6

CAT 2003 Repeat

1. An intelligence agency forms a code of two distinct digits selected from 0,1,2,.....9, such that the first digit of the code is non-zero. The code, handwritten on a slip, can however potentially create confusion when read upside down. For example, the code 91 may appear as 16. How many codes are there for which no such confusion can arise?

   (a) 80 (b) 78

   (c) 71 (d) 69

2. A survey on a sample of 25 new cars being sold at a local auto dealer was conducted to see which of the three popular options (air-conditioning, radio and power windows) were already installed. The survey found:

   15 had air-conditioning;

   2 had air-conditioning and power windows but no radios;

   12 had radio;

   6 had air-conditioning and radio but no power windows;

   11 had power windows;

   4 had radio and power windows;

   3 had all three options.

   What is the number of cars that had none of the options?

   (a) 4 (b) 3

   (c) 1 (d) 2

Directions for Question 3 and 4: Answer the questions on the basis of the information given below.

A string of three English letters is formed as per the following rules:

(a) The first letter is any vowel.

(b) The second letter is *m, n* or *p*.

(c) If the second letter is *m* then the third letter is any vowel which is different from the first letter.

(d) If the second letter is *n* then the third letter is *e* or *u*.

(e) If the second letter is *p* then the third letter is the same as the first letter.

3. How many strings of letters can possibly be formed using the above rules?

(a) 40 (b) 45

(c) 30 (d) 35

4. How many strings of letters can possibly be formed using the above rules such that the third letter of the string is *e*?

(a) 8 (b) 9

(c) 10 (d) 11

5. Using only 2, 5, 10, 25 and 50 paise coins, what will be the minimum number of coins required to pay exactly 78 paise, 69 paise, and Re. 1.01 to three different persons?

(a) 19 (b) 20

(c) 17 (d) 18

Directions for Questions 6–9: Answer the questions on the basis of the following information.

Four families decided to attend the marriage ceremony of one of their colleagues. One family has no kids, while the others have at least one kid each. Each family with kids has at least one kid attending the marriage. Given below is some information about the families, and who reached when to attend the marriage.

The family with 2 kids came just before the family with no kids.

Shanthi who does not have any kids reached just before Sridevi's family.

Sunil and his wife reached last with their only kid.

Anil is not the husband of Joya.

Anil and Raj are fathers.

Sridevi's and Anita's daughters go to the same school.

Joya came before Shanthi and met Anita when she reached the venue.

Raman stays the farthest from the venue.

Raj said his son could not come because of his exams.

6. Which woman arrived third?

(a) Shanthi (b) Sridevi

(c) Anita (d) Joya

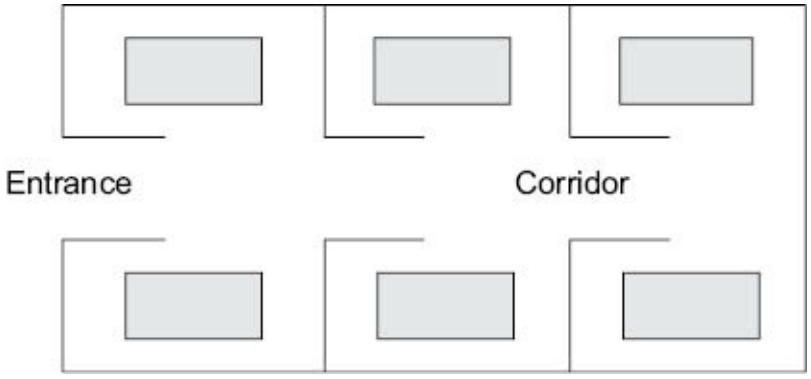
7. Name the correct pair of husband and wife?

(a) Raj and Shanthi (b) Sunil and Sridevi

(c) Anil and Sridevi (d) Raj and Anita

8. Of the following pairs, whose daughters go to the same school?
   (a) Anil and Raman (b) Sunil and Raman
   (c) Sunil and Anil (d) Raj and Anil
9. Whose family is known to have more than one kid for certain?
   (a) Raman's (b) Raj's
   (c) Anil's (d) Sunil's

Directions for Questions 10–13: Answer the questions on the basis of the following information.



The plan above shows an office block for six officers, *A*, *B*, *C*, *D*, *E* and *F*. Both *B* and *C* occupy offices to the right of the corridor (as one enters the office block) and *A* occupies an office to the left of the corridor. *E* and *F* occupy offices on opposite sides of the corridor but their offices do not face each other. The offices of *C* and *D* face each other. *E* does not have a corner office. *F*'s office is further down the corridor than *A*'s, but on the same side.

10. If *E* sits in his office and faces the corridor, whose office is to his left?
    (a) A (b) B
    (c) C (d) D
11. Whose office faces A's office?
    (a) B (b) C
    (c) D (d) E
12. Who is/are F's neighbour(s)?
    (a) A only (b) A and D
    (c) C only (d) Band C
13. D was heard telling someone to go further down the corridor to the last office on the right. To whose room was he trying to direct that person?
    (a) A (b) B
    (c) C (d) F

Directions for Questions 14–17: Answer the questions on the basis of the following information.

Seven faculty members at a management institute frequent a lounge for strong coffee and stimulating conversation. On being asked about their visit to the lounge last Friday, we got the following responses.

JC: I came in first, and the next two persons to enter were SS and SM. When I left the lounge, JP an VR were present in the lounge. DG left with me.

JP: When I entered the lounge with VR, JC was sitting there. There was someone else, but I cannc remember who it was.

SM: I went to the lounge for a short while, and met JC, SS and DG in the lounge that day.

SS: I left immediately after SM left.

DG: I met JC, SS, SM, JP, and VR during my first visit to the lounge. I went back to my office wit JC. When I went to the lounge the second time, JP and VR were there.

PK: I had some urgent work, so I did not sit in the lounge that day, but just collected my coffee and left. JP and DG were the only people in the lounge while I was there.

VR: No comments.

14. Based on the responses, which of the two, JP or DG, entered the lounge first?
    (a) JP
    (b) DG
    (c) Both entered together.
    (d) Cannot be deduced.
15. Who was sitting with JC when JP entered the lounge?
    (a) SS (b) SM
    (c) DG (d) PK
16. How many of the seven members did VR meet on Friday in the lounge?
    (a) 2 (b) 3
    (c) 4 (d) 5
17. Who were the last two faculty members to leave the lounge?
    (a) JC and DG (b) PK and DG
    (c) JP and PK (d) JP and DG

Directions for Questions 18 and 19: Each question is followed by two statements, *A* and *B*. Answer each question using the following instructions:

Choose (a) if the question can be answered by using statement A alone but not by using B alone.

Choose (b) if the question can be answered by using statement B alone but not by using A alone.

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

Choose (d) if the question can be answered by using both the statements together but not by either Statement alone.

18. In a cricket match, the ‘man of the match’ award is given to the player scoring the highest

number of runs. In case of a tie, the player (out of those locked in the tie) who has taken the higher number of catches is chosen. Even thereafter if there is a tie, the player (out of those locked in the tie) who has dropped fewer catches is selected. Aakash, Biplab and Chirag, who were contenders for the award dropped at least one catch each. Biplab dropped 2 catches more than Aakash did, scored 50, and took 2 catches. Chirag got two chances to catch and dropped both. Who was the 'man of the match'?

A. Chirag made 15 runs less than both Aakash and Biplab.

B. The catches dropped by Biplab are 1 more than the catches taken by Aakash.

19. Four friends, A, B, C and D got the top four ranks in a competitive examination, but A did not get the first, B did not get the second, C did not get the third, and D did not get the fourth rank. Who secured which rank?

A. Neither A nor D were among the first 2.

B. Neither B nor C was third or fourth.

Directions for Questions 20–24: Answer the questions on the basis of the following information.

Recently, the answers of a test held nationwide were leaked to a group of unscrupulous people. The investigative agency has arrested the mastermind and nine other people A, B, C, D, E, F, G, H, and I in this matter. Interrogating them, the following facts have been obtained regarding their operation. Initially the mastermind obtains the correct answer key. All the others create their answer keys in the following manner. They obtain the answer key from one or two people who already possess the same. These people are called his/her 'sources'. If the person has two sources, then he/she compares the answer keys obtained from both sources. If the key to a question from both sources is identical, it is copied, otherwise it is left blank. If the person has only one source, he/she copies the source's answers into his/her copy. Finally, each person compulsorily replaces one of the answers (not a blank one) with a wrong answer in his/her answer key.

The paper contained 200 questions; so the investigative agency has ruled out the possibility of two or more of them introducing wrong answers to the same question. The investigative agency has a copy of the correct answer key and has tabulated the following data. These data represent question numbers.

Name	Wrong Answer(s)	Blank Answer(s)
A	46	—
B	96	46, 90, 25
C	27, 56	17, 46, 90
D	17	—
E	46, 90	—
F	14, 46	92, 90
G	25	—
H	46, 92	—
I	27	17, 46, 90

20. Which one among the following must have two sources?

(a) A (b) B

(c) C (d) D

21. How many people (excluding the mastermind) needed to make answer keys before C could make his answer key?

(a) 2 (b) 3

(c) 4 (d) 5

22. Both G and H were sources to

(a) F (b) B

(c) I (d) none of the nine

23. Which of the following statements is true?

(a) C introduced the wrong answer to question 27.

(b) E introduced the wrong answer to question 46.

(c) F introduced the wrong answer to question 14.

(d) H introduced the wrong answer to question 46.

24. Which of the following two groups of people had identical sources?

(I) A, D and G (II) E and H

(a) Only (I) (b) Only (II)

(c) Neither (I) nor (II) (d) Both (I) and (II)

Directions for Question 25: Answer the question on the basis of the following information.

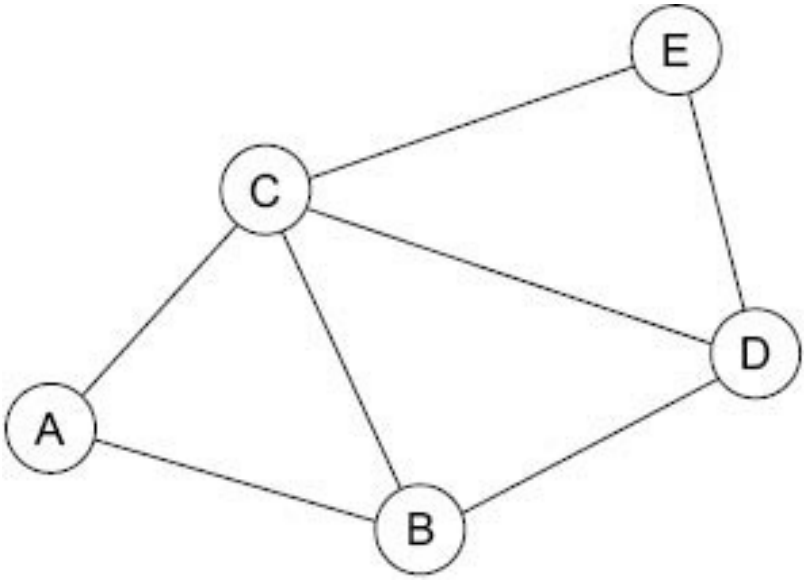
25. Seventy per cent of the employees in a multinational corporation have VCD players, 75 per cent have microwave ovens, 80 per cent have ACs and 85 per cent have washing machines. At least what percentage of employees have all four gadgets?

(a) 15 (b) 5

(c) 10 (d) Cannot be determined

Directions for Questions 26 and 27: Answer the questions on the basis of the following information.

Shown below is the layout of major streets in a city.



Two days (Thursday and Friday) are left for campaigning before a major election, and the city administration has received requests from five political parties for taking out their processions along the following routes.

Congress: A-C-D-E **BJP:** A-B-D-E **SP:** A-B-C-E

BSP: B-C-E **CPM:** A-C-D

Street B-D cannot be used for a political procession on Thursday due to a religious procession. The district administration has a policy of not allowing more than one procession to pass along the same street on the same day. However, the administration must allow all parties to take out their processions during these two days.

26. Congress procession can be allowed

(a) only on Thursday.

(b) only on Friday.

(c) on either day.

(d) only if the religious procession is cancelled.

27. Which of the following is NOT true?

(a) Congress and SP can take out their processions on the same day.

(b) The CPM procession cannot be allowed on Thursday.

(c) The BJP procession can only take place on Friday.

(d) Congress and BSP can take out their processions on the same day.

Answer Key

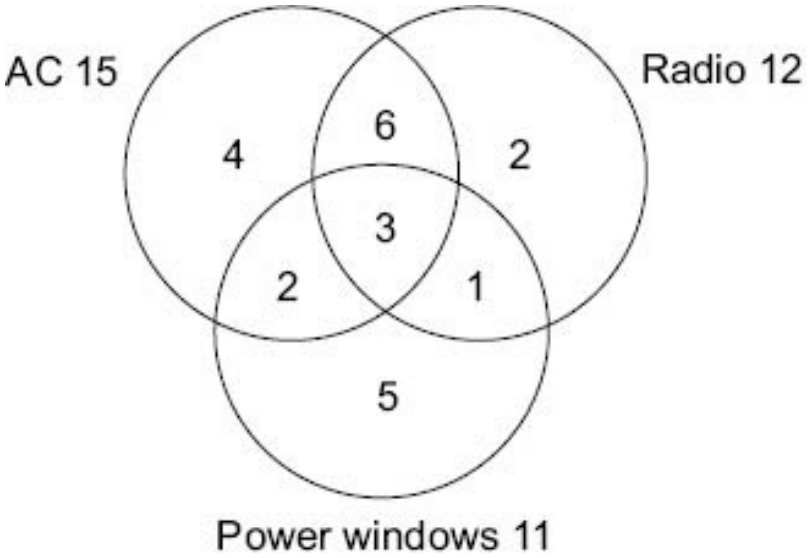
1. (b)	2. (d)	3. (d)	4. (c)
5. (a)	6. (a)	7. (b)	8. (c)
9. (b)	10. (c)	11. (c)	12. (a)
13. (b)	14. (b)	15. (c)	16. (b)

17. (d)	18. (d)	19. (c)	20. (b)
21. (c)	22. (d)	23. (c)	24. (d)
25. (c)	26. (a)	27. (d)	

Solutions to CAT 2003 Retest

1. The codes which will create a confusion would be:
   16 and 91, 18 and 81, 19 and 61, 66 and 99, 68 and 89, 86 and 98: A total of 12 codes which will have confusion. Hence out of 90 two digit codes 78 would have no confusion.

Solution for Question 2:



From the figure it is clear that there would be a total of 23 cars which had one or more of AC/Radio/ Power Steering. Hence, 2 cars had none of the three. Option (d) is correct.

Solutions for Questions 3 and 4:

First of all make a structure of what are the possible combinations:

With *m* as the middle letter—(vowel) *m* (another vowel)

With *n* as the middle letter—(vowel) *n* (*e* or *u*)

With *p* as the middle letter—(vowel) *p* (same vowel)

3. The number of possible letter strings are—
   With *m*: 5 ¥ 4 = 20, with *n* = 5 ¥ 2 = 10
   With *p*: 5 ¥ 1 = 5
   Thus a total of 35 possible strings.
4. With *m*: 4, *n*: 5, *p*: 1. Thus a total of 10 strings.
5. 78 = 50 + 10 + 10 + 2 + 2 + 2 + 2 Æ 7 coins
   69 = 50 + 10 + 5 + 2 + 2 Æ 5 coins
   Re 1.01 = 50 + 25 + 10 + 10 + 2 + 2 + 2 Æ 7 coins
   Thus a total 19 coins would be required.

Solutions for Questions 6–9:

The basic information may be summarised as:

Order of coming	1st	2nd	3rd	Last
Husband name				Sunil
Wife name				
Children details				1 kid

This is about the only direct clue in the question. Thus, we need to focus on the indirect clues to move further.

The first thing we should do perhaps is to collate the 4 names of men and women.

The four men are: Anil, Raj, Sunil and Raman.

The four women are: Shanthi, Sridevi, Joya and Anita.

From the second and the 7th clues together we get the information of the order of arrival of the women.

Shanthi who does not have any kids reached just before Sridevi AND Joya came before Shanthi and met Anita when she reached the venue.

Anita-Joya-Shanthi-Sridevi.

The table now becomes:

Order of coming	1st	2nd	3rd	Last
Husband name				Sunil
Wife name	Anita	Joya	Shanthi	Sridevi
Children details			No kids	1 kid

After this we start looking at the other clues to see which of those fit directly into the given situation.

Using the first and the sixth clues:

The table now becomes:

Order of coming	1st	2nd	3rd	Last
Husband name				Sunil
Wife name	Anita	Joya	Shanthi	Sridevi
Children details	At least 1 daughter	2 kids	No kids	1 kid (daughter)

Also given that Anil and Raj are fathers, and Anil is not the husband of Joya we further transform the table:

Order of coming	1st	2nd	3rd	Last
Husband name	Anil	Raj	Raman	Sunil

Wife name	Anita	Joya	Shanthi	Sridevi
Children details	At least 1 daughter	2 kids	No kids	1 kid (daughter)

The answers can be read off the table:

6. Shanthi
7. Sunil and Sridevi
8. Sunil and Anil
9. Raj's

Solutions for Questions 10–13:

The table for the given situation can be constructed in the following order of logic. (The numberings in the table represent the order in which the respective deductions have been made.)

Left of corridor (2.A) 3.D opposite of C) (4.F Same side as A)	8.D (C and D have to face each other)	9. A	7. F (not opposite E and further down the corridor than A)
Corridor	Corridor	Corridor	Corridor
Right of corridor (1.B, C) (5.E, Opposite side to F)	8. C	6. E (Not a corner office)	10.B

The answers can be read off from the above table:

10. C
11. E
12. A only
13. B

Solutions for Questions 14–17:

The 7 faculty members are:

JC, JP, SM, SS, DG, PK and VR.

Based on the clues we can make the following structure for the coming and going of the 7 faculty members.

Entry	JC	SS	SM	DG			JP & VR		DG		PK		
Exit					SM	SS		DG and JC		VR		PK	JP and DG
Deduction from statement of	JC	JC	JC	SM and DG	SM	SS	JP and DG	JC and DG	DG				

The answers can be read off from the table.

14. DG
15. DG
16. VR met JP, JC and DG. He did not meet SS, SM and PK.
17. JP and DG
18. In order to solve this question, we are first bothered about the number of runs scored by each.

From the basic information in the question, we know that Aakash scored 50 runs.

We can make a mental table of each player's performance based on the available information:

	Aakash	Biplab	Chirag
Runs scored	50	?	?
Catches taken	2		0
Catches dropped	n	$n + 2$	2

Minimum value of $n = 1$.

The above table is the summary of the basic information provided in the question.

Checking for sufficiency of information based on Statement A:

We get that Chirag and Biplab scored 35 and 50 runs respectively. Since Aakash also has the same number of runs as Biplab one of them should be the man of the match and this has to be decided on the basis of who amongst them took the higher number of catches. This information is not available for us; hence statement A is not sufficient to answer the question asked.

From Statement B alone we again do not have enough information to answer the question asked because we do not know the runs scored by each if we are to consider only this statement.

From Both statements we first know the number of runs scored by each and we also know that Biplab drops 3 catches, and Aakash drops 1 catch. However we still do not know how many Biplab has taken. Thus, the question cannot be answered.

19. The basic information can be summarised as:

Rank	Ruled Out	Possible
First	A	B, C, D
Second	B	A, C, D
Third	C	A, B, D
Fourth	D	A, B, C

From statement A, we see that

Rank	Ruled Out	Possible
First	A	Deduction 2: B
Second	B	Deduction 1: C
Third	C	Deduction 4: D
Fourth	D	Deduction 3: A

We get the information about all the ranks and this statement alone is sufficient to answer the

question.

From statement B, we see that

Rank	Ruled Out	Possible
First	A	Deduction 4: B
Second	B	Deduction 3: C
Third	C	Deduction 2: D
Fourth	D	Deduction 1: A

We get the information about all the ranks and this statement alone is sufficient to answer the question.

Solutions for Questions 20–24:

The first thing you should get a hang of while trying this question is that there are essentially two ways of forming an answer key:

1. **If you have 1 source:** All you do is carry forward that source's answer key and introduce 1 error from your own side in it. Thus, if the mastermind is your key then you would have 1 error in your answer key, which you would have introduced yourself. (Note this is the only way of someone having an answer key with no blanks and 1 wrong answer only).

   Similarly, if a person had a source who had 1 wrong answer in his answer key, you would have 2 wrong answers—1 carried over and another one introduced by you.

   Thus, in essence you would carry forward the entire answer key of your source (blanks and wrongs as it is) and add one wrong answer of your own.

2. **If you had 2 sources:**

   (a) **Blank introduced** if you have two different answers for the same question in the answer keys of the two sources. This means that if for one answer, one of the two sources had a right answer and the other had a wrong answer, then a blank would be introduced. Even if one of them had a blank and the other one had a correct or a wrong answer, it would still be a blank.

   (b) **Wrong answer carried forward:** If both sources had the same wrong answer, that wrong answer would be carried forward.

   And according to the basic situation of the question, one new wrong answer of his own would also be carried forward.

   The following table shows the first set of deductions:

Name	Wrong Answer(s)	Blank Answer(s)	Deduction about source	Deduction about wrong answer introduced
A	46	—	Mastermind	46
B	96	46, 90, 25		
C	27, 56	17, 46, 90		

D	17	—	Mastermind	17
E	46, 90	—	Single Source A	90
F	14, 46	92, 90		
G	25	—	Mastermind	25
H	46, 92	—	Single Source A	92
I	27	17, 46, 90		

We now need to think of the remaining people in the group:

B—His answer key is possible if his sources are E and G. In such a case he would get blanks for 25, 46 and 90 (since the answers would be different for these questions in both the sources).

New wrong answer introduced would be 96.

F—His answer key is possible if his sources are E and H. This would give us blank answers as 90 and 92, the wrong answer 46 would be carried forward and 14 would be the new wrong answer introduced by him.

The table would now look like:

Name	Wrong Answer(s)	Blank Answer(s)	Deduction about source	Deduction about wrong answer introduced
A	46	—	Mastermind	46
B	96	46, 90, 25	Two Sources: E and G	
C	27, 56	17, 46, 90		
D	17	—	Mastermind	17
E	46, 90	—	Single Source A	90
F	14, 46	92, 90	Two Sources E and H	
G	25	—	Mastermind	25
H	46, 92	—	Single Source A	92
I	27	17, 46, 90		

We now need to think about C and I.

Looking at C and I's answer keys it is evident that C would have I as a source.

I's answer key can be explained as: Two sources D and E.

Name	Wrong Answer(s)	Blank Answer(s)	Deduction about source	Deduction about wrong answer introduced
A	46	—	Mastermind	46
B	96	46, 90, 25	Two Sources: E and G	96

C	27, 56	17, 46, 90	Single source I	56
D	17	—	Mastermind	17
E	46, 90	—	Single Source A	90
F	14, 46	92, 90	Two Sources E and H	14
G	25	—	Mastermind	25
H	46, 92	—	Single Source A	92
I	27	17, 46, 90	D and E	27

The answers would be read off the table:

20. B
21. For C to make his answer key, I has to make his answer key. For I, D and E have to make his answer key. For E to make his answer key, A should make his answer key before that. Thus, A, D, E and I should make their answer keys before C makes his. Thus, option (c) is correct.
22. None of the nine.
23. F introduced the wrong answer to question 14.
24. A, D and G had the same source—the mastermind. E and H had the same source—A. Thus option (d) is correct.
25. The least percentage of people with all 4 gadgets would happen if all the employees who are not having any one of the four objects is mutually exclusive.

    Thus, 100 – 30 – 25 – 20 – 15 = 10

Solutions for Questions 26 and 27:

According to the situation in the problem, we should realise that there is a clash in the routes of:

Congress and BJP (as both use DE route);

BJP and SP (as they use the AB route);

SP and BSP (as they use the CE route);

Congress and CPM (as they use the AC route)

Also, BJP cannot take out the procession on Thursday as they are using the BD route which is not available on Thursday. Thus they would need to be accommodated on Friday. So, Congress would be given a date on Thursday and consequently CPM would get Friday. Also since BJP is on Friday, SP would be on Thursday and hence BSP would go on Friday.

The answers are:

26. (a)
27. (d)