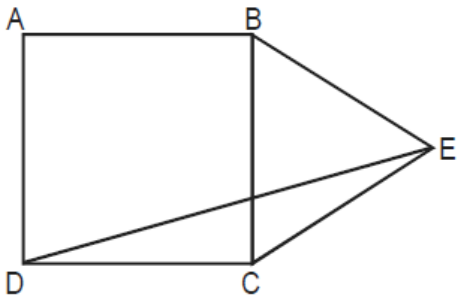
CAT

Previous Year Solved Question Papers

2014

CAT 2014

1. If ABCD is a square and BCE is an equilateral triangle, what is the measure of angle∠DEC?
a. 15° b. 30° c. 20° d. 45°



2. Instead of a metre scale, a cloth merchant uses a 120 cm scale while buying, but uses an 80 cm scale while selling the same cloth. What is his overall profit percentage?
a. 50% b. 25% c. 40% d. 15%

3. From a circular sheet of paper with a radius 20 cm, four circles of radius 5 cm each are cut out. What is the ratio of the uncut to the cut portion?
a. 1 : 3 b. 4 : 1 c. 3 : 1 d. 4 : 3

4. The cost of diamond varies directly as the square of its weight. Once, this diamond broke into four pieces with weights in the ratio 1 : 2 : 3 : 4. When the pieces were sold, the merchant got Rs. 70,000 less. Find the original price of the diamond.
a. Rs. 1.4 lakh b. Rs. 2 lakh
c. Rs. 1 lakh d. Rs. 2.1 lakh

5. The question is followed by two statements, I and II. Mark the answer as.
a. if the question can be answered with the help of statement I alone.
b. if the question can be answered with the help of statement II, alone.
c. if both statement I and statement II are needed to answer the question.
d. if the question cannot be answered even with the help of both the statements.

If x, y and z are real numbers, is z – x even or odd?
I. xyz is odd.
II. xy + yz + zx is even.

Answer the questions based on following data.
The pages of a book are numbered 0, 1, 2 … upto M, M>0. There are four categories of instructions that direct a person in positioning the book at a page. The instruction types and their meanings are :
1. NEW : Position the book at page No. 1
2. END : Position the book at page No. 0
3. ONWARD, n :From the current page move forward by n pages; if, in this process, page number M is reached, stop at M.
4. REGRESS, n : From the current page, move backward by n pages; if in this process, page number 0 is reached, stop at page number 0.
In each of the following questions, you will find a sequence of instructions formed from the above categories. In each case, let n1 be the page number before the instructions are executed and n2 be the page number at which the book is positioned after the instructions are executed.

6. ONWARD, 25 ; REGRESS, 10. which of the following statements is true?
(a) n1=n2 if M=10 and n1=0
(b) M=20 provided n1>0
(c) n1>30 provided M=900
(d) n1=37 provided M=25

7. REGRESS, 5; ONWARD, 5. Which of the following statements is true about the above set of instructions?
(a) n1=n2 provided n1 ≥ 5

(b) n1=n2 provided n1>0
(c) n2=5 provided M>0
(d) n1>n2 provided M>0

8. ONWARD, 10; ONWARD, 10. Which of the following statements about the above instructions is true?
(a) n2-n1=20 only if n1=0
(b) n2-n1=20 if M>20 and n1=1
(c) n2-n1=10 if M=21 and n1=0
(d) n2>n1 if M>0

9. ONWARD, 5; REGRESS, 4. Which of the following statements about the above instructions is true?
(a) n2=n1+4 Provided 1<n1<7
(b) n2=n1 provided M<6
(c) n2=n1+1 provided M-n1>5
(d) n2-n1< 0 provided M>0

10. A circle is inscribed in a given square and another circle is circumscribed about the square. What is the ratio of the area of the inscribed circle to that of the circumscribed circle?
(a) 2 : 3
(b) 3 : 4
(c) 1 : 4
(d) 1 : 2

11. If y = f(x) and f(x) = (1-x) / (1 + x), which of the following is true?
(a) f(2x) = f(x) – 1
(b) x = f(2y)-1
(c) f(1/x) = f(x)
(d) x = f(y)

Directions for questions: Answer the questions on the basis of the information given below.
The HR Manager of the IT company recently scanned employees training results of various exams into the central computer system. When their character reading software cannot read something, it leaves the space blank. The scanner output reads as follows:

Name	Java	C Language	Testing	Analysis	Project Management	GPA
Amanpreet		B	F			1.4
Bikas	D	D	F	F		
Chandra		D	A	F	F	2.4
Deepak	A	B		D	D	3.2
Fazal	D	F	B		D	2.4
Gowri	C	C	A		B	3.8
Hari		B	A		D	2.8
Ismet			B		A	
Jagdeep	A	A	B		C	3.8
Kunal	F		A	F	F	1.8
Leena	B	A		B	F	3.2
Manab			A	B	B	
Navdeep	A	D	B	A	F	3.6

Osman	C		B	B	A	4.6
Preeti	F	D		D		3.2
Rahul	A	C	A		F	4.2
Sameer		C	F	B		
Tara	B					2.4
Utkarsh			F	C	A	3
Vipul	A		C	C	F	2.4

In the grading system, A, B, C, D, and F grades fetch 6, 4, 3, 2, and 0 grade points respectively. The Grade Point Average (GPA) is the arithmetic mean of the grade points obtained in the five subjects. For example Navdeep's GPA is (6 + 2 + 4 + 6 + 0) / 5 = 3.6. Some additional facts are also known about the students' grades. These are
(a) Vipul obtained the same grade in C Language as Amanpreet obtained in Java and Analysis.
(b) Fazal obtained the same grade in Analysis as Utkarsh did in C Language.
(c) Tara received the same grade in exactly three courses.

12. What grade did Preeti obtain in Testing?
(1) A (2) B (3) C (4) D

13. In Project Management, Tara could have received the same grade as
(1) Ismet (2) Hari (3) Jagdeep (4) Manab

14. In Analysis, Gowri's grade point was higher than that obtained by
(1) Fazal (2) Hari (3) Navdeep (4) Rahul

15. What grade did Utkarsh obtain in Java?
(1) B (2) C (3) D (4) F

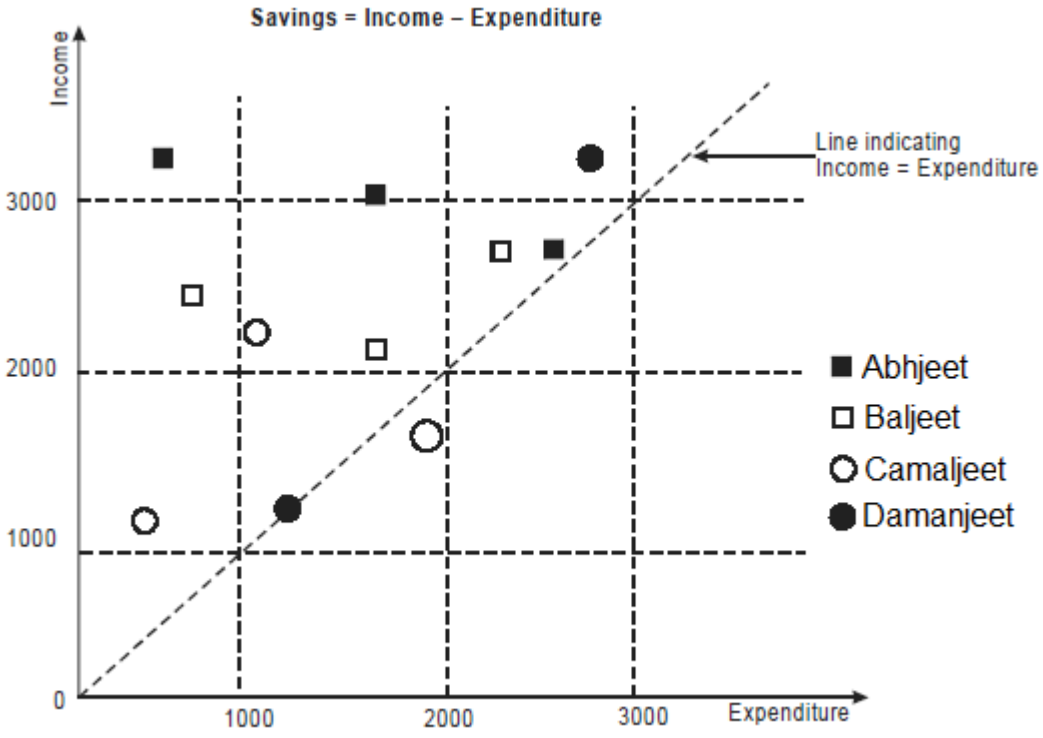
Answer the questions based on following data.
A dealer deals only in colour TVs and VCRs. He wants to spend up to Rs.12 lakhs to buy 100 pieces. He can purchase a colour TV at Rs.10,000 and a VCR at Rs.15,000. He can sell a colour TV at Rs.12,000 and a VCR at Rs.17,500. His objective is to maximize profits. Assume that he can sell all the items that he stocks.

16. For the maximum profit, the number of colour TVs and VCRs that he should respectively stock are
(a) 80, 20
(b) 20, 80
(c) 60, 40
(d) None of these

17. If the dealer would have managed to get an additional space to stock 20 more items, then for maximizing profit, the ratio of number of VCRs and number of TVs that he should stock is
(a) 7 : 3
(b) 0
(c) 1 : 2
(d) None of these

18. The maximum profit, in rupees lakh, the dealer can earn from his original stock if he can sell a colour TV at Rs. 12200 and VCR at Rs.18300 is
(a) 2.64
(b) 2.49
(c) 2.72
(d) 2.87

Directions for questions: Answer the questions on the basis of the information given below.
The data points in the figure below represent monthly income and expenditure data of individual members following families. For these questions, savings is defined as
Savings = Income – Expenditure



19. Which family has the lowest average income?
(1) Abhijeet (2) Baljeet (3) Camaljeet (4) Damanjeet

20. Which family has the highest average expenditure?
(1) Abhijeet (2) Baljeet (3) Camaljeet (4) Damanjeet

21. Which family has the lowest average savings?
(1) Abhijeet (2) Baljeet (3) Camaljeet (4) Damanjeet

22. The highest amount of savings accrues to a member of which family?
(1) Abhijeet (2) Baljeet (3) Camaljeet (4) Damanjeet

23. In a Tennis Open tournament 71 persons have signed up for elimination rounds. All players are to be paired up for the first round, but because 71 is an odd number one player gets a bye, which promotes him to the second round, without actually playing in the first round. The pairing continues on the next round, with a bye to any player left over. If the schedule is planned so that a minimum number of matches are required to determine the champion, the number of matches which must be played is
(a) 71
(b) 70
(c) 69
(d) 36

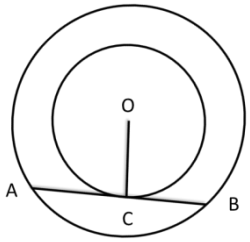
24. There are ten 50 paise coins placed on a table. Six of these show tails four show heads. A coin is chosen at random and flipped over (not tossed). This operation is performed seven times. One of the coins is then covered. Of the remaining nine coins, five show tails and four show heads. The covered coin shows
(a) a head

(b) a tail
(c) more likely a head
(d) more likely a tail

25. From each of the two given numbers, half the smaller number is subtracted. Of the resulting numbers the larger one is three times as large as the smaller. What is the ratio of the two numbers?
(a) 2 : 1
(b) 3 : 1
(c) 3 : 2
(d) None

26. Three identical cones with base radius r are placed on their bases so that each is touching the other two. The radius of the circle drawn through their vertices is
(a) smaller than r.
(b) equal to r.
(c) larger than r.
(d) depends on the height of the cones.

27. The line AB is 6 metres in length and is tangent to the inner one of the two concentric circles at point C. It is known that the radii of the two circles are integers. The radius of the outer circle is
(a) 5 metres
(b) 4 metres
(c) 6 metres
(d) 3 metres



Directions for Questions: Answer the following questions based on the information given below:
The following table shows the break-up of actual costs incurred by a company in last five years (year 2012 to year 2016) to produce a particular product:

	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016
Volume of production and sale (units)	1000	900	1100	1200	1200
Costs (Rs.)					
Input Material	50,000	45,100	55,200	59,900	60,000
Manpower	20,000	18,000	22,100	24,150	24,000
Variables	2,000	2,200	1,800	1,600	1,400
Rent	1,000	1,000	1,100	1,100	1,200
Taxes	400	400	400	400	400
Maintenance	800	820	780	790	800
Operational Cost	30,000	27,000	33,500	36,020	36,000
Marketing	5,750	5,800	5,800	5,750	5,800

The production capacity of the company is 2000 units. The selling price for the year 2016 was Rs. 125 per unit. Some costs change almost in direct proportion to the change in volume of production, while others do not follow any obvious pattern of change with respect to the volume of production and hence are considered fixed. Using the information provided for the year 2016 as the basis for projecting the figures for the year 2017, answer the following questions:

28. What is the approximate cost per unit in rupees, if the company produces and sells 1400 units in the year 2017?
(1) 104 (2) 107 (3) 110 (4) 115

29. What is the minimum number of units that the company needs to produce and sell to avoid any loss?
(1) 313 (2) 350 (3) 384 (4) 747

30. If the company reduces the price by 5%, it can produce and sell as many units as it desires. How many units the company should produce to maximize its profit?
(1) 1400 (2) 1600 (3) 1800 (4) 2000

31. Given that the company cannot sell more than 1700 units, and it will have to reduce the price by Rs.5 for all units, if it wants to sell more than 1400 units, what is the maximum profit, in rupees, that the company can earn?
(1) 25,400 (2) 24,400 (3) 31,400 (4) 32,900

Use the following information for next two questions:
A function f(x) is said to be even if f(-x)=f(x), and odd if f(-x) = -f(x). Thus, for example, the function given by $f(x) = x^2$ is even, while the function given by $f(x) = x^3$ is odd. Using this definition, answer the following questions.

32. The function given by $f(x) = |x|^3$
(a) even
(b) odd
(c) neither
(d) both

33. The sum of two odd functions
(a) is always an even function
(b) is always an odd function
(c) is sometimes odd and sometimes even
(d) may be neither odd nor even

34. A five digit number is formed using digits 1, 3, 5, 7 and 9 without repeating any one of them. What is the sum of all such possible numbers?
(a) 6666600
(b) 6666660
(c) 6666666
(d) None

35. A box contains 6 red balls, 7 green balls and 5 blue balls. Each ball is of a different size. The probability that the red ball selected is the smallest red ball, is
(a) 1/18
(b) 1/3
(c) 1/6
(d) 2/3

36. ABC forms an equilateral triangle in which B is 2 km from A. A person starts walking from B in a direction parallel to AC and stops when he reaches a point D directly east of C. He, then, reverses direction and walks till he reaches a point E directly south of C. Then D is
(a) 3 km east and 1 km north of A
(b) 3 km east and 3 km north of A
(c) 3 km east and 1 km south of A
(d) 3 km west and 3 km north of A

37. A lead cuboid of 8 inches in length, 11 inches in breadth, and 2 inches thick was melted and resolidified into the form of a rod of 8 inches diameter. The length of such a rod, in inches, is nearest to
(a) 3
(b) 3.5
(c) 4

(d) 4.5

Directions for Questions: Answer the following questions based on the information from an airline about their passengers (pax) in particular sectors is given below:
The proportion of males and the proportion of vegetarian pax are given below. The airline has a total of 800 passengers, 80% of whom are in the Mumbai - Delhi sector and rest are equally divided between Mumbai - Hyderabad and Mumbai - Bangalore.

Sector	Male (M)	Vegetarian (V)
Mumbai - Bangalore	0.6	
Mumbai - Hyderabad	0.55	0.5
Mumbai - Delhi sector		0.55
Total	0.475	0.53

38. What is the percentage of male pax in the Mumbai - Delhi sector?
(1) 40 (2) 45 (3) 50 (4) 60

39. In Mumbai - Bangalore, twenty five per cent of the vegetarians are male. What is the difference between the number of female vegetarians and male non-vegetarians?
(1) less than 8 (2) 10 (3) 12 (4) 16

40. What is the percentage of vegetarian pax in Mumbai - Bangalore?
(1) 40 (2) 45 (3) 50 (4) 60

41. In the Mumbai - Delhi sector, 50% of the pax are vegetarian males. Which of the following statements is correct?
(1) Except vegetarian males, all other groups have same number of pax.
(2) Except non-vegetarian males, all other groups have same number of pax.
(3) Except vegetarian females, all other groups have same number of pax.
(4) None of these.

Use the following information:
Eighty five people went to a lottery shop where they could bet on the DhanLaksmi, Rajshri, and Gauri lotteries. It was known that 20 of them took all three ets, and 55 of them took at least two of the three bets. Each bet cost Re. 1, and the total receipt of the lottery shop was Rs. 145.

42. How many people did not try any of the bets?
(a) 5
(b) 10
(c) 15
(d) 20

43. How many people took exactly one bet?
(a) 5
(b) 10
(c) 15
(d) 20

44. John bought five toffees and ten chocolates together for forty rupees. Subsequently, he returned one toffee and got two chocolates in exchange. The price of an chocolate would be
(a) 1
(b) 2
(c) 3
(d) 4

45. Let $a_{n+1} = 2\ a_n + 1$ ($_n = 0,1,2,....$) and $a_0 = 0$. Then u_{10} nearest to

(a) 1023
(b) 2047
(c) 4095
(d) 8195

46. Suppose you have a currency, named Rubble, in three denominations: 1 Rubble, 10 Rubbles and 50 Rubbles. In how many ways can you pay a bill of 95 Rubbles?
(1) 15 (2) 16 (3) 18 (4) 19

47. Consider four-digit numbers for which the first two digits are equal and the last two digits are also equal. How many such numbers are perfect squares?
(1) 3 (2) 2 (3) 4 (4) 1

48. The price of Coffee (in rupees per kilogram) is 100 + 0.10n, on the nth day of 2007 (n = 1, 2, ..., 100), and then remains constant. On the other hand, the price of Ooty tea (in rupees per kilogram) is 89 + 0.15n, on the nth day of 2007 (n = 1, 2, ..., 365). On which date in 2007 will the prices of coffee and tea be equal?
(1) May 21 (2) April 11 (3) May 20 (4) April 10

49. Two circles with centres P and Q cut each other at two distinct points A and B. The circles have the same radii and neither P nor Q falls within the intersection of the circles. What is the smallest range that includes all possible values of the angle AQP in degrees?
(1) Between 0 and 90 (2) Between 0 and 30 (3) Between 0 and 60 (4) Between 0 and 75

50. A quadratic function $f(x)$ attains a maximum of 3 at x = 1. The value of the function at x = 0 is 1. What is the value $f(x)$ at x = 10?
(1) –119 (2) –159 (3) –110 (4) –180

22/34 questions in CAT 2014 could be solved using Catking Shortcuts

1. a Triange BCE is an equilateral triangle, and ABCD is a square, BC = CD. Hence, CD = CE. So in Triange CDE, we have CD = CE. Hence, ∠EDC =∠CED. Now∠BCE = 60° (since equilateral triangle) and∠BCD = 90° (since square). Hence,□∠DCE =∠DCB +∠BCE = (60 + 90) = 150°.So in ∆DCE, ∠EDC +∠CED = 30° (since three angles of a triangle add up to 180°). Hence, we have∠DEC =∠EDC = 15°.□

2. a Lets say if Shopkeeper buys 120m and pays only 100m Same while selling he sells 80m instead of 100 m. So using Cetking 1.2/0.8 shortcut for faulty gain… Gain = error margin / Paid quantity. Ie Gain = 40/80 = 50% ot 1.5times. So profit is 50%.

3. C the ratio of small circle to bigger circle is 1:4 . Using Cetking Similar Circles shortcuts
Therefore the ratio of area of small circle to big circle is 1:16.
Total 4 small circles are (cut area) to big circles area (uncut) ratio is 4:16 = 1:4
Therefore the uncut to cut will be 3:1

4. Let the original weight of the diamond be 10. Hence, its original price will be 100
The weights of the pieces after breaking are x, 2x, 3x and 4x. ie 1:2:3:4
Therefore, their prices will be (1 + 4 + 9 + 16) = 30. Using Cetking Arithmetic shortcuts
Hence, the difference in the price of the original diamond and its pieces = 70 and its value is 70000.
Hence, the original price (100) will be 100,000/-

5. Statement I - xyz is odd, Means that all three of them are odd. Hence, z – x is even.
Statement II - xy + yz + zx is even,
So only statement I is required to answer the question.

6. a ONWARD 25, REGRESS 10 would effectively mean a ONWARD 15 i.e. n2-n1 = 15, (if M – n1> 25) and n2 = M – 10 (if M – n1 < 25). The only option that satisfies this is option (a). So if M = 10 and n1 = 0., then M – n1 < 25 and so n2 = 10 – 10 = 0. Hence, n1=n2

7. a REGRESS, 5; ONWARD, 5 would effectively mean n1 = n2 (in case n1 ≥ 5) or n2 = 5 (in case n1<5). The only option that satisfies this is (a).

8. b ONWARD, 10 ; ONWARD, 10 would effectively mean a ONWARD 20 i.e. n2-n1 = 20, (if M – n1 ≥ 20) .or n2 = M (if M – n1 < 20). The option that satisfies this condition is (b), as if M>20 and n1=1, then M – n1 > 20, and hence n2-n1 = 20.

9. c ONWARD, 5; REGRESS, 4, would effectively mean a ONWARD 1 i.e. n2-n1 = 1 (if M – n1 ≥ 5) or n2 = M – 4 (if M – n1< 5). The option that satisfies this condition is (c).

10. Let C1 be inscribed circle, S be the square with side a and C2 be the circumscribed circle.
the diameter of the C1 = Side of the square S ie a.
diameter of the C2 = Diagonal of the S ie √2a
Ratio of diameter of C1 : C2 = a : √2a = 1: √2
Using cetking similar circle shortcuts
Area C1 : Area C2 = Square of diameter of C1 : C2 = Squre of 1: √2 = 1:2

11. Use Cetking dirty quant shortcut to solve this question.
Let x = 2. Hence f(2) = (1 – 2)/(1 + 2) = -1/3 = y.
Using Elimination method only option (d) satisfies the condition.
f(y) = (-1/3) = (1 + 1/3)/(1 – 1/3) = 2 = x.

12. 1 GPA of Preeti = 3.2
i.e. F + D + X + D + Y / 5 = 3.2
0 + 2 + x + 2 + y = 16
x + y = 12
So only combination possible is A, A.
So Preeti obtained A grade in testing.

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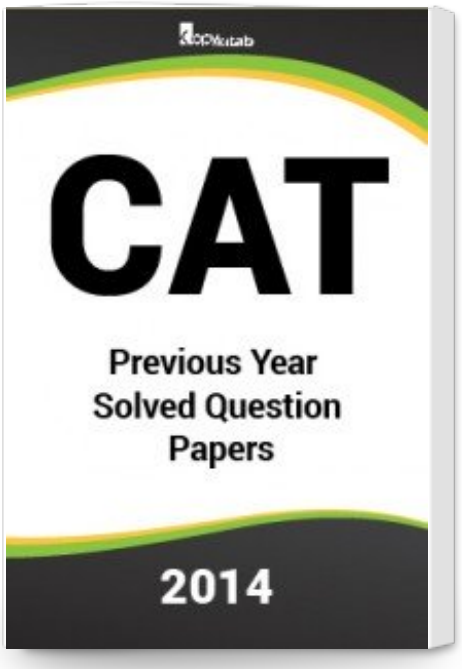

Publisher : Faculty Notes

Author : Panel of Experts