phonemic judgements are difficult for them to make. In fact, a recent survey of different developmental studies has shown that the different levels of phonological awareness appear to emerge sequentially. The awareness of syllables, onsets, and rimes appears to

merge at around the ages of 3 and 4, long before most children go to school. The awareness of phonemes, on the other hand, usually emerges at around the age of 5 or 6, when children have been taught to read for about a year. An awareness of onsets and rimes thus appears to be a precursor of reading, whereas an awareness of phonemes at every serial position in a word only appears to develop as reading is taught. The onset-rime and phonemic levels of phonological structure, however, are not distinct. Many onsets in English are single phonemes, and so are some rimes (e.g. sea, go, zoo).

The early availability of onsets and rimes is supported by studies that have compared the development of phonological awareness of onsets, rimes, and phonemes in the same subjects using the same phonological awareness tasks. For example, a study by Treiman and Zudowski used a same/different judgement task based on the beginning or the end sounds of words. In the beginning sound task, the words either began with the same onset, as in plea and plank, or shared only the initial phoneme, as in plea and pray. In the end-sound task, the words either shared the entire rime, as in spit and wit, or shared only the final phoneme, as in rat and wit. Treiman and Zudowski showed that four- and five-year-old children found the onset-rime version of the same/different task significantly easier than the version based on phonemes. Only the sixyear- olds, who had been learning to read for about a year, were able to perform both versions of the tasks with an equal level of success.

76. From the following statements, pick out the true statement according to the passage.

(A) A mono-syllabic word can have only one onset.

(B) A mono-syllabic word can have only one rhyme but more than one rime.

(C) A mono-syllabic word can have only one phoneme.

(D) None of these

77. Which one of the following is likely to emerge last in the cognitive development of a child?

(A) Rhyme

(B) Rime

(C) Onset

(D) Phoneme

78. A phonological deficit in which of the following is likely to be classified as dyslexia?

(A) Phonemic judgement

(B) Onset judgement

(C) Rime judgement

(D) Any one or more of the above

79. The Treiman and Zudowski experiment found evidence to support which of the following conclusions?

(A) At age six, reading instruction helps children perform both, the same-different judgement task.

(B) The development of onset-rime awareness precedes the development of an awareness of phonemes.

(C) At age four to five children find the onset-rime version of the same/different task significantly easier.

(D) The development of onset-rime awareness is a necessary and sufficient condition for the development of an awareness of phonemes.

80. The single-syllable words Rhyme and Rime are constituted by the exact same set of A. rime(s) B. onset(s) C. rhyme(s) D. phonemes(s)

(A) A and B

(B) A and C

(C) A, B and C

(D) B, C and D

Questions 81 to 84

Billie Holiday died a few weeks ago. I have been unable until now to write about her, but since she will survive many who receive longer obituaries, a short delay in one small appreciation will not harm her or us. When she died we — the musicians, critics, all who were ever transfixed by the most heart-rending voice of the past generation — grieved bitterly. There was no reason to. Few people pursed self-destruction more whole-heartedly than she, and when the pursuit was at an end, at the age of 44, she had turned herself into a physical and artistic wreck. Some of us tried gallantly to pretend otherwise, taking comfort in the occasional moments when she still sounded like a ravaged echo of her greatness. Others had not even the heart to see and listen any more. We preferred to stay home and, if old and lucky enough to own the incomparable records of her heyday from 1937 to 1946, many of which are not even available on British LP, to recreate those coarse-textured, sinuous, sensual and unbearable sad noises which gave her a sure corner of immortality. Her physical death called, if anything, for relief rather than sorrow. What sort of middle age would she have faced without the voice to earn money for her drinks and fixes, without the looks — and in her day she was hauntingly beautiful — to attract the men she needed, without business sense, without anything but the disinterested worship of ageing men who had heard and seen her in her glory?

And yet, irrational though it is, our grief expressed Billie Holiday's art, that of a woman for whom one must be sorry. The great blues singers, to whom she may be justly compared, played their game from strength. Lionesses, though often wounded or at bay (did not Bessie Smith call herself 'a tiger, ready to jump'?), their tragic equivalents were Cleopatra and Phaedra; Holiday's was an embittered Ophelia. She was the Puccini heroine among blues singers, or rather among jazz singers, for though she sang a cabaret version of the blues incomparably, her natural idiom was the pop song. Her unique achievement was to have twisted this into a genuine expression of the major passions by means of a total disregard of its sugary tunes, or indeed of any tune other than her own few delicately crying elongated notes, phrased like Bessie Smith or Louis Armstrong in sackcloth, sung in a thin, gritty, haunting voice whose natural mood was an unresigned and voluptuous welcome for the pains of love. Nobody has sung, or will sing, Bess's songs from Porgy as she did. It was this combination of bitterness and physical submission, as of someone lying still while watching his legs being amputated, which gives such a blood-curdling quality to her Strange Fruit, the anti-lynching poem which she turned into an unforgettable art song. Suffering was her profession; but she did not accept it.

Little need be said about her horrifying life, which she described with emotional, though hardly with factual, truth in her autobiography Lady Sings the Blues. After an adolescence in which self-respect was measured by a girl's insistence on picking up the coins thrown to her by clients with her hands, she was plainly beyond help. She did not lack it, for she had the flair and scrupulous honesty of John Hammond to launch her, the best musicians of the 1930s to accompany her — notably Teddy Wilson, Frankie Newton and Lester Young — the boundless devotion of all serious connoisseurs, and much public success. It was too late to arrest a career of systematic embittered self-immolation. To be born with both beauty and selfrespect in the Negro ghetto of Baltimore in 1915 was too much of a handicap, even without rape at the age of 10 and drug-addiction in her teens. But, while she destroyed herself, she sang, unmelodious, profound and heartbreaking. It is impossible not to weep for her, or not to hate the world which made her what she was.

81. Why will Billie Holiday survive many who receive longer obituaries?

(A) Because of her blues creations.

(B) Because she was not as self-destructive as some other blues exponents.

(C) Because of her smooth and mellow voice.

(D) Because of the expression of anger in her songs.

82. According to the author, if Billie Holiday had not died in her middle age

(A) she would have gone on to make a further mark.

(B) she would have become even richer than what she was when she died.

(C) she would have led a rather ravaged existence.

(D) she would have led a rather comfortable existence.

83. Which of the following statements is not representative of the author's opinion?

(A) Billie Holiday had her unique brand of melody.

(B) Billie Holiday's voice can be compared to other singers in certain ways.

(C) Billie Holiday's voice had a ring of profound sorrow.

(D) Billie Holiday welcomed suffering in her profession and in her life.

84. According to the passage, Billie Holiday was fortunate in all but one of which of the following ways?

(A) She was fortunate to have been picked up young by an honest producer.

(B) She was fortunate to have the likes of Louis Armstrong and Bessie Smith accompany her.

(C) She was fortunate to possess the looks.

(D) She enjoyed success among the public and connoisseurs.

Questions 85 to 90

The narrative of Dersu Uzala is divided into two major sections, set in 1902, and 1907, that deal with separate expeditions which Arseniev conducts into the Ussuri region. In addition, a third time frame forms a prologue to the film. Each of the temporal frames has a different focus, and by shifting them Kurosawa is able to describe the encroachment of settlements upon the wilderness and the consequent erosion of Dersu's way of life. As the film opens, that erosion has already begun. The first image is a long shot of a huge forest, the trees piled upon one another by the effects of the telephoto lens so that the landscape becomes an abstraction and appears like a huge curtain of green. A title informs us that the year is 1910. This is as late into the century as Kurosawa will go. After this prologue, the events of the film will transpire even farther back in time and will be presented as Arseniev's recollections. The character of Dersu Uzala is the heart of the film, his life the example that Kurosawa wishes to affirm. Yet the formal organization of the film works to contain, to close, to circumscribe that life by erecting a series of obstacles around it. The film itself is circular, opening and closing by Dersu's grave, thus sealing off the character from the modern world to which Kurosawa once so desperately wanted to speak. The multiple time frames also work to maintain a separation between Dersu and the contemporary world. We must go back father even than 1910 to discover who he was. But this narrative structure has yet another implication. It safeguards Dersu's example, inoculates it from contamination with history, and protects it from contact with the industrialised, urban world. Time is organised by the narrative into a series of barriers, which enclose Dersu in a kind of vacuum chamber, protecting him from the social and historical dialectics that destroyed the other Kurosawa heroes. Within the film, Dersu does die, but the narrative structure attempts to immortalise him and his example, as Dersu passes from history into myth.

We see all this at work in the enormously evocative prologue. The camera tilts down to reveal felled trees littering the landscape and an abundance of construction. Roads and houses outline the settlement that is being built. Kurosawa cuts to a medium shot of Arseniev standing in the midst of the clearing, looking uncomfortable and disoriented. A man passing in a wagon asks him what he is doing, and the explorer says he is looking for a grave. The driver replies that no one has died here, the settlement is too recent. These words enunciate the temporal rupture that the film studies. It is the beginning of things (industrial society) and the end of things (the forest), the commencement of one world so young that no one has had time yet to die and the eclipse of another, in which Dersu had died. It is his grave for which the explorer searches. His passing symbolises the new order, the development that now surrounds Arseniev. The explorer says he buried his friend three years ago next to huge cedar and fir trees, but now they are all gone. The man on the wagon replies they were probably chopped down when the settlement was built, and he drives off. Arseniev walks to a barren, treeless spot next to a pile of bricks. As he moves, the camera tracks and pans to follow, revealing a line of freshly built houses and a woman hanging her laundry to dry. A distant train whistle is heard, and the sounds of construction in the clearing vie with the cries of birds and the rustle of wind in the trees. Arseniev pauses, looks around for the grave that once was, and murmurs desolately, 'Dersu'. The image now cuts farther into the past, to 1902, and the first section of the film commences, which describes Arseniev's meeting with Dersu and their friendship.

Kurosawa defines the world of the film initially upon a void, a missing presence. The grave is gone, brushed aside by a world rushing into modernism, and now the hunter exists only in Arseniev's memories. The hallucinatory dreams and visions of Dodeskaden are succeeded by nostalgic, melancholy ruminations. Yet by exploring these ruminations, the film celebrates the timelessness of Dersu's wisdom. The first section of the film has two purposes: to describe the magnificence and inhuman vastness of nature and to delineate the code of ethics by which Dersu lives and which permits him to survive in these conditions. When Dersu first appears, the other soldiers treat him with condescension and laughter, but Arseniev watches him closely and does not share their derisive response. Unlike them, he is capable of immediately grasping Dersu's extraordinary qualities. In camp, Kurosawa frames Arseniev by himself, sitting on the other side of the fire from his soldiers. While they sleep or joke among themselves, he writes in his diary and Kurosawa cuts in several point-of-view shots from his perspective of trees that appear animated and sinister as the firelight dances across their gnarled, leafless outlines. This reflective dimension, this sensitivity to the spirituality of nature, distinguishes him from the others and forms the basis of his receptivity to Dersu and their friendship. It makes him a fit pupil for the hunter.

85. How is Kurosawa able to show the erosion of Dersu's way of life?

(A) By documenting the ebb and flow of modernisation.

(B) By going back farther and farther in time.

(C) By using three different time frames and shifting them.

(D) Through his death in a distant time.

86. Arseniev's search for Dersu's grave

(A) is part of the beginning of the film.

(B) symbolises the end of the industrial society.

(C) is misguided since the settlement is too new.

(D) symbolises the rediscovery of modernity.

87. The film celebrates Dersu's wisdom

(A) by exhibiting the moral vacuum of the pre-modern world.

(B) by turning him into a mythical figure.

(C) through hallucinatory dreams and visions.

(D) through Arseniev's nostalgic, melancholy ruminations.

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88. According to the author, the section of the film following the prologue

(A) serves to highlight the difficulties that Dersu faces that eventually kills him.

(B) shows the difference in thinking between Arseniev and Dersu.

(C) shows the code by which Dersu lives that allows him to survive his surroundings.

(D) serves to criticize the lack of understanding of nature in the pre-modern era.

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89. In the film, Kurosawa hints at Arseniev's reflective and sensitive nature

(A) by showing him as not being derisive towards Dersu, unlike other soldiers.

(B) by showing him as being aloof from other soldiers.

(C) through shots of Arseniev writing his diary, framed by trees.

(D) All of these

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90. According to the author, which of these statements about the film is correct?

(A) The film makes its arguments circuitously.

(B) The film highlights the insularity of Arseniev.

(C) The film begins with the absence of its main protagonist.

(D) None of these

Questions 91 to 96

Read the passage carefully and answer the questions that follow:

Democracy rests on a tension between two different principles. There is, on the one hand, the principle of equality before the law, or, more generally, of equality, and, on the other, what may be described as the leadership principle. The first gives priority to rules and the second to persons. No matter how skilfully we contrive out schemes, there is a point beyond which the one principle cannot be promoted without some sacrifice of the other.

Alexis de Tocqueville, the great 19th-century writer on democracy, maintained that the age of democracy, whose birth he was witnessing, would also be the age of mediocrity; in saying this, he was thinking primarily of a regime of equality governed by impersonal rules. Despite his strong attachment to democracy, he took great pains to point out what he believed to be its negative side: a dead level plane of achievement in practically every sphere of life. The age of democracy would, in his view, be an unheroic age; there would not be room in it for either heroes or hero-worshippers.

But modern democracies have not been able to do without heroes: this too was foreseen, with much misgiving, by Tocqueville. Tocqueville viewed this with misgiving because he believed, rightly or wrongly, that unlike in aristocratic societies, there was no proper place in a democracy for heroes and, hence, when they arose, they would sooner or later turn into despots. Whether they require heroes or not, democracies certainly require leaders, and, in the contemporary age, breed them in

great profusion; the problem is to know what to do with them.

In a world preoccupied with scientific rationality, the advantages of a system based on an impersonal rule of law should be a recommendation with everybody. There is something orderly and predictable about such a system. When life is lived mainly in small, self-contained communities, men are able to take finer personal distinctions into account in dealing with their fellow men. They are unable to do this in a large and amorphous society, and organised living would be impossible here without a system of impersonal rules. Above all, such a system guarantees a kind of equality to the extent that everybody, no matter in what station of life, is bound by the same explicit, often written, rules, and nobody is above them. But a system governed solely by impersonal rules can at best ensure order and stability; it cannot create any shining vision of a future in which mere formal equality will be replaced by real equality and fellowship. A world governed by impersonal rules cannot easily change itself, or when it does, the change is so gradual as to make the basic and fundamental feature of society appear unchanged. For any kind of basic or fundamental change, a push is needed from within, a kind of individual initiative which will create new rules, new terms and conditions of life.

The issue of leadership thus acquires crucial significance in the context of change. If the modern age is preoccupied with scientific rationality, it is no less preoccupied with change. To accept what exists on its own terms is traditional, not modern, and it may be all very well to appreciate tradition in music, dance and drama, but for society as a whole the choice has already been made in favour of modernisation and development. Moreover, in some countries the gap between ideal and reality has become so great that the argument for development and change is now irresistible.

In these countries no argument for development has greater appeal or urgency than the one which shows development to be the condition for the mitigation, if not the elimination, of inequality. There is something contradictory about the very presence of large inequalities in a society which profess to be democratic. It does not take people too long to realise that democracy by itself can guarantee only formal equality; beyond this, it can only whet people's appetite for real or substantive equality. From this arises their continued preoccupation with plans and schemes that will help to bridge the gap between the ideal of equality and the reality which is so contrary to it.

When pre-existing rules give no clear directions of change, leadership comes into its own. Every democracy invests its leadership with a measure of charisma, and expects from it a corresponding measure of energy and vitality. Now, the greater the urge for change in a society, the stronger the appeal of a dynamic leadership in it. A dynamic leadership seeks to free itself from the constraints of existing rules: in a sense, that is the test of its dynamism. In this process, it may take a turn at which it ceases to regard itself as being bound by these rules, placing itself above them. There is always a tension between 'charisma' and 'discipline' in the case of a democratic leadership, and when this leadership puts forward revolutionary claims, the tension tends to be resolved at the expense of discipline.

Characteristically, the legitimacy of such a leadership rests on its claim to be able to abolish or at least substantially reduce the existing inequalities in society. From the argument that formal equality or equality before the law is but a limited good, it is often one short step to the argument that it is a hindrance or an obstacle to the establishment of real or substantive equality. The conflict between a 'progressive' executive and a 'conservative' judiciary is but one aspect of this larger problem. This conflict naturally acquires added piquancy when the executive is elected, and the judiciary appointed.

91. Dynamic leaders are needed in democracies because

(A) they have adopted the principles of 'formal' equality rather than 'substantive' equality.

(B) 'formal' equality whets people's appetite for 'substantive' equality.

(C) systems that rely on the impersonal rules of 'formal' equality lose their ability to make large changes.

(D) of the conflict between a 'progressive' executive and a 'conservative' judiciary.

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92. What possible factor would a dynamic leader consider a 'hindrance' in achieving the development goals of a nation?

(A) Principle of equality before the law

(B) Judicial activism

(C) A conservative judiciary

(D) Need for discipline

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93. Which of the following four statements can be inferred from the above passage? A. Scientific rationality is an essential feature of modernity. B. Scientific rationality results in the development of impersonal rules. C. Modernisation and development have been chosen over traditional music, dance and drama. D. Democracies aspire to achieve substantive equality.

(A) A, B, D but not C

(B) A, B but not C, D

(C) A, D but not B, C

(D) A, B, C but not D

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94. Tocqueville believed that the age of democracy would be an un-heroic age because

(A) democractic principles do not encourage heroes.

(B) there is no urgency for development in democratic countries.

(C) heroes that emerged in democracies would become despots.

(D) aristocratic society had a greater ability to produce heroes.

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95. A key argument the author is making is that

(A) in the context of extreme inequality, the issue of leadership has limited significance.

(B) democracy is incapable of eradicating inequality.

(C) formal equality facilitates development and change.

(D) impersonal rules are good for avoiding instability but fall short of achieving real equality.

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96. Which of the following four statements can be inferred from the above passage? A. There is conflict between the pursuit of equality and individuality. B. The disadvantages of impersonal rules can be overcome in small communities. C. Despite limitations, impersonal rules are essential in large systems. D. Inspired leadership, rather than plans and schemes, is more effective in bridging inequality.

(A) B, D but not A, C

(B) A, B but not C, D

(C) A, D but not B, C

(D) A, C but not B, D

Questions 97 to 100

In the modern scientific story, light was created not once but twice. The first time was in the Big Bang, when the universe began its existence as a glowing, expanding, fireball, which cooled off into darkness after a few million years. The second time was hundreds of millions of years later, when the cold material condensed into dense nuggets under the influence of gravity, and ignited to become the first stars.

Sir Martin Rees, Britain's astronomer royal, named the long interval between these two

enlightements the cosmic 'Dark Age'. The name describes not only the poorly lit conditions, but also the ignorance of astronomers about that period. Nobody knows exactly when the first stars formed, or how they organized themselves into galaxies — or even whether stars were the first luminous objects. They may have been preceded by quasars, which are mysterious, bright spots found at the centres of some galaxies.

Now two independent groups of astronomers, one led by Robert Becker of the University of California, Davis, and the other by George Djorgovski of the Caltech, claim to have peered far enough into space with their telescopes (and therefore backwards enough in time) to observe the closing days of the Dark age.

The main problem that plagued previous efforts to study the Dark Age was not the lack of suitable telescopes, but rather the lack of suitable things at which to point them. Because these events took place over 13 billion years ago, if astronomers are to have any hope of unravelling them they must study objects that are at least 13 billion light years away. The best prospects are quasars, because they are so bright and compact that they can be seen across vast stretches of space. The energy source that powers a quasar is unknown, although it is suspected to be the intense gravity of a giant black hole. However, at the distances required for the study of Dark Age, even quasars are extremely rare and faint.

Recently some members of Dr Becker's team announced their discovery of the four most distant quasars known. All the new quasars are terribly faint, a challenge that both teams overcame by peering at them through one of the twin Keck telescopes in Hawaii. These are the world's largest, and can therefore collect the most light. The new work by Dr Becker's team analysed the light from all four quasars. Three of them appeared to be similar to ordinary, less distant quasars. However, the fourth and most distant, unlike any other quasar ever seen, showed unmistakable signs of being shrouded in a fog because new-born stars and quasars emit mainly ultraviolet light, and hydrogen gas is opaque to ultraviolet. Seeing this fog had been the goal of would-be Dark Age astronomers since 1965, when James Gunn and Bruce Peterson spelled out the technique for using quasars as backlighting beacons to observe the fog's ultraviolet shadow.

The fog prolonged the period of darkness until the heat from the first stars and quasars had the chance to ionise the hydrogen (breaking it into its constituent parts, protons and electrons). Ionised hydrogen is transparent to ultraviolet radiation, so at that moment the fog lifted and the universe became the well-lit place it is today. For this reason, the end of the Dark Age is called the 'Epoch of Re-ionisation'. Because the ultraviolet shadow is visible only in the most distant of the four quasars, Dr Becker's team concluded that the fog had dissipated completely by the time the universe was about 900 million years old, and oneseventh of its current size.

97. In the passage, the Dark Age refers to

(A) the period when the universe became cold after the Big Bang.

(B) a period about which astronomers know very little.

(C) the medieval period when cultural activity seemed to have come to an end.

(D) the time that the universe took to heat up after the Big Bang.

---

98. Astronomers find it difficult to study the Dark Age because

(A) suitable telescopes are few.

(B) the associated events took place aeons ago.

(C) the energy source that powers a quasars is unknown.

(D) their best chance is to study quasars, which are faint objects to begin with.

---

99. The four most distant quasars discovered recently

(A) could only be seen with the help of large telescopes.

(B) appear to be similar to other ordinary, quasars.

(C) appear to be shrouded in a fog of hydrogen gas.

(D) have been sought to be discovered by Dark Age astronomers since 1965.

---

100. The fog of hydrogen gas seen through the telescopes

(A) is transparent to hydrogen radiation from stars and quasars in all states.

(B) was lifted after heat from stars and quasars ionised it.

(C) is the material which eventually became stars and quasars.

(D) is broken into constituent elements when stars and quasars are formed.

Questions 101 to 104

Directions for the following four questions: Answer the questions based on the table given below.

The following table describes garments manufactured based upon the color and size for each lay. There are four sizes: M – medium, L – large, XL – extra large and XXL – extra extra large. There are three colors: yellow, red and white.

Lay	Number of Garments											
	Yellow				Red				White			
Lay No.	M	L	XL	XXL	M	L	XL	XXL	M	L	XL	XXL
1	14	14	7	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	42	42	21	0
3	20	20	10	0	18	18	9	0	0	0	0	0
4	20	20	10	0	0	0	0	0	30	30	15	0
5	0	0	0	0	24	24	12	0	30	30	15	0
6	22	22	11	0	24	24	12	0	32	32	16	0
7	0	24	24	12	0	0	0	0	0	0	0	0
8	0	20	20	10	0	2	2	1	0	0	0	0
9	0	20	20	10	0	0	0	0	0	22	22	11
10	0	0	0	0	0	26	26	13	0	20	20	10
11	0	22	22	11	0	26	26	13	0	22	22	11
12	0	0	2	2	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	20	20
14	0	0	0	0	0	0	0	0	0	0	22	22
15	0	0	10	10	0	0	2	2	0	0	22	22
16	0	0	0	0	1	0	0	0	1	0	0	0
17	0	0	0	0	0	5	0	0	0	0	0	0
18	0	0	0	0	0	32	0	0	0	0	0	0
19	0	0	0	0	0	32	0	0	0	0	0	0
20	0	0	0	0	0	5	0	0	0	0	0	0
21	0	0	0	18	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	26	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	22
24	0	0	0	8	0	0	0	1	0	0	0	0
25	0	0	0	8	0	0	0	0	0	0	0	12
26	0	0	0	0	0	0	0	1	0	0	0	14
27	0	0	0	8	0	0	0	2	0	0	0	12
Production	76	162	136	97	67	194	89	59	135	198	195	156
Order	75	162	135	97	134	388	178	118	135	197	195	155
Surplus	1	0	1	0	0	0	0	0	0	1	0	1

101. How many lays are used to produce yellow fabrics?

(A) 10
(B) 11
(C) 12
(D) 14

102. How many lays are used to produce XXL fabrics?

(A) 15
(B) 16
(C) 17
(D) 18

103. How many lays are used to produce XL yellow or XL white fabrics?

(A) 8
(B) 9
(C) 10
(D) 15

104. How many varieties of fabrics, which exceed the order, have been produced?

(A) 3 (B) 4

(C) 5 (D) 6

Questions 105 to 108

Directions for the following four questions: Answer the questions based on the table given below concerning the busiest 20 international airports in the world.

No.	Name	International Airport Type	Code	Location	Passengers
1	Hartsfield	A	ATL	Atlanta, Georgia, USA	77,939,536
2	Chicago-O'Hare	A	ORD	Chicago, Illinois, USA	72,568,076
3	Los Angeles	A	LAX	Los Angeles, California, USA	63,876,561
4	Heathrow	E	LHR	London, United Kingdom	62,263,710
5	DFW	A	DFW	Dallas/Ft. Worth, Texas, USA	60,000,125
6	Haneda Airport	F	HND	Tokyo, Japan	54,338,212
7	Frankfurt Airport	E	FRA	Frankfurt, Germany	45,858,315
8	Roissy-Charles de Gaulle	E	CDG	Paris, France	43,596,943
9	San Francisco	A	SFO	San Francisco, California, USA	40,387,422
10	Denver	A	DIA	Denver, Colorado, USA	38,034,231
11	Amsterdam Schiphol	E	AMS	Amsterdam, Netherlands	36,781,015
12	Minneapolis - St. Paul	A	MSP	Minneapolis-St. Paul, USA	34,216,331
13	Detroit Metropolitan	A	DTW	Detroit, Michigan, USA	34,038,381
14	Miami	A	MIA	Miami, Florida, USA	33,899,246
15	Newark	A	EWR	Newark, New Jersey, USA	33,814,000
16	McCarran	A	LAS	Las Vegas, Nevada, USA	33,669,185
17	Phoenix Sky Harbor	A	PHX	Phoenix, Arizona, USA	33,533,353
18	Kimpo	FE	SEL	Seoul, Korea	33,371,074
19	George Bush	A	IAH	Houston, Texas, USA	33,089,333
20	John F. Kennedy	A	JFK	New York, New York, USA	32,003,000

105. How many international airports of type 'A' account for more than 40 million passengers?

(A) 4 (B) 5

(C) 6 (D) 7

106. What percentage of top ten busiest airports is in the United States of America?

(A) 60% (B) 80%

(C) 70% (D) 90%

107. Of the five busiest airports, roughly, what percentage of passengers in handled by Heathrow Airport?

(A) 30 (B) 40

(C) 20 (D) 50

108. How many international airports not located in the USA handle more than 30 million passengers?

(A) 5 (B) 6

(C) 10 (D) 14

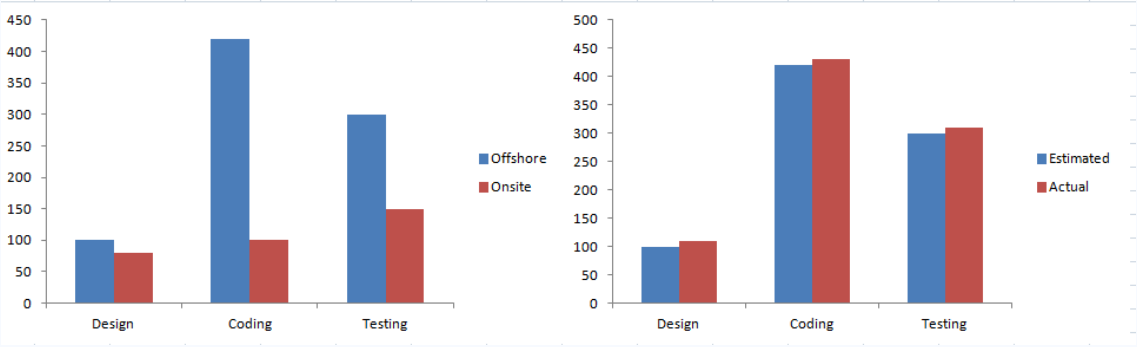
Questions 109 to 114

Directions for the following six questions: Answer the questions based on the two graphs shown below.

Figure I (the chart on the left) shows the amount of work distribution, in man-hours, for a software company between offshore and onsite activities.

Figure 2 (the chart on the right) shows the estimated and actual work effort involved in the different offshore activities in the same company during the same period.

[Note: Onsite refers to work performed at the customer's premise and offshore refers to work performed at the developer's premise.]



109. Which work requires as many man-hours as that spent in coding?

(A) Offshore, design and coding
(B) Offshore coding
(C) Testing
(D) Offshore, testing and coding

---

110. Roughly, what percentage of the total work is carried out onsite?

(A) 40%
(B) 20 %
(C) 30 %
(D) 10 %

---

111. The total effort in man-hours spent onsite is nearest to which of the following?

(A) The sum of the estimated and actual effort for offshore design
(B) The estimated man-hours of offshore coding
(C) The actual man-hours of offshore testing
(D) Half of the man-hours of estimated offshore coding

---

112. If the total working hours were 100, which of the following tasks will account for approximately 50 hr?

(A) Coding
(B) Design
(C) Offshore testing
(D) Offshore testing plus design

---

113. If 50% of the offshore work were to be carried out onsite, with the distribution of effort between the tasks remaining the same, the

proportion of testing carried out offshore would be

(A) 40%

(B) 30%

(C) 50%

(D) 70%

114. If 50% of the offshore work were to be carried out onsite, with the distribution of effort between the tasks remaining the same, which of the following is true of all work carried out onsite?

(A) The amount of coding done is greater than that of testing

(B) The amount of coding done onsite is less than that of design done onsite

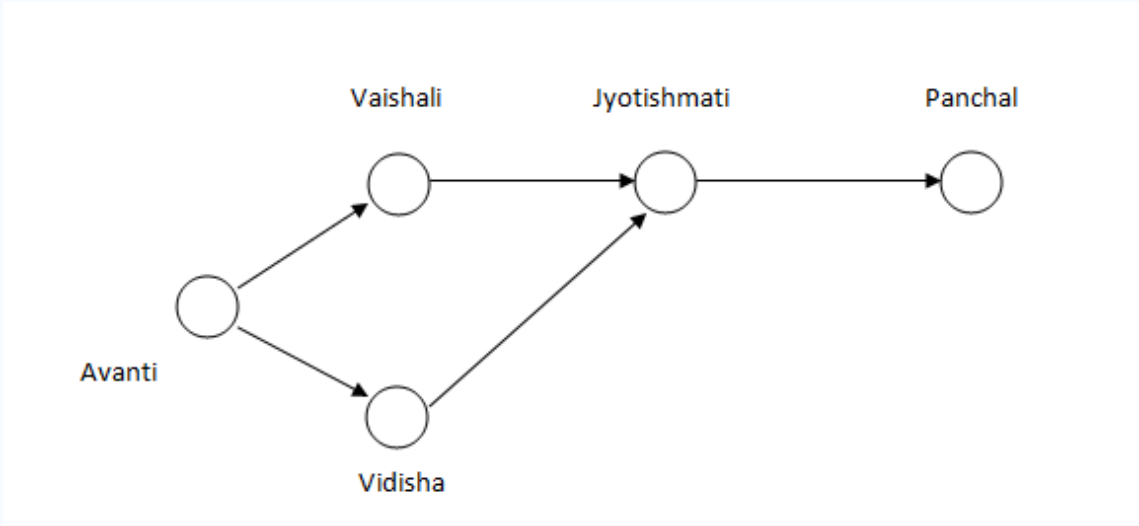
(C) The amount of design carried out onsite is greater than that of testing

(D) The amount of testing carried out offshore is greater than that of total design

Questions 115 to 117

Directions for the following three questions: Answer the questions based on the pipeline diagram below.

The following sketch shows the pipelines carrying material from one location to another. Each location has a demand for material. The demand at Vaishali is 400, at Jyotishmati is 400, at Panchal is 700, and at Vidisha is 200. Each arrow indicates the direction of material flow through the pipeline. The flow from Vaishali to Jyotishmati is 300. The quantity of material flow is such that the demands at all these locations are exactly met. The capacity of each pipeline is 1,000.



115. The quantity moved from Avanti to Vidisha is

(A) 200

(B) 800

(C) 700

(D) 1,000

116. The free capacity available at the Avanti-Vaishali pipeline is

(A) 0

(B) 100

(C) 200

(D) 300

117. What is the free capacity available in the Avanti-Vidisha pipeline?

(A) 300 (B) 200

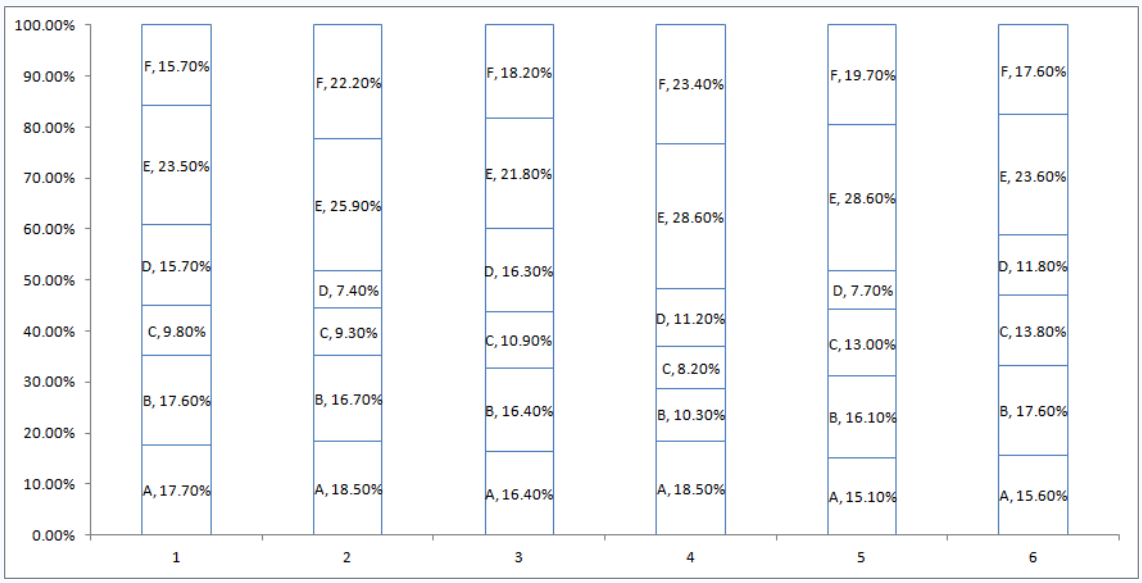
(C) 100 (D) 0

Questions 118 to 120

Directions for the following three questions: Answer these questions based on the data given below:

There are six companies, 1 through 6. All of these companies use six operations, A through F. The following graph shows the distribution of efforts put in by each company in these six operations.

The Y axis represents the % distribution of effort and the X axis represents the company



118. Suppose effort allocation is inter-changed between operations B and C, then C and D, and then D and E. If companies are then ranked in ascending order of effort in E, what will be the rank of company 3?

(A) 2 (B) 3

(C) 4 (D) 5

119. A new technology is introduced in company 4 such that the total effort for operations B through F get evenly distributed among these. What is the change in the percentage of effort in operation E?

(A) Reduction of 12.3 (B) Increase of 12.3

(C) Reduction of 5.6 (D) Increase of 5.6

120. Suppose the companies find that they can remove operations B, C and D and redistribute the effort released equally among the remaining operations. Then which operation will show the maximum share across all companies and all operations?

(A) Operation E in company 1 (B) Operation E in company 4

(C) Operation F in company 5 (D) Operation E in company 5

121. What are the values of m and n? I. n is an even integer, m is an odd integer, and m is greater than n. II. Product of m and n is 30.

(A) The question can be answered by one of the statements alone and not by the other.

(B) The question can be answered by using either statement alone.

(C) The question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(D) The question cannot be answered even by using both statements together.

---

122. Is Country X's GDP higher than country Y's GDP? I. GDPs of the countries X and Y have grown over the past 5 years at compounded annual rate of 5% and 6% respectively. II. Five years ago, GDP of country X was higher than that of country Y.

(A) The question can be answered by one of the statements alone and not by the other.

(B) The question can be answered by using either statement alone.

(C) The question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(D) The question cannot be answered even by using both statements together.

---

123. What is the value of X? I. X and Y are unequal positive even integers, less than 10, and $\frac{X}{Y}$ is an odd integer. II. X and Y are positive even integers, each less than 10, and product of X and Y is 12.

(A) The question can be answered by one of the statements alone and not by the other.

(B) The question can be answered by using either statement alone.

(C) The question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(D) The question cannot be answered even by using both statements together.

---

124. On a given day a boat ferried 1,500 passengers across the river in 12 hr. How many round trips did it make? I. The boat can carry 200 passengers at any time. II. It takes 40 min each way and 20 min of waiting time at each terminal.

(A) The question can be answered by one of the statements alone and not by the other.

(B) The question can be answered by using either statement alone.

(C) The question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(D) The question cannot be answered even by using both statements together.

---

125. What will be the time for downloading software? I. Transfer rate is 6 kilobytes per second. II. The size of the software is 4.5 megabytes.

(A) The question can be answered by one of the statements alone and not by the other.

(B) The question can be answered by using either statement alone.

(C) The question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(D) The question cannot be answered even by using both statements together.

---

126. A square is inscribed in a circle. What is the difference between the area of the circle and that of the square? I. The diameter of the circle is $25\sqrt{2}$ cm. II. The side of the square is 25 cm.

(A) The question can be answered by one of the statements alone and not by the other.

(B) The question can be answered by using either statement alone.

(C) The question can be answered by using both the statements together, but cannot be answered by using either statement alone.

(D) The question cannot be answered even by using both statements together.

---

127. Two friends, Ram and Gopal, bought apples from a wholesale dealer. How many apples did they buy? I. Ram bought one-half the number of apples that Gopal bought. II. The wholesale dealer had a stock of 500 apples.

(A) The question can be answered by one of the statements alone and not by the other.

(B) The question can be answered by using either statement alone.

(C) The question can be answered by using both the statements together, but cannot be answered by using either statement alone.

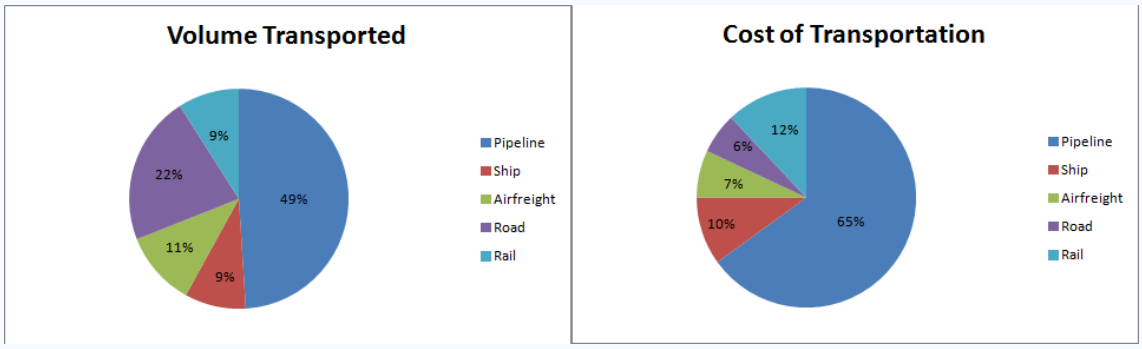
(D) The question cannot be answered even by using both statements together.

Questions 128 to 130

Directions for the following three questions: Answer the questions based on the pie charts given below.

Chart 1 shows the distribution of 12 million tonnes of crude oil transported through different modes over a specific period of time.

Chart 2 shows the distribution of the cost of transporting this crude oil. The total cost was Rs. 30 million.



128. The cost in rupees per tonne of oil moved by rail and road happens to be roughly

(A) Rs. 3 (B) Rs. 1.5

(C) Rs. 4.5 (D) Rs. 8

---

129. From the charts given, it appears that the cheapest mode of transport is

(A) road (B) rail

(C) pipeline (D) ship

---

130. If the costs per tonne of transport by ship, air and road are represented by P, Q and R respectively, which of the following is true?

(A) R > Q > P

(B) P > R > Q

(C) P > Q > R

(D) R > P > Q

---

131. At a village mela, the following six nautankis (plays) are scheduled as shown in the table below.

No.	Nautanki	Duration	Show Times
1	Sati Savitri	1 hr	9 am and 2 pm
2	Joru ka Ghulam	1 hr	10:30 am and 11:30 am
3	Sundar Kand	30 min	10 am and 11 am
4	Veer Abhimanyu	1 hr	10 am and 11 am
5	Reshma aur Shera	1 hr	9:30 am, 12 noon and 2 pm
6	Jhansi ki Rani	30 min	11 am and 1:30 pm

You wish to see all the six nautankis. Further, you wish to ensure that you get a lunch break from 12.30 p.m. to 1.30 p.m. Which of the following ways can you do this?

(A) Sati Savitri is viewed first; Sundar Kand is viewed third, and Jhansi ki Rani is viewed last

(B) Sati Savitri is viewed last; Veer Abhimanyu is viewed third, and Reshma aur Shera is viewed first

(C) Sati Savitri is viewed first; Sundar Kand is viewed third, and Joru ka Ghulam is viewed fourth

(D) Veer Abhimanyu is viewed third; Reshma aur Shera is viewed fourth, and Jahansi ki Rani is viewed fifth

---

132. Mrs Ranga has three children and has difficulty remembering their ages and months of their birth. The clue below may help her remember. . The boy, who was born in June, is 7 years old. . One of the children is 4 years old but it was not Anshuman. . Vaibhav is older than Suprita. . One of the children was born in September, but it was not Vaibhav. . Suprita's birthday is in April. . The youngest child is only 2-year-old. Based on the above clues, which one of the following statements is true?

(A) Vaibhav is the oldest, followed by Anshuman who was born in September, and the youngest is Suprita who was born in April

(B) Anshuman is the oldest being born in June, followed by Suprita who is 4-year-old, and the youngest is Vaibhav who is 2-year-old

(C) Vaibhav is the oldest being 7-year-old, followed by Suprita who was born in April, and the youngest is Anshuman who was born in September

(D) Suprita is the oldest who was born in April, followed by Vaibhav who was born in June, and Anshuman who was born in September

---

133. The Bannerjees, the Sharmas, and the Pattabhiramans each have a tradition of eating Sunday lunch as a family. Each family serves a special meal at a certain time of day. Each family has a particular set of chinaware used for this meal. Use the clues below to answer the following question. . The Sharma family eats at noon. . The family that serves fried brinjal uses blue chinaware. . The Bannerjee family eats at 2 o'clock. . The family that serves sambar does not use red chinaware. . The family that eats at 1 o'clock serves fried brinjal. . The Pattabhiraman family does not use white chinaware. . The family that eats last likes makkai-ki-roti. Which one of the following statements is true?

(A) The Bannerjees eat makkai-ki-roti at 2 o'clock, the Sharmas eat fried brinjal at 12 o'clock and the Pattabhiramans eat sambar from red chinaware

(B) The Sharmas eat sambar served in white chinaware, the Pattabhiramans eat fried brinjal at 1 o'clock, and the Bannerjees eat makkai-ki-roti served in blue chinaware

(C) The Sharmas eat sambar at noon, the Pattabhiramans eat fried brinjal served in blue chinaware, and the Bannerjees eat makkai-ki-roti served in red chinaware

(D) The Bannerjees eat makkai-ki-roti served in white chinaware, the Sharmas eat fried brinjal at 12 o'clock and the Pattabhiramans eat sambar from red chinaware

---

134. While Balbir had his back turned, a dog ran into his butcher shop, snatched a piece of meat off the counter and ran out. Balbir was mad when he realised what had happened. He asked three other shop-keepers, who had seen the dog, to describe it. The shopkeepers really did not want to help Balbir. So each of them made a statement which contained one truth and one lie. . Shopkeeper number 1 said: "The dog had black hair and a long tail." . Shopkeeper number 2 said: "The dog had a short tail and wore a collar." . Shopkeeper number 3 said: "The dog had white hair and no collar." Based on the above statements, which of the following could be a correct description?

(A) The dog had white hair, short tail and no collar

(B) The dog had white hair, long tail and a collar

(C) The dog had black hair, long tail and a collar

(D) The dog had black hair, long tail and no collar

Questions 135 to 136

Directions for the following two questions: Answer the following questions based on the information given below.

Elle is three times older than Yogesh. Zaheer is half the age of Wahida. Yogesh is older than Zaheer.

135. Which of the following can be inferred?

(A) Yogesh is older than Wahida

(B) Elle is older than Wahida

(C) Elle may be younger than Wahida

(D) None of these

---

136. Which of the following information will be sufficient to estimate Elle's age?

(A) Zaheer is 10-year-old

(B) Both Yogesh and Wahida are older than Zaheer by the same number of years

(C) Both the above statements are needed

(D) None of these

Questions 137 to 139

Directions for the following three questions: Answer the questions based on the passage below.

A group of three or four has to be selected from seven persons. Among the seven are two women: Fiza and Kavita, and five men: Ram, Shyam, David, Peter and Rahim. Ram would not like to be in the group If Shyam is also selected. Shyam and Rahim want to be selected together in the group. Kavita would like to be in the group only if David is also there. David, if selected, would not like Peter in the group. Ram would like to be in the group only if Peter is also there. David insists that

Fiza be selected in case he is there in the group.

137. Which of the following is a feasible group of three?

(A) David, Ram and Rahim
(B) Peter, Shyam and Rahim
(C) Kavita, David and Shyam
(D) Fiza, David and Ram

---

138. Which of the following is a feasible group in four?

(A) Ram, Peter, Fiza and Rahim
(B) Shyam, Rahim, Kavita and David
(C) Shyam, Rahim, Fiza and David
(D) Fiza, David, Ram and Peter

---

139. Which of the following statements is true?

(A) Kavita and Ram can be part of a group of four
(B) A group of four can have two women
(C) A group of four can have all four men
(D) None of these

---

140. On her walk through the park, Hamsa collected 50 coloured leaves, all either maple or oak. She sorted them by category when she got home, and found the following: The number of red oak leaves with spots is even and positive. The number of red oak leaves without any spot equals the number of red maple leaves without spots. All non-red oak leaves have spots, and there are five times as many of them as there are red spotted oak leaves. There are no spotted maple leaves that are not red. There are exactly 6 red spotted maple leaves. There are exactly 22 maple leaves that are neither spotted nor red. How many oak leaves did she collect?

(A) 22
(B) 17
(C) 25
(D) 18

---

141. Eight people carrying food baskets are going for a picnic on motorcycles. Their names are A, B, C, D, E, F, G, and H. They have 4 motorcycles M1, M2, M3 and M4 among them. They also have 4 food baskets O, P, Q and R of different sizes and shapes and each can be carried only on motorcycles M1, M2, M3 and M4 respectively. No more than 2 persons can travel on a motorcycle and no more than one basket can be carried on a motorcycle. There are 2 husband-wife pairs in this group of 8 people and each pair will ride on a motorcycle together. C cannot travel with A or B. E cannot travel with B or F. G cannot travel with F, or H, or D. The husband-wife pairs must carry baskets O and P. Q is with A and P is with D. F travels on M1 and E travels on M2 motorcycles. G is with Q, and B cannot go with R. Who is travelling with H?

(A) A
(B) B
(C) C
(D) D

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142. In a family gathering there are 2 males who are grandfathers and 4 males who are fathers. In the same gathering there are 2 females who are grandmothers and 4 females who are mothers. There is at least one grandson or a granddaughter present in this gathering. There are 2 husband-wife pairs in this group. These can either be a grandfather and a grandmother, or a father and a mother. The single grandfather (whose wife is not present) has 2 grandsons and a son present. The single grandmother (whose husband is not present) has 2 grand daughters and a daughter present. A grandfather or a grandmother present with their spouses does not have any grandson or granddaughter present. What is the

minimum number of people present in this gathering?

(A) 10 (B) 12

(C) 14 (D) 16

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143. I have a total of Rs. 1,000. Item A costs Rs. 110, item B costs Rs. 90, item C costs Rs. 70, item D costs Rs. 40 and item E costs Rs. 45. For every item D that I purchase, I must also buy two of item B. For every item A, I must buy one of item C. For every item E, I must also buy two of item D and one of item B. For every item purchased I earn 1,000 points and for every rupee not spent I earn a penalty of 1,500 points. My objective is to maximise the points I earn. What is the number of items that I must purchase to maximise my points?

(A) 13 (B) 14

(C) 15 (D) 16

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144. Four friends Ashok, Bashir, Chirag and Deepak are out for shopping. Ashok has less money than three times the amount that Bashir has. Chirag has more money than Bashir. Deepak has an amount equal to the difference of amounts with Bashir and Chirag. Ashok has three times the money with Deepak. They each have to buy at least one shirt, or one shawl, or one sweater, or one jacket that are priced Rs. 200, Rs. 400, Rs. 600, and Rs. 1,000 a piece respectively. Chirag borrows Rs. 300 from Ashok and buys a jacket. Bashir buys a sweater after borrowing Rs. 100 from Ashok and is left with no money. Ashok buys three shirts. What is the costliest item that Deepak could buy with his own money?

(A) A shirt (B) A shawl

(C) A sweater (D) A jacket

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145. In a 'keep-fit' gymnasium class there are 15 females enrolled in a weight-loss programme. They all have been grouped in any one of the five weight-groups W1, W2, W3, W4, or W5. One instructor is assigned to one weight-group only. Sonali, Shalini, Shubhra and Shahira belong to the same weight-group. Sonali and Rupa are in one weight-group, Rupali and Renuka are also in one weight-group. Rupa, Radha, Renuka, Ruchika, and Ritu belong to different weight groups. Somya cannot be with Ritu, and Tara cannot be with Radha. Komal cannot be with Radha, Somya, or Ritu. Shahira is in W1 and Somya is in W4 with Ruchika. Sweta and Jyotika cannot be with Rupali, but are in a weight-group with total membership of four. No weight-group can have more than five or less than one member. Amita, Babita, Chandrika, Deepika and Elina are instructors of weight-groups with membership sizes 5, 4, 3, 2 and 1 respectively. Who is the instructor of Radha?

(A) Babita (B) Elina

(C) Chandrika (D) Deepika

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146. A king has unflinching loyalty from eight of his ministers M1 to M8, but he has to select only four to make a cabinet committee. He decides to choose these four such that each selected person shares a liking with at least one of the other three selected. The selected persons must also hate at least one of the likings of any of the other three persons selected. M1 likes fishing and smoking, but hates gambling. M2 likes smoking and drinking, but hates fishing. M3 likes gambling, but hates smoking, M4 likes mountaineering, but hates drinking, M5 likes drinking, but hates smoking and mountaineering. M6 likes fishing, but hates smoking and mountaineering. M7 likes gambling and mountaineering, but hates fishing. M8 likes smoking and gambling, but hates mountaineering. Who are the four people selected by the king?

(A) M1, M2, M5 and M6 (B) M3, M4, M5 and M6

(C) M4, M5, M6 and M8 (D) M1, M2, M4 and M7

Questions 147 to 150

Directions for the following four questions: Answer the questions based on the following information.

A and B are two sets (e.g. A = Mothers, B = Women).

The elements that could belong to both the sets (e.g. women who are mothers) is given by the set $C = A \cap B$.

The elements which could belong to either A or B, or both, is indicated by the set $D = A \cup B$.

A set that does not contain any elements is known as a null set represented by ϕ(e.g. if none of the women in the set B is a mother, then $C = A \cap B$ is a null set, or C = ϕ).

Let 'V' signify the set of all vertebrates, 'M' the set of all mammals, 'D' dogs, 'F' fish, 'A' alsatian and 'P', a dog named Pluto.

147. Given that $X = M \cap D$ is such that $X = D$. Which of the following is true?

(A) All dogs are mammals (B) Some dogs are mammals

(C) $X = \phi$ (D) All mammals are dogs

148. If $Y = F \cap (D \cap V)$ is not a null set, it implies that

(A) all fish are vertebrates (B) all dogs are vertebrates

(C) some fish are dogs (D) None of these

149. If $Z = (P \cap D) \cup M$, then

(A) the elements of Z consist of Pluto, the dog, or any other mammal

(B) Z implies any dog or mammal

(C) Z implies Pluto or any dog that is a mammal

(D) Z is a null set

150. If $P \cap A = \phi$ and $P \cup A = D$, then which of the following is true?

(A) Pluto and alsatians are dogs (B) Pluto is an alsatian

(C) Pluto is not an alsatian (D) Both A and C

- End of Question Paper -