JEE EXPERT

SAMPLE PAPER

MENTAL ABILITY
Going to X

Time : 2 Hours

Maximum Marks : 300

**Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.**

INSTRUCTIONS

(i) The question paper has 15 printed pages excluding Answer Sheet. Please ensure that the copy of the question paper you have received contains all pages.

(ii) The question paper contains 100 questions. Each question carry 3 marks and all the questions are compulsory.

There is negative marking. One mark will be deducted for each wrong answer. No mark will be deducted for unattempted question.

(iii) Each question contains Four alternatives out of which only **ONE** is correct.

(iv) Indicate the correct answer for each question by filling appropriate bubble in your answer sheet.

(v) For rough work, use the space provided in question paper booklet. No extra sheet will be provided for rough work.

(vi) Use of Calculator, Log Table, Slide Rule and Mobile is not allowed.

(vii) The answer(s) of the questions must be marked by shading the circles against the question by dark pencil only. For example if only 'B' choice is correct then,

the correct method for filling the bubble is

A	B	C	D
○	●	○	○

the wrong method for filling the bubble are

(a)   A   B   C   D

(b)   A   B   C   D

(c)   A   B   C   D
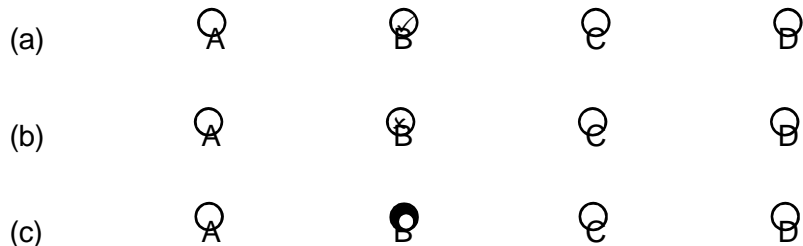
The answer of the questions in wrong or any other manner will be treated as wrong.

Name of the candidate		**Regn. Number**	

I have read all the instructions and shall abide by them.

....

Signature of the Candidate

I have verified all the information filled in by the candidate.

Signature of the invigilator
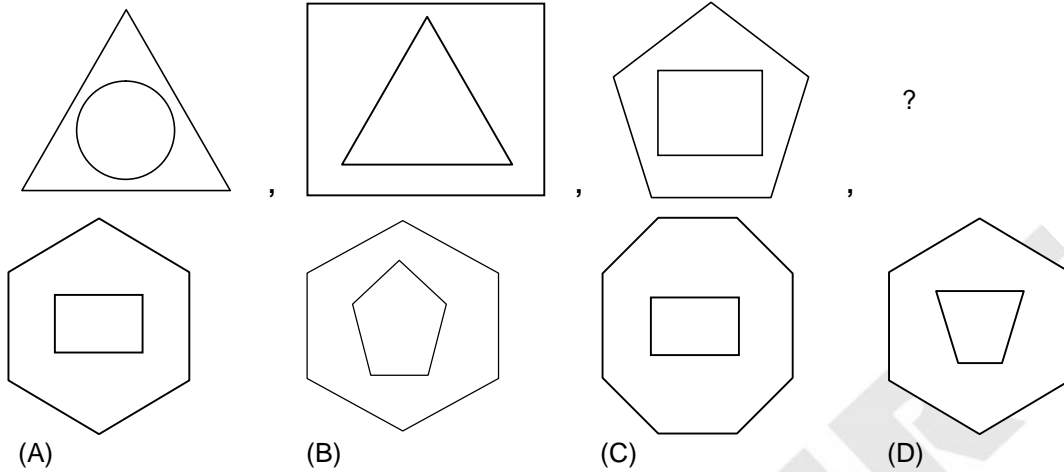
SECTION – I

Straight Objective Type

This Section contains 100 multiple choice questions numbered 1 to 100. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

Directions (Questions 1 – 10): Find the missing term of the series.

1. 1, 2, 3, 6, 9, 18, ?, 54
    (A) 18   (B) 27   (C) 36   (D) 81

2. 6, 13, 25, 51, 101, ?
    (A) 201   (B) 202   (C) 203   (D) 205

3. 2, 7, 27, 107, 427, ?
    (A) 1262   (B) 1707   (C) 4027   (D) 4207

4. $\dfrac{2}{\sqrt{5}}, \dfrac{3}{5}, \dfrac{4}{5\sqrt{5}}, \dfrac{5}{25}, ?$

    (A) $\dfrac{6}{5\sqrt{5}}$ (B) $\dfrac{6}{25\sqrt{5}}$ (C) $\dfrac{6}{125}$ (D) $\dfrac{7}{25}$

5. 2, 9, 28, 65, 126, 217, ?
    (A) 300   (B) 342   (C) 344   (D) 354

6. PMT, OOS, NQR, MSQ, ?
    (A) LUP   (B) LVP   (C) LVR   (D) LWP

7. ABD, DGK, HMS, MTB, SBL, ?
    (A) XKW   (B) ZAB   (C) ZKU   (D) ZKW

8. ATTRIBUTION, TTRIBUTIO, RIBUTIO, IBUTI, ?
    (A) IBU   (B) UT   (C) UTI   (D) BUT

9. KM5, IP8, GS11, EV14, ?
   (A) BX17   (B) BY17   (C) CY17   (D) CY18

Space for rough work

10.

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

11. A rat runs 20 m towards East and turns to right, runs 10 m and turns to right, runs 9 m and again turns to left, runs 5 m and then turns to left, runs 12 m and finally turns to left and runs 6 m. Now, which direction is the rat facing?
(A) East   (B) North   (C) West   (D) South

12. A man walks 30 m towards South. Then turning to his right he walks 30 m. Then turning to his left he walks 20 m. Again turning to his left he walks 30 m. How far is he from his starting position?
(A) 30 m   (B) 20 m   (C) 50 m   (D) 60 m

13. Two buses start from the opposite points of a main road, 150 km apart. The first bus runs for 25 km and takes a right turn and then runs for 15 km. It, then turns left and runs for another 25 km and takes the direction back to reach the main road. In the meantime, due to the minor breakdown the other bus has run only 35 km along the main road. What would be the distance between the two buses at this point?
(A) 65 km   (B) 80 km   (C) 75km   (D) 85 km

14. A postman was returning to the post office which was in front of him to the north. When the post office, was 100 m away from him, he turned to the left and moved 50 m to deliver the last letter at the Shanti villa. He, then moved in the same direction for 40 m, turned to his right and moved 100 m. How many metres was he away from the post office?
(A) 0   (B) 150   (C) 90   (D) 100

Space for rough work

Directions (Questions 15 – 19): These questions are based on the following diagram showing four persons stationed at the four corners of a square piece of plot as shown therein:
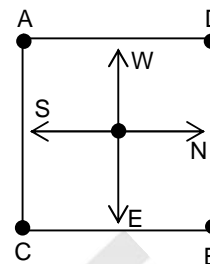
15. 'A' starts crossing the field diagonally. After walking half the distance, he turns right, walks some distance and turns to left. Which direction is 'A' facing now?
(A) North – East   (B) North – West   (C) South – East   (D) South – West

16. From the original position given in the figure above 'A' and 'B' moves one arm length clockwise and move to the next corner. 'C' and 'D' move one arm length anticlockwise and move to the next corner. The original configuration A, D, B, C has now changed to:
(A) CBDA   (B) BDAC   (C) DACB   (D) BCAD

17. From the positions in original figure. 'A' and 'C' move diagonally to opposite corners and then one side each clockwise and anticlockwise respectively. 'D' and 'B' move two sides each clockwise and anticlockwise respectively. Where is 'A' now?
(A) At the North – East corner   (B) At the North – West corner
(C) At the South – West corner   (D) At the South – East corner

18. From the positions in original figure, 'A' and 'C' move diagonally to opposite corners and then one side each clockwise and anticlockwise, respectively. 'D' and 'B' move two sides each clockwise and anticlockwise, respectively. Where is 'B' now?
(A) At the North – East corner   (B) At the North – West corner
(C) At the South – West corner   (D) At the South – East corner

19. From the original position, D and B move one and a half length of sides, clockwise and anticlockwise, respectively. Which one of the following statements is true?
(A) B and D are both at the mid point between A and C
(B) D is at the mid point between A and C, and B is at the corner originally occupied by C
(C) B is at the mid point between original position of A and D and D is at the mid point between original positions of B and C
(D) B is at the mid point between A and C, and D is at the mid point between original positions of B and C

Space for rough work

20. One morning after sunrise, Vikram and Shailesh were standing in a lawn with their backs towards each other. Vikram's shadow was exactly towards his left hand side. Which direction was Shailesh facing?
(A) East   (B) West   (C) North   (D) South

Directions (Questions 21 – 28): In these questions some capital alphabets are written in a row, below them their coding have been given. Now in questions a particular word has been coded in a particular manner using codes as given below the capital letters. You have to understand the pattern of coding and have to answer the question asked subsequently.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
u	a	2	v	b	w	3	t	4	x	s	y	5	z	6	c	d	8	7	e	r	h	9	i	p	q

21. If DASH is 2 a 8 4, then SMASH is
(A) 7 5 u 7 t   (B) e y a 8 4   (C) 8 z q e 3   (D) 8 z q e 4

22. If BAFFLE is aat4cx, then DANGER is
(A) vacx49   (B) vacxh9   (C) vacxhi   (D) vacxhr

23. If FASHION is z64t7uw, then POSITION is
(A) z64e476c   (B) z64e47c6   (C) c674e46z   (D) c674e4z6

24. If MAIDEN is u5v4zb, then DANGER is
(A) vuz3b8   (B) 8b3zuv   (C) uv3z8b   (D) uv3zb8

25. If DEER is vw8 and TOSS is to e6e, then DOTT is
(A) v6r   (B) bce   (C) bcr   (D) vr6

26. If MAIDEN is yux2b6, then FIBRES is
(A) b428w8   (B) b4288w   (C) b42dbe   (D) b42bde

27. If MAY is yzqaiq, then TIE is
(A) 7rtxwv   (B) 7rtxvw   (C) 7rtxbw   (D) 7rtxwb

28. If LONDON is 5c62z5, then EUROPE is
(A) wh7cdw   (B) wh7z6v   (C) br76cb   (D) wh76cb

Space for rough work

Directions (Questions 29 – 32): In each of these questions, a word has been given, followed by four other words, one of which cannot be formed by using the letters of the given word. Find that word.

29. CONSTRUCTION
    (A) SUCTION   (B) COINS   (C) CAUTION   (D) NOTION

30. DETERMINATION
    (A) MINT   (B) TEAM   (C) TAMED   (D) NORTH

31. ADMINISTRATION
    (A) RATION   (B) MINISTER   (C) TRADITION   (D) STATION

32. NATIONALISATION
    (A) NOTATION   (B) SALINATION   (C) INSTALLATION   (D) SANITATION

Directions (Questions 33 – 36): Study the following information carefully to answer these questions:

M K K I D N E T T Q O B F H A A G T U U X W L S R I

Each of these letters gets a numerical value based on its position in the above arrangement, such as, 1 for M, 2 for K, 4 for I and so on.

33. What is the sum of the values of the group of letters ARM?
    (A) 41   (B) 33
    (C) 34   (D) 35

34. The value of which of the following consonants, when added to that of the vowel following immediately, amounts to 11?
    (A) H   (B) K
    (C) N   (D) None of these

35. Value of A is exactly equal to the total value of which of the following pairs?
    (I) DO   (II) QE   (III) MH
    (A) Only I   (B) Only II   (C) Only III   (D) Both I and II

36. The sum of the values of OB is exactly equal to which of the following?
    (A) N   (B) K
    (C) U   (D) L

Space for rough work

Directions (Questions 37 – 41): In each of the questions below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusion(s) logically follow(s) from the two given statements, disregarding commonly known facts.

Given your answer as:-

    (A) if only conclusion I follows

    (B) if only conclusion II follows

    (C) if neither I nor II follows

    (D) if both I and II follow

37.   Statements   :   1. All cars are cats.
                                    2. All fans are cats.

            Conclusions   :   I. All cars are fans
                                      II. Some fans are cars.

38.   Statements   :   1. All pencils are pens.
                                    2. No pen is a book.

            Conclusions   :   I. No pencil is a book.
                                      II. Some pens are pencils.

39.   Statements   :   1. Some bags are hots.
                                    2. All hots are cakes

            Conclusions   :   I. All cakes are bags.
                                      II. All bags are cakes.

40.   Statements   :   1. All pencils are papers.
                                    2. Some papers are books.

            Conclusions   :   I. Some pencils are books.
                                      II. Some books are papers.

41.   Statements   :   1. Some schools are factories.
                                    2. All factories are shops.

            Conclusions   :   I. All shops are factories.
                                      II. Some shops are schools.

Space for rough work

Directions (Questions 42 – 45): Read the following information to answer the questions given below it:

(i) Five friends A, B, C, D and E wore shirts of Green, Yellow, Pink, Red and blue colours and shorts of Black, White, Grey, Blue and Green colours.

(ii) Nobody wore shirt and short of the same colour

(iii) D wore Blue shirt and C wore Green short

(iv) The one who wore Green shirt, wore Black short and the one who wore Blue short, wore Red shirt.

(v) A wore White short and Pink shirt

(vi) E did not wear Red shirt.

42. Which colour shirt did C wear?
(A) Yellow   (B) Blue   (C) Green   (D) Pink

43. Which colour short did B wear?
(A) Grey   (B) Blue   (C) White   (D) Black

44. Who wore White short?
(A) E   (B) B   (C) C   (D) A

45. Who wore Black short?
(A) C   (B) E   (C) B   (D) D

Directions (Questions 46 – 48): In these questions, choose the option which shows common feature in the relationship given in each question.

46. Water : Glass : Mirror
(A) They are without colour   (B) Reflection can be seen in them
(C) They are used in day-to-day life   (D) They are transparent

47. Fractions: Decimal: Ratio
(A) They are part of a number
(B) The terms are connected with equations
(C) The terms are connected with Mathematics
(D) They show relationship between numbers

48. Flood : Cyclone : Earthquakes
(A) They take toll of many lives   (B) They move from one place to another
(C) They are caused by low pressure   (D) They are natural calamities

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Space for rough work

Directions (Questions 49 – 50): From the set of the numbers given in the four alternatives, which is the most similar to the set given in the question.

49.   Given set : (6, 15, 28)
        (A) (50, 59, 71)   (B) (46, 56, 66)   (C) (60, 69, 72)   (D) (60, 69, 82)

50.   Given set : (81, 77, 69)
   (A) (56, 52, 44)   (B) (64, 61, 53)   (C) (92, 88, 79)   (D) (75, 71, 60)

Directions (Questions 51 – 55): *Find the odd one.*

51.   (A) Beaver   (B) Alpaca   (C) Walrus   (D) Koala

52.   (A) Mercury   (B) Acetone   (C) Petrol   (D) Kerosene

53.   (A) Honest   (B) Intelligent   (C) Traitor   (D) Wise

54.   (A) Telescope   (B) Transistor   (C) Tape-recorder   (D) Telephone

55.   (A) Albatross   (B) Ostrich   (C) Pelican   (D) Penguin

56.   Introducing a man to her husband, a woman said, "His brother's father is the only son of my grandfather." How is the woman related to this man?
        (A) Mother   (B) Aunt   (C) Sister   (D) Daughter

57.   X introduces Y saying, "He is the husband of the grand daughter of the father of my father." How is Y related to X?
        (A) Brother   (B) Son   (C) Brother-in-law (D) Nephew

58.   Pointing to a woman, Naman said, "She is the daughter of the only child of my grandmother." How is the woman related to Naman?
        (A) Sister   (B) Niece   (C) Cousin   (D) Data inadequate

59.   Pointing to the woman in the picture, Rajiv said, "Her mother has only one grandchild whose mother is my wife." How is the woman in the picture related to Rajiv?
        (A) Cousin   (B) Wife   (C) Sister   (D) Data inadequate

60.   Pointing to a man in photograph, a woman said, "His brother's father is the only son of my grandfather." How is the woman related to the man in the photograph?
        (A) Mother   (B) Aunt   (C) Sister   (D) Daughter

Space for rough work

Directions (Questions 61 – 70): Each of the questions given below contains three items which are represented below by circles, irrespective of their sizes. Your task is to match the right set of items with the right set of circles on the basis of their relationship.

A	B	C

D	E	F
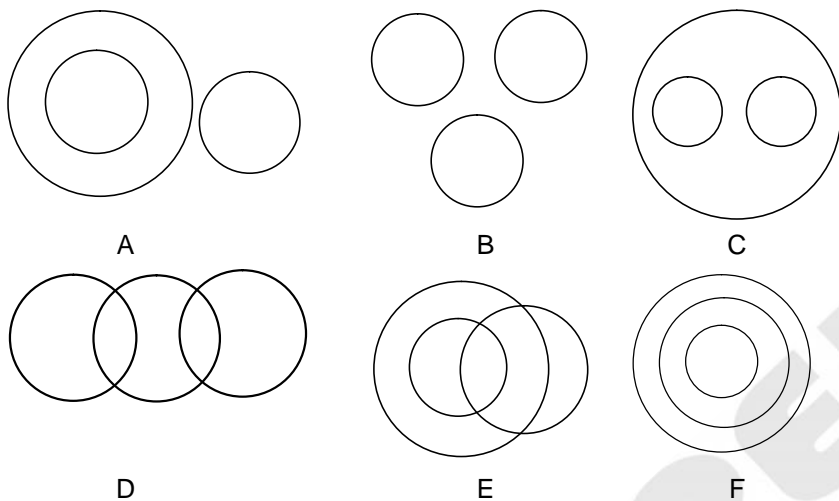
61.   Oxygen, Atmosphere, Nitrogen
(A) A   (B) E   (C) F   (D) C

62.   Cloud, River, Mountain
(A) C   (B) B   (C) F   (D) A

63.   Universe, Earth, Europe
(A) E   (B) B   (C) C   (D) F

64.   Sentence, Word, Letter
(A) F   (B) C   (C) B   (D) E

65.   Copy, Stationery, Car
(A) F   (B) B   (C) C   (D) A

66.   Chapter, Book, Topic
(A) C   (B) F   (C) D   (D) E

Space for rough work

67. Clock, Dial, Stereo
   (A) A   (B) B   (C) C   (D) D

68. Vegetable, Potato, Rotten
   (A) C   (B) B   (C) D   (D) E

69. Mother, Fatty, Father
   (A) A   (B) B   (C) C   (D) D

70. Shell, Apple, Nut
   (A) A   (B) B   (C) C   (D) D

71. A is father of X; B is mother of Y. The sister of X and Z is Y. Which of the following statements is definitely not true?
   (A) B is the mother of Z   (B) X is the sister of Z
   (C) Y is the son of A   (D) B has one daughter

72. P's father Q is B's paternal uncle and A's husband M is P's paternal uncle. How is A related to B?
   (A) Cousin   (B) Aunt
   (C) Mother   (D) Data inadequate

73. Shobha is the niece of Ashish. Ashish's mother is Priya. Kamla is Priya's mother. Kamal's husband is Hari. Krishna is the mother-in-law of Hari. How is Shobha related to Hari?
   (A) Daughter   (B) Great grand daughter
   (C) Grand niece   (D) Great grandson's daughter

74. Kalyani is mother-in-law of Veena who is sister-in-law of Ashok. Dheeraj is father of Sudeep, the only brother of Ashok. How is Kalyani related to Ashok?
   (A) Cousin   (B) Wife   (C) Mother   (D) Aunt

75. Examine the following relationship among members of a family of six persons – A, B C, D, E and F
   (1) The number of males equals that of females
   (2) A and E are sons of F.
   (3) D is the mother of two, one boy and one girl
   (4) B is the son of A.
   (5) There is one married couple in the family at present.
   Which one of the following inferences can be drawn from the above?
   (A) A, B and C are all females   (B) A is the husband of D
   (C) D is the grand daughter of F   (D) E and F are children of D

Space for rough work

Directions (Questions 76-77): In the following question, a dot is placed in the figure marked (X). This figure is followed by four alternatives marked as (A), (B), (C) and (D). One out of these four options contains the common region to circle, square, triangle similar to that of marked by dot in figure (X). Select that option.
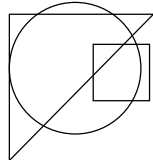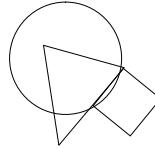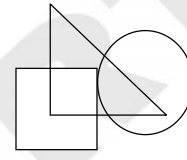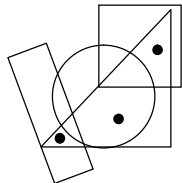
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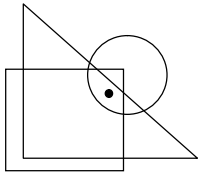
(X)
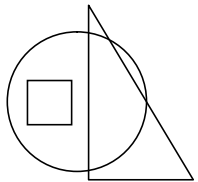
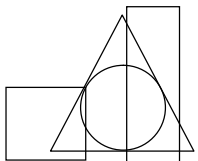(A)   (B)   (C)   (D)
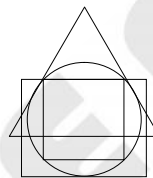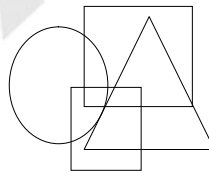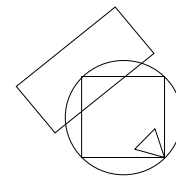
77.

(X)

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

Space for rough work

Directions (Questions 78-82): Each of these questions consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question.

Read both the statements and give answer:

     (A) If the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.

     (B) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.

     (C) If the data either in statement I alone or in statement II alone are sufficient to answer the question.

     (D) If the data given in both statements I and II together are not sufficient to answer the question.

78. What is the colour of the fresh grass?
    I.   Blue is called green, red is called orange, orange is called yellow.
    II. Yellow is called white, white is called black, green is called brown and brown is called purple.

79. How is Divya related to Shaloo?
    I.   Divya's mother is sister of Shaloo's father
    II. Shaloo is the daughter of Divya's grandfather's only child.

80. Who among P, Q, R, S and T is the lightest?
    I.   R is heavier than Q and T but lighter than S.
    II. S is not the heaviest.

81. How many girls are taller than Shravan in his class?
    I.   When students of Shravan's class are ranked in descending order of their heights, Sharvan's rank is 17th from the top among all the students and 12th among boys.
    II. Shravan's rank from the bottom on the basis of height among boys is 18th and among all   students, 29th

82. How many doctors are practising in this town?
    I.   There is one doctor per seven hundred residents.
    II. There are 16 wards with each ward having as many doctors as the number of wards.

83. On what dates of Dec 1984 did Sunday fall?
    (A) 6th, 13th, 20th & 27th (B) 7th, 14th, 21st & 28th
    (C) 2nd, 9th, 16th, 23rd & 30th (D) 1st, 8th, 15th & 22nd


Space for rough work

84. Which year next to 1990 will have the same calendar as that of the year 1990?
    (A) 1995 (B) 1997 (C) 1996 (D) 1992

85. A bus starts from city X. The number of women in the bus is half the number of men. In the city Y, 10 men left the bus and five women boarded in to it. Now, number of men and women becomes equal. In the beginning, how many passengers entered the bus?
    (A) 15 (B) 30 (C) 36 (D) 45

86. A, B, C, D and E play a game of cards. A says to B, " If you give me 3 cards, you will have as many as I have at this moment while if D takes 5 cards from you, he will have as many as E has", A and C together have twice as many cards as E has. B and D together also have the same number of cards as A and C have taken together. If all together they have 150 cards, how many cards has C got?
    (A) 28 (B) 29 (C) 31 (D) 35

87. Five years ago Vinay's age was one-third of the age of Vikas and now Vinay's age is 17 years. What is the present age of Vikas?
    (A) 9 years (B) 36 years (C) 41 years (D) 51 years

88. A worker may claim Rs 15 for each km which he travels by taxi and Rs 5 for each km which he drives his own car. If in one week he claimed Rs 500 for travelling 80 km, how many km did he travel by taxi?
    (A) 10 (B) 20 (C) 30 (D) 40

89. In a certain code language, 'pen pencil' is written as '$£', 'eraser sharpener' is written as '@#' and 'pencil eraser' is written as '$@'. Then, what is the code for 'pen'?
    (A) # (B) $ (C) @ (D) £

90. In a certain code, '786' means 'study very hard', '958' means 'hard work pays' and '645' means 'study and work'. Which of the following is the code for 'very'?
    (A) 8 (B) 6
    (C) 7 (D) cannot be determined

91. In a certain code language, '123' means 'hot filtered coffee'. '356' means 'very hot day' and '589' means 'day and night'. Which digit stands for 'very'?
    (A) 9 (B) 5 (C) 8 (D) 6

Space for rough work

Directions (Questions 92-94): In each of these questions refer to the following two positions of the same dice.
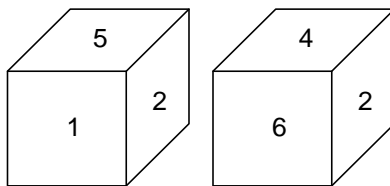
92. Which number will come opposite to number 2?
    (A) 5   (B) 1   (C) 6   (D) 3

93. Which number will come opposite to number 6?
    (A) 1   (B) 5   (C) 4   (D) 3

94. Which number will come opposite to number 4?
    (A) 3   (B) 5   (C) 1   (D) 2

Directions (Questions 95-99): A cube is coloured orange is one face, pink on the opposite face, brown on one face and silver on a face adjacent to the brown face. The other two faces are left uncoloured. It is then cut into 125 smaller cubes of equal sizes. Now, answer the following questions based on the above information.

95. How many cubes have at least one face painted pink?
    (A) 1   (B) 9   (C) 16   (D) 25

96. How many cubes are coloured silver on one face, orange or pink on another face and have four uncoloured faces?
    (A) 8   (B) 10   (C) 12   (D) 16

97. How many cubes have all the faces uncoloured?
    (A) 24   (B) 36   (C) 48   (D) 64

98. How many cubes are coloured orange on one face and have the remaining faces uncoloured?
    (A) 19   (B) 20   (C) 21   (D) 16

99. How many cubes have at least two faces coloured?
    (A) 19   (B) 20   (C) 21   (D) 23

100. How many times in a day do the hands of a clock coincide?
    (A) 10   (B) 11   (C) 22   (D) 24

Space for rough work

JEE EXPERT

Going X
(MAT) [20.01.2019]
ANSWERS

1.	B	2.	C	3.	B	4.	B
5.	C	6.	A	7.	D	8.	C
9.	C	10.	B	11.	B	12.	C
13.	A	14.	C	15.	A	16.	A
17.	D	18.	C	19.	C	20.	D
21.	C	22.	A	23.	A	24.	C
25.	A	26.	C	27.	B	28.	B
29.	C	30.	D	31.	B	32.	C
33.	A	34.	D	35.	C	36.	D
37.	C	38.	D	39.	C	40.	B
41.	B	42.	A	43.	B	44.	D
45.	B	46.	B	47.	C	48.	D
49.	D	50.	A	51.	C	52.	A
53.	C	54.	A	55.	B	56.	C
57.	C	58.	A	59.	B	60.	C
61.	D	62.	B	63.	D	64.	A
65.	D	66.	B	67.	A	68.	D
69.	D	70.	A	71.	C	72.	C
73.	B	74.	C	75.	B	76.	B
77.	A	78.	B	79.	C	80.	D
81.	A	82.	B	83.	C	84.	C
85.	D	86.	A	87.	C	88.	A
89.	D	90.	C	91.	D	92.	D
93.	A	94.	B	95.	D	96.	A
97.	C	98.	D	99.	C	100.	C