# Solved CAT-2001 Paper

## SECTION—1

**No. of Questions: 50**

**Directions for questions 1 to 5:** *Each question is independent of each other.*

1. Ujakar and Keshav attempted to solve a quadratic equation. Ujakar made a mistake in writing down the constant term. He ended up with the roots (4, 3). Keshav 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)

2. 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

3. 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

4. A certain city has a circular wall around it, and the wall has four gates pointing north, south, east and west. A house stands outside the city, three kms north of the north gate, and it can just be seen from a point nine kms 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

5. 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 can not be true?

(*a*) $(x - z)^2 y$ is even (*b*) $(x - y)y^2$ is odd
(*c*) $(x - z)y$ is odd (*d*) $(x - y)^2 z$ is even

6. A square, whose side is 2 meters, 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 meters is:

(*a*) $\frac{(\sqrt{2})}{(\sqrt{2+1})}$ (*b*) $\frac{(2)}{(\sqrt{2+1})}$

(*c*) $\frac{(2)}{(\sqrt{2-1})}$ (*d*) $\frac{(\sqrt{2})}{(\sqrt{2-1})}$

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

(*a*) 44 (*b*) 45
(*c*) 10 (*d*) 12

8. 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

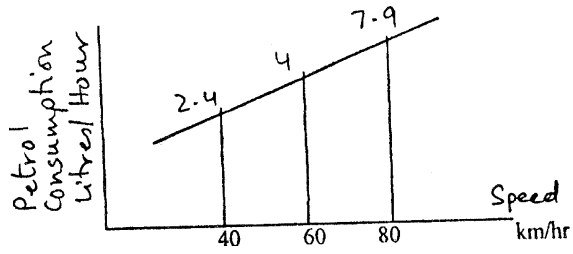
9. In a number system the product of 44 and 11 is 2124. The number 3111 of this system, when converted to the decimal number system, becomes:

(*a*) 406 (*b*) 1086 (*c*) 213 (*d*) 691

10. A does 120 surveys in a week and gets Rs 3600. B is 1.2 times more efficient than A. Also, A is 25% more efficient than C. Each of them works for one week. Which of the following statements is not correct?

(*a*) B gets 20% more than A
(*b*) A and C together get double of what B alone gets
(*c*) B gets 50% more than C
(*d*) A, B, C together get triple of what A alone gets

**Directions for questions 11 to 12:** *The petrol consumption rate of a new car 'Palto' depends on its speed and may be described by the graph below:*




11. Manisha makes the 200 km trip from Mumbai in Pune at a steady speed of 60 km per hour. What is the amount of petrol consumed for the journey?

(*a*) 12.5 litres (*b*) 13.33 litres
(*c*) 16 litres (*d*) 19.75 litres

12. Manisha would like to minimise the fuel consumption for the trip by driving at the appropriate speed. How should she change the speed?

(*a*) Increase the speed (*b*) Decrease the speed
(*c*) Maintain the speed at 60 km/hour
(*d*) Cannot be determined

**Directions for questions 13 and 14:**

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:

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

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

13. Based on the information provided which of the following is true?

(*a*) $MBA_1 \le BA \le MBA_2$

(*b*) $BA \le MBA_2 \le MBA_1$

(*c*) $MBA_2 \le BA \le MBA_1$

(*d*) None of these

14. An experienced cricketer with no incomplete innings has a 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

**Directions for questions 15 to 50:** *Answer the questions independent of each other.*

15. Raju has 128 boxes with him. He has to put atleast 120 oranges in one box and 144 at the most. Find the least number of boxes which will have the same number of oranges.

(*a*) 5 (*b*) 103

(*c*) 6 (*d*) Cannot be determined

16. Every ten 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*) 11264 (*b*) 14174

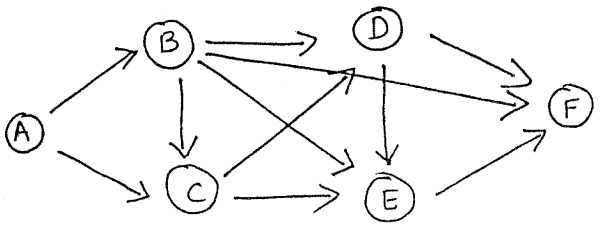
(*c*) 5632 (*d*) 10154

17. 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

18. 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

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

(*a*) 36 meters (*b*) 48 meters

(*c*) 60 meters (*d*) 72 meters

20. Consider a triangle. 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*) $\sqrt{270}$

21. A train X departs from station A at 11.00 a.m. for station B, which is 180 km away. Another train Y departs from station B at the same time. 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 minutes at station C, which is 60 km away from station B enroute to station A. At what distance from A would they meet?

(*a*) 112 (*b*) 118

(*c*) 120 (*d*) None of these

22. Three friends, returning from a movie, stopped to eat at a restaurant. After dinner, they paid their bill and noticed of mints at the front counter. Sita took 1/3 of the mints, but returned four because she had a momentary pang of guilt. Fatima then took 1/4 of what was left but returned three for similar reasons. 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

23. The tax on a commodity is diminished by 25% and its consumption increases by 20%. Now, a person can save what per cent more/less from before?

(*a*) 10% more (*b*) 10% less

(*c*) cannot be determined (*d*) None of these

24. 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

25. Anita had to do a multiplication. Instead 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

26. 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 up-down cycle, the price of a painting decreased by Rs 441. After a second up-down cycle the painting was sold for Rs 1944.81. What was the original price of the painting?

(*a*) 2756.25 (*b*) 2256.25

(*c*) 2500 (*d*) 2000

27. 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 $35\frac{7}{17}$. What was the number erased?

(*a*) 7 (*b*) 8

(*c*) 9 (*d*) None of these

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

(*a*) 144 (*b*) 168

(*c*) 192 (*d*) None of these

29. Three math 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.

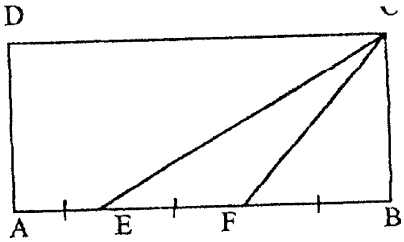
The average score of all sudents in classes X and Y together is 79.

The average score of all students in classes Y and Z together is 81.

What is the average for all the three clalsses?

(*a*) 81 (*b*) 81.5
(*c*) 82 (*d*) 84.5

30. In the diagram, ABCD is a rectangle with AE=EF=FB. What is the ratio of the area of the triangle CEF and that of the rectangle?




(*a*) $\frac{1}{6}$ (*b*) $\frac{1}{8}$
(*c*) $\frac{1}{9}$ (*d*) None of these

31. At a certain fast food restaurant, Bakshi can buy 3 burgers, 7 shakes, and one order of fries for Rs 120. At the same place it would cost Rs 164.50 for 4 burgers, 10 shakes, and one order of fries. How much would it cost for a meal of one burger, one shake, and one order of fries?

(*a*) Rs 31 (*b*) Rs 41
(*c*) Rs 21 (*d*) Cannot be determined

32. 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, B (*b*) A, C
(*c*) B, C (*d*) A, D

33. In a 4-digit number, the sum of the first two digits is equal to that of the last two 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 two digits. What is the third digit of the number?

(*a*) 5 (*b*) 8
(*c*) 1 (*d*) 4

34. 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 total 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*) Rs 500

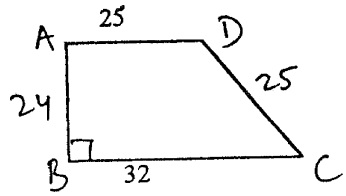
35. A, B and C went to buy ration from a wholesale market. They had a combined sum of Rs 900. A spent 80%, B spent 70% and C spent 75% of their respective amounts. Now the ratio of amounts left with them is 4 : 9 : 10. Find the ratio of amounts they had in the beginning.

(*a*) 2 : 4 : 3 (*b*) 3 : 4 : 2
(*c*) 5 : 2 : 2 (*d*) 2 : 3 : 4

36. A red light flashes 3 times per minute and a green light flashes 5 times in two minutes 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

37. Two sides of a plot measure 32 meters and 24 meters and the angle between them is a right angle. The other two sides measure 25 meters each and the other three angles are not right angles.



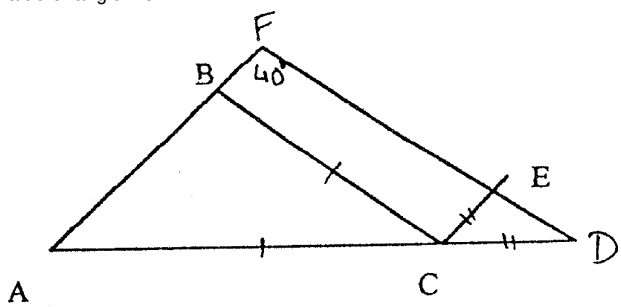

What is the area of the plot?

(*a*) 768 (*b*) 534
(*c*) 696.5 (*d*) 684

38. Ashish is given Rs 158 in one rupee denomination. 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

39. In the given figure BC = AC, angle AFD = 40° and CE = CD. The value of angle BCE = ?




(*a*) 140 (*b*) 70
(*c*) 100 (*d*) None of these

40. 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 of squares of seventh and sixth terms of this sequence is 517, what is the tenth term of this sequence?

(*a*) 147 (*b*) 76
(*c*) 123 (*d*) Cannot be determined

41. In some code, letters a, b, c, d and e represents numbers 2, 4, 5, 6 and 10. We don't know which letter represents which number. Consider the following relationships:

(*i*) a + c = e (*ii*) b – d = d and (*iii*) e = a = b

Which statement below is true?

(*a*) b = 4, d = 2 (*b*) a = 4, e = 6
(*c*) b = 6, e = 2 (*d*) a = 4, c = 6

42. At his usual rowing rate, Rahul can travel 12 miles downstream in a certain river in six hours less than it takes him to travel the same distance upstream. But if he could double his usual rowing rate for his 24 mile round trip, the downstream 12 miles would then take only one hour 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*) $\frac{8}{3}$

43. Two men X and Y started working for a certain company at similar jobs on January 1, 1950. X asked for an initial salary of Rs 300 with an annual increment of Rs 30. Y asked for an initial salary of Rs 200 with a rise of Rs 15 every six 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

44. What is the minimum value of x for which the expression $x^3 - 7x^2 + 11x - 5$ gives positive values?

(*a*) 5 (*b*) 8
(*c*) 4 (*d*) None of these

45. A rectangular pool 20 meters wide and 60 meters long is surrounded by a walkway of uniform width. If the total area of the walkway is 516 square meters, how wide, in meters, is the walkway?

(*a*) 43 (*b*) 4.3
(*c*) 3 (*d*) 3.5

46. December 9, 2001 is Sunday. What was the day on December 9, 1971?

(*a*) Thursday (*b*) Wednesday
(*c*) Saturday (*d*) Sunday

47. 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*) None of these

48. Fresh grapes contain 90% water by weight while dried grapes contain 20% water by weight. 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

49. A change making machine contains 1 rupee, 2 rupee and 5 rupee coins. The total number of coins is 300. The amount is Rs 960. If the number of 1 rupee coins and the number of 2 rupee coins are interchanged, the value comes down by Rs 40. The total number of 5 rupee coins is:

(*a*) 100 (*b*) 140
(*c*) 60 (*d*) 150

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

(*a*) 12 (*b*) 20
(*c*) 12.5 (*d*) 13.3

## SECTION—2

**No. of Questions: 50**

**Direction for questions 51 to 80:** *Each of the six passages given below is followed by questions. Choose the best answer for each question.*

### PASSAGE—I

The narrative of Dersu Uzala is divided into two major sections, set in 1902 and 1907, that deal with separate expeditions which Areseniev 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 close 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 represented 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 organisation of the film works to contain, to close, to circumscribe that life by erecting a series of obstacles around it. The file 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 farther 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 has 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 probable 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 widom.

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 fire light 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.

51. 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 criticise the lack of understanding of nature in the pre-modern era.

52. 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.

53. 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 the above.

54. 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.

55. 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.

56. According to the author, which of these statements about the film are 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 the above.

**PASSAGE—II**

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 pursued self-destruction more whole-heartedly, and when the pursuit was at an end, at the age of forty-four, 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 (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. Bessie's songs 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 song, *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 in 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 musician 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 self-respect in the Negro ghetto of Baltimore in 1915 was too much of a handicap, even without rape at the age of ten 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.

57. According to the passage, Billie Holiday was fortunate in all but one 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.

58. 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.

59. 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.

60. 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.

## ANSWERS

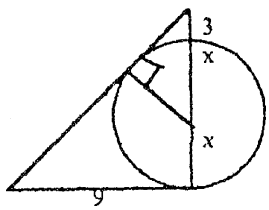
### SECTION—1

1. (*a*) Mistake in constant term implies that the sum $(\alpha+\beta) = -\frac{b}{a}$ is correct. Hence $\alpha+\beta = 7$. Secondly mistake in coefficient of x means that the product was correct. Hence $\alpha\beta = 6$. Only choice (*a*) satisfies both these conditions.

2. (*d*) The Pythagorean triplet 8, 15, 17 satisfies the given condition. If the ladder is moved away by 2, it would rest at the foot of the wall.

3. (*c*) Total marks = 6x + 7x + 8x + 10x = 40x. This was equal of 60% of 5y, if y are the total marks in each subject.
Hence $40x = 0.6 \times 5y = \frac{40}{3} = 13.33x$.
The number of papers in which he can receive 50% marks = 4. [Only when x = 4 is y > 50].

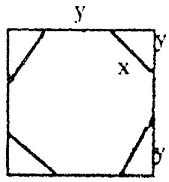
4. (*b*)




The best way to do this sum is to use Pythagoras and work from the choices. Taking choice (*b*) we get $12^2 + 9^2 = 144 + 81 = 225$, hence hypotenuse is 15. To check the answer, put x = 4.5 and see in the upper triangle whether the relationship holds.

5. (*a*) (x – z) = odd – even = odd; y = odd. Odd × odd will always give odd, hence the first statement is wrong.

6. (*b*)




We have $x^2 = y^2 + y^2 = 2y^2$ and 2y + x = 2 (side of square).
From (1), $y = \frac{x}{\sqrt{2}}$ which is $\frac{\sqrt{2x}}{2}$.

Then substitute second equation to get $\sqrt{2x} + x = 2$;

Hence $x = \frac{2}{(\sqrt{2}+1)}$

7. (*c*) Sum of rational numbers = $\frac{n(n+1)}{2} < 1000$.

We get $n^2 + n < 2000$; hence n = 44

Since $44^2 + 44 = 1936 + 44 = 1980$. $\frac{(n^2+n)}{2} = \frac{1980}{2} = 990$.

Hence the number added twice = 1000 – 990 = 10.

8. (*c*) Substitute possible figures in the given choices. In choice (*a*) x can be 2.9 and y can be – 6.9. In choice (*c*) this becomes 5(xy) which is less than $x^2y$.

9. (*d*) 484 = 2124. If the base of conversion is a; we get $2a^3 + a^2 + 2a + 4 = 484$, hence a = 6.
Converting 3111 from base 6, we get
$3 \times 6^3 + 6^2 + 6^1 + 6^0 = 648 + 36 + 6 + 1 = 691$.

10. (*b*) A does 120, B gets 120 × 1.2 = 144
He gets 144 $(\frac{3600}{12}) = 4320$

C should get 96 × 30 = 2880

11. (*b*) Time taken for the journey = $\frac{200}{60} = \frac{10}{3}$ hrs.

Litres consumed = $\frac{10}{3} \times 4 = \frac{40}{3} = 13.33$

12. (*b*) At 40 km/hr, she spends $\frac{200}{40}$ = 5 hrs and thereby consumes 5 × 2.4 = 12.0 litres.

At 80 km/hr she spends $\frac{200}{80} = 2.5$ litres and consumes 2.5 × 7.9 = 19 litres. Hence she must reduce the speed.

13. (*d*) Visual question. Notice that the difference between BA and MBA is in the denominator. Since the denominator in $MBA_2$ is higher, it implies that this quantity must be smaller. But $MBA_1$ could be greater than $MBA_2$ but less than BA. Hence statement (*d*) is correct.

14. (*b*) Supposing he plays 10 matches and BA = 50.
Then $MBA_2 = \frac{(500+45)}{11} = \frac{545}{11} = 49.5$, hence $MBA_2$ will decrease.

15. (*b*) The number of boxes containing same number of oranges will be least when there are maximum boxes containing different number of oranges.

16. (*c*) We derive the table as follows:

| | Male | Female |
|---|---|---|
| Chota Hazri | $\frac{11264}{2}$ = 5632 | 14174 – 2910 = 11264 |
| Mota Hazri | 14174 – 4020 = 10154 | 14174 |

17. (*d*) Substitute some values, say x = 6 and y = – 2.
Then all the given choices are wrong.

18. (*a*) ABCF, ABF, ABEF, ABDCF, ABDEF, ADCF, ADCEF, ADEF, ADEF.

19. (*b*) Distance travelled = A : x, B : x – 12, C : x – 18.
When B goes x, C goes $\frac{(x-18)}{x} \times x = x - 8$. Solve x for runner.

20. (*a*) Use the formula of area of triangle
$A = \sqrt{s(s-a)(s-b)(s-c)}$ (s – c) where $s = \frac{(a+b+c)}{2}$.

Substitute a = 20, b = 10 to get the value of c.

21. (*a*) Time taken to cover 60 km by train Y = $\frac{60}{50}$ = 1 hr 12 min.

Rest = 15 min. Total time = 1 hr 27 min.
Distance from A of train X = 100 km approx.
Remaining distance = 180 – (100 + 60) = 20 km.

Time taken to meet = $[\frac{\text{Distance}}{\text{Relative Speed}}] = \frac{20}{120} = \frac{1}{6}$ hr.

Distance from A = $70 \times \frac{1}{6}$ = 11 approx.

Total distance = 100 + 11 = 111 km

22. (*d*) The number of mints must be divisible by 3.
23. (*c*) We do not have any data about the earlier savings.
24. (*c*) The minimum value will occur when a = b = c = d = 1.
25. (*d*) The new product must be a multiple of 53. Only one choice fulfils this requirement.
26. (*a*)
27. (*d*) Total of (x – 1) numbers = $\frac{602}{17}$.

This means x – 1 = 17 and x = 18.
Hence x = 612. Number erased = 10.

28. (*c*) The number can end in multiples of 4, that is 12, 16, 24, 36, 32, 52, 56, 64 = 8 cases.
The first three positions can be filled by 4 × 3 × 2 = 24 ways.
Hence total number of ways = 24 × 8 = 192 ways.
29. (*b*) Taking x and y, we get $\frac{(83x+76y)}{(x+y)} = 79$; and taking y and z we get $\frac{(76y + 85z)}{(y+z)} = 81$.

From (*a*), 83x + 76y = 79x + 79y, hence 4x = 3y.
From (*b*), 76y + 85z = 81y + 81z, hence 5y = 4z.
Average for all the classes = $\frac{(83\times3+76\times4+85\times5)}{2} = 815$

30. (*a*) Since height is the same, area of $\Delta$CEF = $\frac{1}{3}$ of $\Delta$ABC

Hence it is $\frac{1}{6}$ of the rectangle.

31. (*a*) We get 3x + 7y + z = 120 and 4x + 10y + z = 164.50.
Subtracting, we get x + 3y = 44.50 or 2x + 6y = 89.
Substitute in first equation to get x + y + z = 120 – 89 = 31.
32. (*d*) Work from the choices.

A + D = $\frac{1}{4}+\frac{1}{32}=\frac{9}{32}$

B + C = $\frac{1}{8}+\frac{1}{16}=\frac{3}{16}$ and $\frac{9}{32}\times\frac{2}{3}=\frac{3}{16}$

33. (*a*) We use hit and trial to solve this sum. Taking the first choice, we can get the number 1854, which satisfies all conditions.
34. (*d*) Let x be the number already contacted.
Then amount collected is 600 x.

As this is 75% of the sum, the total sum is 600x × $\frac{4}{3}$ = 800 x.

Balance amount 200x has to be collected from 40%,
Hence $\frac{200x}{0.4x} = 500$.

35. (*d*) 20% of A : 30% of B : 25% of C = 4 : 9 : 10.
Solve to get the answer.
36. (a) Red light = $\frac{60}{3}$ = 20 sec and green light = $\frac{120}{5}$ = 24 sec.

They will flash together in 120 sec (LCM of 20 and 24); *i.e.* 2 min.

No. of times they flash in an hour = $\frac{60}{2}$ = 30.

37. (*d*) Area of right angled triangle = $\frac{1}{2}$ (24) (32) = 384 units and area of isosceles triangle with sides 25, 25, 40 = 300.
Total area = 300 + 384 = 684 units.
38. (*b*) The coins should be put as follows: 1, 2, 4, 8, 16, 32, 64, 1, 2, 4, 8, 16, and hence he can meet all denominations.
Hence 12 bags.
39. (*c*) Let angle A = a, E = a, F = b, B = b.
Then a + b = 140, since D = 40.
Taking the quadrilateral ABCD,
$\angle$ACB = 360 – [40 + 180 – a + 180 – b] = – 40 + a + b = 100.
40. (*c*) $a^2 - b^2 = 517 = 11 \times 47$. (a + b) (a – b).
Sum of terms is 47 and difference of terms is 11.
Hence x + x + 11 = 47, and the two terms are 18 and 29.
Hence 8th term = 47, 9th term = 47 + 29 = 76 and 10th term = 76 + 47 = 123.
41. (*b*) We get a = 4, c = 2, e = 6; b = c + a = 6 + 4 = 10 and b – d = d is given by 10 – 5 = 5.
42. (*d*) $\frac{12}{(x+a)} - 6 = \frac{12}{(x-a)}$; and $\frac{12}{(2x+a)} \quad 1 = \frac{12}{(2x-a)}$.
43. (*a*) X $\rightarrow$ a = 300, d = 30, t = 10;
s = 5(600 + 9 × 30 × 12) = 870 × 5 × 12 = 52,200.
Y $\rightarrow$ a = 200, d = 15, t = 20; s = 10(400 + 19 × 15) × 6 = 41,100.
Total amount = 52,200 + 41,100 = 93,300
44. (*b*)
45. (*c*) Outer area = (60 + 2x) (20 + 2x) and inner area = 60 × 20 = 1200.
Then, (60 + 2x) (20 + 2x) – 1200 = 516.
Solving the equations, we get x = 3.
46. (*d*) 1971—2001 = 30 years including 8 leap years.

No of odd days = 38; hence $\frac{38}{7}$, remainder = 3.

Sunday – 3 = Thursday.

47. (*c*) $a = b^2 - b$ and $b \geq 4$.
Substitute some values to get b = 4, 5, 6 .....
Hence a = 12, 20, 30 .....
In each case, $a^2 - 2a$ is divisible by 24.
48. (*c*) In 20 kg fresh grapes, 18 kg is water and 2 kg is dried grapes.
But these must contain 20% of water of total weight.

Hence $\frac{2}{0.8}$ = 2.5 kg.

49. (*b*) We get 3 equations: x + y + z = 300, x + 2y + 5z = 960, 2x + y + 5z = 920.
Subtract 1) from 2) and 3) to get:
3x + 3y + 10z = 1880 and 3x + 3y + 3z = 900; 7z = 980
Hence z = 140.
50. (*c*) The minimum value will occur when x = y = $\frac{1}{2}$.

The value of the expression thus is: $(2.5)^2 + (2.5)^2 = 12.5$.

**SECTION—2**

51. (*d*) The film is about the present, in which forests are cut, juxtaposed with the pre-modern era, which showed an understanding with nature.
52. (*a*) The film opens with Arseniev searching for Dersu's grave.
53. (*d*) All the choices show Arseniev's reflective nature.
54. (*d*) The story is told through Arseniev's nostalgic memories.
55. (*c*) This is explained right in the first paragraph.
56. (*c*) Dersu is already dead when the film opens.
57. (*c*) It is mentioned in the last para that her beauty and self-respect was too much of a handicap.
58. (*c*) Her physical death called for relief (first para).
59. (*a*) The "most heart-rending voice of the past generation".
60. (*d*) Though she pursued self-destruction, it cannot be said that she welcomed suffering.

***(Balance Questions alongwith answers will appear in June 2002 issue.)***

# Solved CAT-2001 Paper

*Questions 1-60 were published in May issue. Balance questions alongwith answers are given below:*

**PASSAGE—III**

The Union government's position *vis-a-vis* the United Nations conference on racial and related discrimination world-wide 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 particularly admonished, damage the country's image. Somehow, India's spiritual beliefs elbow out concrete actualities. Inverted representations, as we know, have often been deployed in human histories as balm for the forsaken—religion being most persistent of such inversions. Yet, we would humbly submit that if globalising our markets are thought 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 originally 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 offering in the 20th century from America, those findings 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 originally 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.

61. 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.*

62. 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.

63. 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' as a category.
- (*c*) admits the incompatibility between the people of different race and caste.
- (*d*) admits indirectly that both caste-based prejudice and racial discrimination exist.

64. An important message in the passage, if one accepts a dialectic between nature and culture, is that:
- (*a*) the result 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.

65. Based on the passage, which of the following 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.

(*a*) A, E (*b*) C, E
(*c*) A, C, E (*d*) B, C, D

**PASSAGE IV**

In 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 year 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 enlightenments 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 organised 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, and the other by George Djorgovski of 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 twin 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 of hydrogen gas. This gas is leftover material from the Big Bang that did not condense into stars or quasars. It acts like 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 causing 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 one-seventh of its current size.

66. 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.

67. 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 quasar is unknown.
(*d*) their best chance is to study quasars, which are faint objects to begin with.

68. The four most distant quasars discovered recently:
(*a*) could only be seen with quasars discovered recently.
(*b*) appear to be similar to other ordinary, quasars.
(*c*) appears to be shrouded in a fog of hydrogen gas.
(*d*) have been sought to be discovered by Dark Age astronomers since 1965.

69. 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 material which eventually became stars and quasars.
(*d*) is broken into constituent elements when stars and quasars are formed.

**PASSAGE—V**

Studies of factors governing reading development in young children have achieved a remarkable degree of consensus over the past two decades. This 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 of 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 5-year-old might have difficulty in recognising that the odd word out in the set of words fan, cat, hat, mat is fan. This task requires an awareness of the sub-syllable units of the onset and the rime. The onset corresponds to any initial consonants in a syllable, and the rime corresponds to the vowel and to any following consonants. Rimes correspond 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 valentine are/v/and/t/, and the rimes correspond to the spelling patterns 'al', 'en', and 'ine'.

A 6-year-old might have difficulty in recognising that plea and may 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 '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 level of phonological awareness appears to emerge sequentially. The awareness of syllables, onsets, and rimes appears to emerge 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 4 and 5 year old children found the onset-rime version of the same/different task significantly easier than the version based on phonemes. Only the 6-year-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.

70. 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, B (*b*) A, C
(*c*) A, B, C (*d*) B, C, D

71. The Treiman and Zudowski experiment found evidence to support the following:

(*a*) at age 6, 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 4-5 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.

72. 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.

73. 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*) All of the above.

74. 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

**PASSAGE—VI**

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 our schemes, there is a point beyond which the one principle cannot be promoted without some sacrifice of the other.

Alexis de Tocqueville, the great nineteenth 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 of 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, bred 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 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 present of large inequalities in a society which professes 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.

75. 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

76. 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.

77. 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

78. 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.

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

(*a*) democratic 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.

80. 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 loose their ability to make large changes.
(*d*) of the conflict between a 'progressive' executive and a 'conservative' judiciary.

**Directions for questions 81 to 85:** *The sentence given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

81. 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.

(*a*) BDAC (*b*) CDAB
(*c*) DBAC (*d*) ABCD

82. 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.

(*a*) FDEBAC (*b*) FCABED
(*c*) DEBACF (*d*) DFEBAC

83. 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 reward, translators come somewhere near nurses and street-cleaners.

(*a*) EACDB (*b*) ADEBC
(*c*) EACBD (*d*) DCEAB

84. A. Although there are large regional variations, it is not infrequent to find a large number of people sitting here together 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.

(*a*) ECADBF (*b*) EADCFB (*c*) EADBFC (*d*) ABFCBE

85. 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 Irisman'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 or feuding families engaged in mutual massacre will be genuinely appalled if by some mischance a bystander or outsider is killed.

(*a*) DABC (*b*) ACDB (*c*) CBAD (*d*) DBAC

**Directions for questions 86 to 90:** *Each of the words below, a contextual usage is provided. Pick the word from the alternatives given that is most inappropriate in the given context.*

86. Disuse: Some words fall into disuse as technology makes objects obsolete.

(*a*) Unused (*b*) Outdated
(*c*) Misuse (*d*) Obsolescence

87. 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

88. 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

89. Parsimonious: The evidence was constructed from very parsimonious scraps of information.
(*a*) Frugal (*b*) Penurious
(*c*) Thrifty (*d*) Altruistic

90. Obviate: The new mass transit system may obviate the need for the use of personal cars:
(*a*) Prevent (*b*) Forestall
(*c*) Preclude (*d*) Bolster

**Directions for questions 91 to 95:** *For the word given at the top, match the dictionary definitions (A, B, C, D) with their corresponding usage given (E, F, G, H). Out of the four possibilities given below select the one that has all the definitions and their usages correctly matched.*

91. Exceed
*Dictionary Definition*
A. To extend outside of or enlarge beyond used chiefly in strictly physical relations
B. To be greater than or superior to
C. Be beyond the comprehension of
D. To go beyond a limit set by (as an authority or privilege)
*Usage*
E. The mercy of god exceeds our finite minds
F. Their accomplishments exceeded our expectation
G. He exceed his authority when he paid his brother's gambling debts with money from the trust
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

92. Infer
*Dictionary Definition*
A. To derive by reasoning or implication
B. To surmise
C. To point out
D. To hint
*Usage*
E. We see smoke and infer fire
F. Given some utterance, a listener may infer from it things which the utterer never implied
G. I waited all day to meet him, from this you can infer my zeal to see him
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—H C—E 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

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

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

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

**Directions for questions 96 to 100:** *In each of the following sentences, parts of the sentence are left blank. Beneath each sentence, four different ways of completing the sentence are indicated. Choose the best alternative from among the four.*

96. But_____are now regularly written to describe 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

97. 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

98. 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

99. In this context, the_____of the British labour movement is particularly_____.
(*a*) affair, weird (*b*) activity, moving
(*c*) experience, significant (*d*) atmosphere, gloomy

100. 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

## SECTION—3

**No. of Questions 50**

**Directions for questions 101 to 107***: Answer each of the questions independent of each other.*

101. Four friends Ashok, Bashir, Chirag and Deepak are out 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 1000 apiece, 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

102. In a family gathering there are two males who are grandfathers and four males who are fathers. In the same gathering there are two females who are grandmothers and four females who are mothers. There is at least one grandson or a grand-daughter present in this gathering. There are two 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 two grandsons and a son present. The single grandmother (whose husband is not present) has two grand-daughters and a daughter present. A grandfather or a grandmother present with their spouses does not have any grandson or grand-daughter present. What is the minimum number of people present in this gathering?

(*a*) 10 (*b*) 12
(*c*) 14 (*d*) 16

103. 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 four motorcycles M1, M2, M3 and M4 among them. They also have four food baskets O, P, Q and R of different size and shapes and which can be carried only on motorcycles M1, M2, M3 or M4 respectively. No more than two persons can travel on a motorcycle and no more than one basket can be carried on a motorcycle. There are two husband-wife pairs in this group of eight 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

104. I have a total of Rs 1000. 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 time purchased I earn 1000 points and for every rupee not spent I earn a penalty of 150 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

105. 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

106. 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 atleast one of the liking 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, and
M8 likes smoking and gambling, but hates mountaineering.
Who are the four people selected by the king?

(*a*) M1, M2, M5, M6
(*b*) M3, M4, M5, M6
(*c*) M4, M5, M6, M8
(*d*) M1, M2, M4, M7

107. In a "keep-fit" gymnasium class there are fifteen females enrolled in a weight-loss program. 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

**Directions for questions 108-110:** *Answer the following 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.

108. 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 the above.

109. Which of the following is a feasible group of four?
(*a*) Ram, Peter, Fiza, Rahim
(*b*) Shyam, Rahim, Kavita, David
(*c*) Shyam, Rahim, Fiza, David
(*d*) Fiza, David, Ram, Peter

110. Which of the following is a feasible group of three?
(*a*) David, Ram, Rahim
(*b*) Peter, Shyam, Rahim
(*c*) Kavita, David, Shyam

(*d*) Fiza, David, Ram

**Directions for questions 111-112:** *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.

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

(*a*) Zaheer is 10 years old.

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

(*c*) Both (*a*) and (*b*) above.

(*d*) None of the above.

112. 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 the above.

**Directions for questions 113 to 116:** *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.B. The elements which could belong to either A or B, or both, is indicated by the set D = AOB. A set that does not contain any elements is known as a null set, represented by @(for example, if none of the women in the set B is a mother, then C = A.B. is a null set, or C = @. 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.*

113. If P.A. = @ and POA = D, then which of the following is true?

(*a*) Pluto and Alsatian are dogs

(*b*) Pluto is an Alsatian

(*c*) Pluto is not an Alsatian

(*d*) D is a null set.

114. If y = FO (D.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 the above.

115. If Z = (P.D.) OM, 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.

116. Given that X = M.D. is such that X = D, which of the following is true?

(*a*) All dogs are mammals.

(*b*) Some dogs are mammals.

(*c*) X = @

(*d*) All mammals are dogs.

***Directions for question 117 to 120:*** *Answer the questions independent of each other.*

117. At a village mela, the following six nautankis (plays) are schedule as shown in the table below:

| | Nautanki | Duration | Show times |
|---|---|---|---|
| 1. | *Sati Savitri* | 1 hour | 9.00 am and 2.00 pm |
| 2. | *Joru ka Gulam* | 1 hour | 10.30 am and 11.30 am |
| 3. | *Sunder Kand* | 30 minutes | 10.00 am and 11.00 am |
| 4. | *Veer Abhimanyu* | 1 hour | 10.00 am and 11.00 am |
| 5. | *Reshma aur Shera* | 1 hour | 9.30 am, 12.00 noon and 2.00 pm |
| 6. | *Jhansi ki Rani* | 30 minutes | 11.00 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; *Sunder Kand* is viewed third and *Jhansi ki Rani* is viewed last.

(*b*) *Sati-Savitri* is viewed last; *Sunder Kand* is viewed third and *Jhansi ki Rani* is viewed last.

(*c*) *Sati-Savitri* is viewed first; *Sunder Kand* is viewed third and *Joru ka Gulam* is viewed fourth.

(*d*) *Veer Abhimanyu* is viewed third; *Reshma aur Shera* is viewed fourth and *Jhansi ki Rani* is viewed fifth.

118. While Balbir had his back turned, a dog ran into his butcher shop, snatched a piece of meat off the counter and ran off. Balbir was mad when he realised what had happened. He asked three other shopkeepers, who had seen the dog, to describe it. The shopkeepers really didn't 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.

119. 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 only 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 *makki-ki-roti.*

*Which one of the following statements is true?*

(*a*) The Bannerjees eat *makki-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 *makki-ki-roti* in blue chinaware.

(*c*) The Sharmas eat sambhar at noon. The Pattabhiramans eat fried brinjal served in blue chinaware and the Bannerjees eat *makki-ki-roti* served in red chinaware.

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

120. Mrs Ranga has three children and has difficulty remembering their ages and the months of their birth. The clues below may help her remember.

(*a*) The boy, who was born in June, is 7 years old.

(*b*) One of the children is 4 years old, but is not Anshuman.

(*c*) Vaibhav is older than Supriya.

(*d*) One of the children was born in September but it was not Vaibhav.

(*e*) Supriya's birthday is in April.

(*f*) The youngest child is only 2 years 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 Supriya who was born in April.
(*b*) Anshuman is the oldest being born in June, followed by Supriya who is 4-year old, and the youngest is Vaibhav who is 2 years old.
(*c*) Vaibhav is the oldest being 7 years old, followed by Supriya who was born in April, and the youngest is Anshuman who was born in September.
(*d*) Supriya is the oldest, who was born in April, followed by Vaibhav who was born in June, and Anshuman who was born in September.

***Directions for questions 121 to 124:*** *Answer these questions based on the table given below concerning the busiest twenty international airports in the world.*

| No. | Name | International Airport type | Code | Location | Passengers |
|---|---|---|---|---|---|
| 1. | Harstfield | A | ATL | Atlanta, Georgia, USA | 77939536 |
| 2. | Chicago-O'Hare | A | ORD | Chicago, Illinois, USA | 72568076 |
| 3. | Los Angeles | A | LAX | Los Angeles, California, USA | 63876561 |
| 4. | Heathrow Airport | E | LHR | London, United Kingdom | 62263710 |
| 5. | DFW | A | DFW | Dallas/ft. Worth, Texas, USA | 60000125 |
| 6. | Hander Airport | F | HND | Tokyo, Japan | 54338212 |
| 7. | Frankfurt Airport | E | FRA | Frankfurt, Germany | 45858315 |
| 8. | Rouse-Charles de Gaulle | E | CDG | Paris, France | 43596943 |
| 9. | San Francisco | A | SFO | San Francisco, California, USA | 40387422 |
| 10. | Denver | A | DIA | Denver, Colorado, USA | 38034231 |
| 11. | Amsterdam Schipol | E | AMS | Amsterdam, Netherlands | 36781015 |
| 12. | Minneapolis-St. Paul | A | MSP | Minneapolis-St. Paul, USA | 34216331 |
| 13. | Detroit Metropolitan | A | DTW | Detroit, Michigan, USA | 34038381 |
| 14. | Miami | A | MIA | Miami, Florida, USA | 33899246 |
| 15. | Newark | A | EWR | Newark, New Jersey, USA | 33814000 |
| 16. | McCarran | A | LAS | Las Vegas, Nevada, USA | 33669185 |
| 17. | Phoenix Sky harbor | A | PHX | Phoenix, Arizona, USA | 33533353 |
| 18. | Kimpo | FE | SEL | Seoul, Korea | 33371074 |
| 19. | George Bush | A | IAH | Houston, Texas, USA | 33089333 |
| 20. | John F. Kennedy | A | JFK | New York, New York, USA | 32003000 |

121. What percentage of top ten busiest airports is in the United States of America?
(*a*) 60 (*b*) 80
(*c*) 70 (*d*) 90

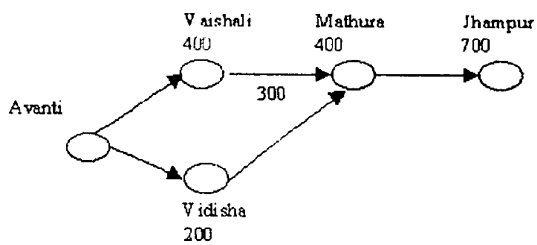
122. How many international airports of type 'A' account for more than 40 million passengers?
(*a*) 4 (*b*) 5
(*c*) 6 (*d*) 7

123. How many international airports of type 'A' account for more than 40 million passengers?
(*a*) 5 (*b*) 6
(*c*) 10 (*d*) 14

124. Of the five busiest airports, roughly what percentage of passengers is handled by Heathrow airport?
(*a*) 30 (*b*) 40
(*c*) 20 (*d*) 50

***Directions for questions 125-127:*** *Answer these 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 Mathura is 400, at Jhampur is 700 and at Vidisha is 200. Each arrow indicates the direction of material flow through the pipeline. The flow from Vaishali to Mathura 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 1000.




125. What is the free capacity available in the Avanti-Vidisha Pipeline?
(*a*) 300 (*b*) 200
(*c*) 100 (*d*) 0

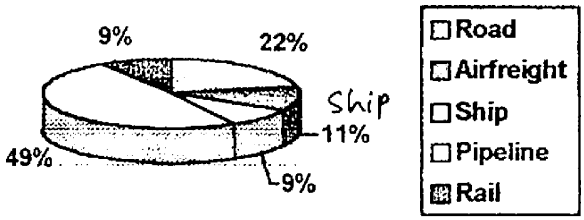
126. What is the extra capacity available from Avanti to Vaishali?
(*a*) 0 (*b*) 100
(*c*) 200 (*d*) 300

127. The quantity moved from Avanti to Vidisha is?
(*a*) 200 (*b*) 800
(*c*) 700 (*d*) 1000

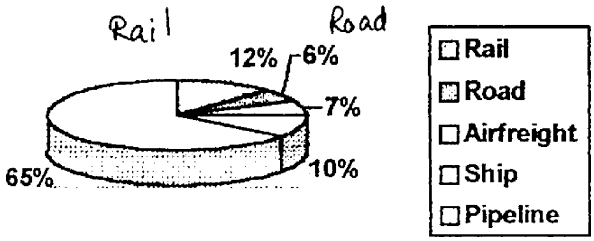
***Directions for questions 128 to 130:*** *The questions based on the pie charts given below:*

Chart 1 shows the distribution of twelve million tonnes of crude oil transport 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.

Volume Transported




Cost of Transported




128. If the cost 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

129. The cost in rupees per tonne of oil moved by rails and happens to be roughly:

(*a*) 3 (*b*) 1.5
(*c*) 4.5 (*d*) 8

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

(*a*) Road (*b*) Rail
(*c*) Pipeline (*d*) Ship

***Directions for questions 131 to 137:*** *Each item is followed by two statements, A and B. Answer each question using the following instructions.*

Choose (*a*) if the question can be answered by one of the statements alone and not by the other.

Choose (*b*) if the question can be answered by using either statement alone.

Choose (*c*) if the question can be answered by using both the statements together, but cannot be answered by using either statement alone.

Choose (*d*) if the question cannot be answered even by using both statements together.

131. Two friends, Ram and Gopal, bought apples from a wholesale dealer. How many apples did they buy?

A. Ram bought one-half the number of apples that Gopal bought.
B. The wholesale dealer had a stock of 500 apples.

132. Is country X's GDP higher than country Y's GDP?

A. GDPs of the countries X and Y have grown over the past five years at compounded annual rate of 5% and 6% respectively.
B. Five years ago, GDP of country X was higher than that of country Y.

133. What is the value of X?

A. X and Y are unequal even integers, less than 10, and $\frac{X}{Y}$ is an odd integer.
B. X and Y are even integers, each less than 10, and product of X and Y is 12.

134. On a given day a boat ferried 1500 passengers across the river in twelve hours. How many round trips did it make?

A. The boat can carry two hundred passengers at any time.
B. It takes 40 minutes each way and 20 minutes of waiting time at each terminal.

135. What will be the time for downloading software?

A. Transfer rate if 6 Kilobytes per second.
B. The size of the software is 4.5 megabytes.

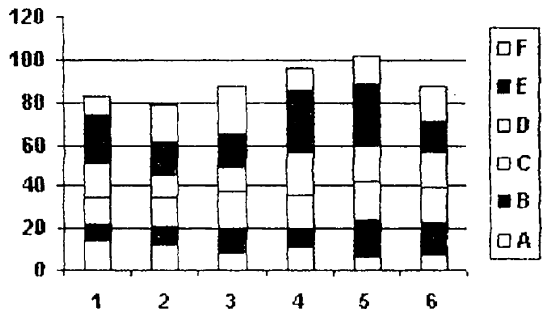
136. A square is inscribed in a circle. What is the difference between the area of the circle and that of the square?

A. The diameter of the circle is $\frac{25}{2}$ cm
B. The side of the square is 25 cm.

137. What are the values of m and n?

A. n is an even integer, m is an odd integer, and m is greater than n.
B. Product of m and n is 30.

***Directions for questions 138 to 140:*** *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.

138. 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, which company would be at third rank?

(*a*) 2 (*b*) 3
(*c*) 4 (*d*) 5

139. Suppose the companies find that they can remove operations B, C and D and re-distribute the effort released equally among the remaining operations. Then, which operation will show the maximum 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

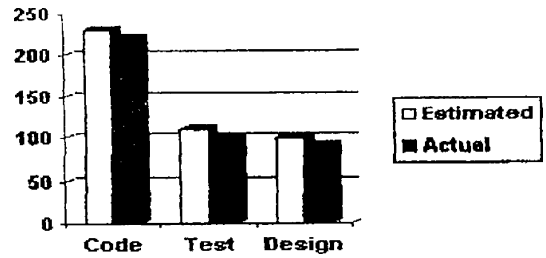
140. A new technology is introduced in company 4 such that the total effort for operations B through F get evenly distributed among these. What is the change in the percentage of effort in operation E?

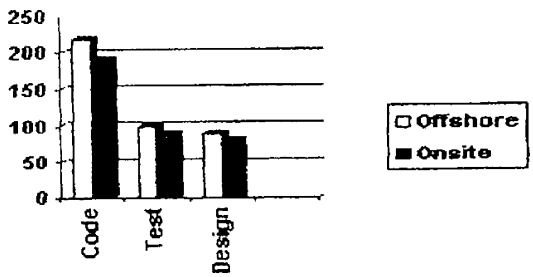
(*a*) Reduction of 12.3
(*b*) Increase of 12.3
(*c*) Reduction of 5.6
(*d*) Increase of 5.6

***Directions for questions 141 to 146:*** *Answer these questions based on the two graphs shown below:*

Figure 1 show the amount of work distribution, in man-hours for a software company between offshore and onsite activities. Figure 2 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.)




141. If 50 per cent of the offshore work 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.

142. Roughly what percentage of total work is carried on site?
(*a*) 40 (*b*) 20
(*c*) 30 (*d*) 50

143. The total effort in hours onsite is nearest to which of the following?
(*a*) Sum of 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 the no. of estimated man-hours of offshore coding.

144. If the total working hours were 100 which of the following tasks will account for approx 50 hours:
(*a*) coding
(*b*) design
(*c*) offshore testing
(*d*) offshore design

145. If 50 per cent of the offshore work to be carried out onsite, with the distribution of effort between the tasks remaining the same, the percentage of testing carried out offshore would be:
(*a*) 40% (*b*) 30%
(*c*) 50% (*d*) 70%

146. Which of the 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

**ANSWERS**

61. (*a*) Inverted representations have often been employed as balm for the forsaken (directly stated).
62. (*a*) The reference is to make the social inequities well known (reverse globalisation).
63. (*b*) The argument is about whether caste is admissible into the agenda, hence *(b)*. Also mentioned in the beginning of the second para.
64. (*c*) Second paragraph—"all subsequent distinctions are constructed ones".
65. (*b*) Racial and related discrimination—first line.
66. (*b*) The ignorance of astronomers....
67. (*d*) Mentioned in the third paragraph.
68. (*a*) Can best be done by eliminating choices b, c and d.
69. (*c*) Leftover material that did not condense into stars or quasars.
70. (*d*) The words have the same outset, rhyme and phoneme.
71. (*c*) Directly stated in the second last line.
72. (*d*) It is stated that any deficit could lead to dyslexia.
73. (*c*) Stated in the passage.
74. (*d*) Than the version based on phonemes (last paragraph).
75. (*c*) Statements A and B can be inferred from the first three paragraphs. But the author does not say about C or D.
76. (*c*) Second last line states this.
77. (*c*) A and D can be inferred (last paragraph).
78. (*d*) Directly stated "But a system...."
79. (*a*) Directly stated in the second paragraph.
80. (*c*) Directly stated in the last paragraph.
81. (*a*) Those the most logically related sentences.
82. (*a*) 83. (*c*) 84. (*a*) 85. (*b*)
86. (*a*) Some words stop being used
87. (*d*) Non serious
88. (*d*) False, but as a ring of truth: deceptive.
89. (*a*) Very little, frugal.
90. (*a*) 91. (*b*) 92. (*d*) 93. (*c*) 94. (*b*)
95. (*d*) 96. (*a*) 97. (*c*) 98. (*b*) 99. (*c*)
100. (*d*)

**SECTION—3**

101. (*b*) We know A < 3B,C > B, D = C – B and A = 3D. B must have 500, since he has to borrow 100 from A. C must have at least 700, but this is not correct as this leaves D with 200 and A with 600. Since A lends 300 to C and 100 to B, A must have at least 1000 since A = 3D, we get A = 1200, D = 400, hence D can buy one shawl.
102. (*b*) There are 6 males and 6 females. Hence the minimum number of people present can be 6 + 6 = 12.
103. (*c*) We get the following table which satisfies all the given conditions.

| M1 | M2 | M3 | M4 |
|---|---|---|---|
| O | P | Q | R |
| FB | DE | AG | CH |

104. (*b*) We must maximise the number of items and minimise the balance money. By hit and trial, we must buy 2(E + 2D + B) and 2(D + 2B) = 2 × 215 + 2 × 220 = 870 which leaves 130, the minimum amount. Note that we must buy the cheapest combination, which is E + 2D + B, in order to maximise the number of items purchased.
105. (*b*) We have 22 + 6 = 28 maple leaves. The red spotted oak leaves must be 2 and non-red spotted maple not red = 0, this means that red maple without spots must be 5, which is equal to the red oak leaves without spots. Total oak leaves = 10 + 2 + 7 = 17.
106. (*d*) Likings: M1 = F + S; M2 = S + D; M5 = D, M6 = F. At least one liking is shared. Dislikes: M1 = G, M2 = F, M5 = 5 + M, M6 = 5 + M. Since G is not in the liking list, choice (*a*) is wrong. Continue checking. Only M1, M2, M4 and M7 (liking = F + S + D + M +

G, dislike = G + F + D + F) meets all the requirements.

107. (*b*) Radha cannot be in W1 or with Tara or Komal. This leaves her to be in the group with membership 1, so Elina is her instructor.
108. (*d*) The group of 4 cannot be made with the conditions, except S + R + F + D.
109. (*c*) From the above.
110. (*b*) In all the other choices we have D, who insist that F be with him.
111. (*c*) We have E = 3Y, Z = $\frac{1}{2}$ W, Y > Z. To find E, we must know Y, hence both statements are needed.
112. (*b*) Y could be 11, 12, ... hence the minimum age of E can be 33. Since W = 20, we can infer that E > W.
113. (*a*) P.A = @ implies P into is not an Alsatian, but POA = D implies both P and A are dogs.
114. (*c*) Fish $\cup$ (Dogs $\cap$ Vertebrate) $\neq$ @ implies that some elements are common between Fish and Dogs.
115. (*a*) Z = (Pluto $\cap$ Dogs) $\cup$ Mammals = Pluto $\cup$ Mammals.
116. (*a*) X = Mammals $\cap$ Dogs = Dogs, hence dogs are mammals.
117. (*c*) 9-10: SS, 10-11: VA, 11-11.30: SK, 11.30-12.30 : JK; 12.30-1.30: Lunch; 1.30-2: JKG; 2-3: RS.
118. (*b*) Make truth tables as follows: Case I: The dog has black hair.
    *a*) Black hair—short tail
    *b*) Short tail—not wearing collar
    *c*) Black hair—not wearing collar
    Case II: The dog has white hair.
    *a*) White hair—long tail
    *b*) Long tail—wore a collar
    *c*) White hair—wore a collar
    Now check the choices. Only *(b)* is correct as per the above.
119. (*c*) We get the following table.

| 12 | 1 | 2 |
|---|---|---|
| Sharma | Patti | Banerjee |
| Sambar | Brinjal | Makki |
| White | Blue | Red |

120. (*c*) Supriya—April—4; Vaibhav—June—7; Anshuman—September—2.
121. (*c*) There are 14 out of 20 busiest airports which are from USA = 70%.
122. (*b*) 1, 2, 3, 5, 9 = 5 airports.
123. (*b*) Count the A's in the top 10.
124. (*c*) $\frac{62}{336}$ = 20% approx.
125. (*d*) Avanti-Vidisha carries 300 + 700 for Panchal, free capacity = 0
126. (*d*) Avanti-Vaishali carries 700; spare capacity = 300.
127. (*d*) Avanti-Vidisha: full capacity.
128. (*c*) Calculate the cost by ship, air and road.

$$P = \frac{3}{108} = 2.77;\ Q = \frac{2.10}{132} = 1.58;\ R = \frac{180}{2.64} = 0.68$$

Hence P > Q > R.

129. (*a*) $\frac{3.60}{108} = 3.33$.
130. (*a*) Road is the cheapest, from Q. 132.
131. (*d*) We cannot find out how many apples they bought, even from the two statements.
132. (*d*) We do not know the base figures, hence cannot come to a conclusion.
133. (*b*) We can get X = 6 from either statement.
134. (*a*) Only the second statement gives the time, hence total number of trips can be found out.
135. (*c*) We need both statements to find out the time required.
136. (*b*) The area of square and circle can be found out using either statement.
137. (*c*) We have three cases: 15, 2; 10, 3 and 6, 5. Using both statements, we zero in on the first one.
138. (*b*) Interchange the times between B and E. Then arrange in ascending order.
139. (*d*) In company 5, $\frac{(B+C+D)}{3} = \frac{36.8}{3} = 12.3$.

Add to E = 28.6 + 12.3 = 40.9 which is the highest.

140. (*a*) Total reduction = $\frac{817}{5} = 16.3$

Reduction = 28.6 – 16.3 = 12.3.

141. (*a*) Distribute 50% of the work and we find that coding > testing.
142. (*c*) $\frac{(80+100+150)}{(180+520+430)} = \frac{330}{1130} = 30\%$
143. (*c*) Total onsite hours: 440, which is equal to off-shore testing.
144. (*b*) $\frac{800}{2}$ = 400 hours. Only coding comes equal to this figure.
145. (*b*) $\frac{140}{330} = 33\%$
146. (*b*) Visual question.