

# ICET - 2004 PAPER

(BASED ON STUDENTS MEMORY)

Time : 2 Hours]

[Max. Marks : 200

**SECTION - A**  
**ANALYTICAL ABILITY**

Questions : 75] [Marks : 75

**DATA SUFFICIENCY**

*Note : In questions numbered 1 to 20, a question is followed by data in the form of two statements labelled as I and II. You must decide whether the data given in the statements are sufficient to answer the question. Using the data make an appropriate choice from (1) to (4) as per the following guidelines :*

- Mark choice (1) If the statements I alone is sufficient to answer the question;
- Mark choice (2) If the statements II alone is sufficient to answer the question;
- Mark choice (3) If both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient;
- Mark choice (4) If both the statements I and II together are not sufficient to answer the question and additional data is required.

1. For given integers  $a$  and  $b$ , can we find integers  $x$  and  $y$  such that  $ax + by = 1$ ? ( )

- I)  $a = 75, b = 120$  II)  $a = 286, b = 105$

2. Let  $a$  and  $b$  be positive real numbers, is  $a > 1$ ?

- I)  $\frac{1}{a} + \frac{1}{b} = 1$  II)  $a + b > 1$  ( )

3. What is  $a_1 + a_2 + a_3 + a_4 + a_5$ ? ( )

- I)  $a_1 = 50$   
II)  $a_1, a_2, a_3, a_4, a_5$  are consecutive even integers

4. Is  $ad - bc = 0$ ? ( )

I)  $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix} \neq \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

II)  $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix} \neq \begin{bmatrix} x & y \\ z & t \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

5. What is the value of  $(a + b + c) \left[ \frac{1}{a} + \frac{1}{b} + \frac{1}{c} \right]$ ?

- I)  $a^2 + b^2 + c^2 > 0$  II)  $a > 0, b > 0, c > 0$  ( )

6. What is the value of  $(a - b)^2$ ? ( )

- I)  $a + b = 5$  II)  $ab = 3$

7. Is there a term independent of  $x$  in the expansion of  $\left[ x + \frac{1}{x^2} \right]^n$ ? ( )

- I)  $n = 3k, k$  is a positive integer  
II)  $n$  is an odd positive integer

8. What is the equation of the straight line? ( )

- I) Its slope is  $\frac{1}{2}$   
II) It is parallel to the line  $x - 2y + 8 = 0$

9. Are the positive integers  $a$  and  $b$  relatively prime?

- I) There is a prime number dividing both  $a$  and  $b$   
II) The L.C.M. of  $a$  and  $b$  is 24 ( )

10. What is the value of  $a^3 + b^3 + c^3 - 3abc$ ? ( )

- I)  $a = b$  II)  $c = 0$

11. What is the present age of A? ( )

- I) Father of A was born on the 25th anniversary of India's Independence  
II) A was born on the 25th birthday of his father

12. For real numbers  $a_1, a_2$  is  $\left[ a_1 + \frac{1}{a_1} \right] \left[ a_2 + \frac{1}{a_2} \right] \geq 4$ ?

- I)  $a_1 a_2 > 0$  II)  $a_1 + a_2 = 1$  ( )

13. What is the set A? ( )

- I)  $A - B = \{1, 2, 3\}$  II)  $B = \{4, 5\}$

14. Is an integer  $a$  divisible by 36? ( )

- I)  $a$  is a multiple of 18  
II)  $a$  is a multiple of 12

15. Let  $f(x)$  be a polynomial. Is " $r$ " a root of  $f(x)$ ?

- I)  $r$  is root of  $f(x)$  ( )  
II)  $(x - r)^2$  is a factor of  $f(x)$

16. A bag contains balls of which some are white, some are green, some are red and some are blue. What is the fraction of green balls?

- I)  $1/2$  of the balls are red  
II)  $1/4$  of the balls are white and  $1/5$  of the balls are blue

<p>17. <math>n - {}^n C_3 + n - {}^n C_4 + n C_3</math> ( )</p> <p>I) n is a positive real number II) n is an integer greater than 7</p>	<p>29. Which word is coded as BANGALORE ? ( )</p> <p>1) WVIBV GJMZ 2) XJIQZIZN 3) XJIQYIYM 4) XJIQZIZM</p>
<p>18. Is <math>\frac{n^3 + 3n^2 + 2n}{3}</math> an integer ? ( )</p> <p>I) n is an integer II) n is a positive rational number</p>	<p>30. Which word is coded as CONVENER ? ( )</p> <p>1) XJIQYIZN 2) XJIQZIZN 3) XJIQYIYM 4) XJIQZIZM</p>
<p>19. For real number a, b is <math>a &gt; b</math> ? ( )</p> <p>I) <math>a^2 &gt; b^2</math> II) <math>b &gt; 0</math></p>	<p>31. What is the least positive integer n such that <math>8^2 + n^2 + 6^2</math> is a perfect cube ? ( )</p> <p>1) 2 2) 4 3) 5 4) 6</p>
<p>20. What is the area of the circular field ? ( )</p> <p>I) The total cost of fencing around the field is Rs.10,000 II) The cost of fencing per meter is Rs.100</p>	<p>32. The mirror reflection of clock shows 02:30 hrs. What is the actual time ? ( )</p> <p>1) 09:40 hrs. 2) 08:30 hrs. 3) 10:30 hrs. 4) 09:30 hrs.</p>
<p><b>PROBLEM SOLVING</b></p>	
<p><i>In a code, each letter in English alphabet is shifted forward to five place cyclically, that is <math>A \Rightarrow F, B \Rightarrow G, \dots, U \Rightarrow Z, V \Rightarrow A, W \Rightarrow B, \dots, Z \Rightarrow E</math>. The reverse of this process is used for decoding. Based on this coding and decoding processes answer questions 21 to 30.</i></p>	
<p>21. The code for MATHS is ( )</p> <p>1) R F Y M Z 2) R F Y M X 3) R F Y M S 4) R F X M Y</p>	<p>33. If the last day of March is Wednesday, the day on which the month starts is : ( )</p> <p>1) Monday 2) Tuesday 3) Thursday 4) Friday</p>
<p>22. The code for BUSSINESS is ( )</p> <p>1) G Z X X N T J X X 2) G Z X X N S K X X 3) G Z X X N S J X X 4) G Z Y Y N T J Y Y</p>	<p>34. A, B, C, D, E, F are seated in a circle facing the centre. D is between F and B, A is second to the left of D and second to the right of E. Who is facing A? ( )</p> <p>1) D 2) F or B 3) C or D 4) E</p>
<p>23. What is the code word for ICET ? ( )</p> <p>1) N H K Z 2) N H K Y 3) N H J X 4) N H J Y</p>	<p>35. A is 40 meters South-West of B and C is 40 meters South - East of B. Then C is in which direction of A ? ( )</p> <p>1) East 2) West 3) South 4) North</p>
<p>24. What is the code word for EXAM ? ( )</p> <p>1) J C F S 2) J C F R 3) J C F T 4) J C F Q</p>	<p>36. A and B are children of C. B is the mother of D and E is maternal grandmother of D. What is the relation of E to C ? ( )</p> <p>1) Husband 2) Sister 3) Wife 4) Brother</p>
<p>25. What is the code of PRIMARY ? ( )</p> <p>1) U W N R F W D 2) U W N R F X D 3) U W M R F W D 4) U W N S F W D</p>	<p>37. The present ages of a father and son are in the ratio 5:2. If after ten years the ratio becomes 2:1, the present age of the son, in years, is .... ( )</p> <p>1) 25 2) 20 3) 15 4) 10</p>
<p>26. Which word is coded as INDIA ? ( )</p> <p>1) D J Y D V 2) D J Y D U 3) D I Y D V 4) D J Y D W</p>	<p>38. A can run a kilometer in 3 min. 10 sec and B in 3 min. 20 sec. By what distance can A beat B ? ( )</p> <p>1) 50 mts. 2) 40 mts. 3) 30 mts. 4) 10 mts.</p>
<p>27. Which word is coded as KARGIL ? ( )</p> <p>1) F V M B E G 2) F V M B D J 3) F V M B D H 4) F V M B D G</p>	<p>39. <math>a * b = a^3 + b^3 - 3ab ((-1)^* 1) 1 = ?</math> ( )</p> <p>1) 12 2) 19 3) 13 4) 1</p>
<p>28. Which word is coded as NEXT ? ( )</p> <p>1) I Z S P 2) I Z S O 3) I Z S N 4) I Z T O</p>	<p>40. <math>\{x \in \mathbb{R} / x^2 - 3 x  + 2 = 0\} = ?</math> ( )</p> <p>1) (1, 2) 2) (-2, -1) 3) (1, 2, -2) 4) (-2, -1, 1, 2)</p>

Note : In questions numbered 41 to 55 a sequence of numbers or letters that follow a definite pattern are given. Each question has a blank space. This has to be filled by the correct answer from the four given options to complete the sequence without breaking the pattern.

41. 2, 9, 28,....., 126 ( )  
1) 47 2) 55 3) 63 4) 65
42. 3, 17, 55, 129,....., 433 ( )  
1) 249 2) 250 3) 252 4) 251
43. 2, 6, 12, 20,....., 42 ( )  
1) 26 2) 28 3) 30 4) 32
44. 0.5, 0.55, 0.65, 0.8, ..... ( )  
1) 0.9 2) 0.82 3) 1 4) 0.95
45.  $\frac{7}{11}, \frac{13}{17}, \frac{19}{23}, \dots, \frac{37}{41}, \frac{43}{47}$  ( )  
1)  $\frac{29}{31}$  2)  $\frac{31}{29}$  3)  $\frac{21}{29}$  4)  $\frac{49}{21}$
46. 6, 26, 126, 626, ..... , 15626 ( )  
1) 4126 2) 2126 3) 3126 4) 7126
47.  $\sqrt{26}, \sqrt{38}, \sqrt{58}, \dots, \sqrt{86}$  ( )  
1)  $\sqrt{74}$  2)  $\sqrt{62}$  3)  $\sqrt{82}$  4)  $\sqrt{98}$
48. (4, 15), (6, 35), (8, 63), ..... , (12, 143) ( )  
1) (10, 93) 2) (10, 99) 3) (10, 98) 4) (10, 96)
49. ACF, ..... , GIL, JLO, MOR ( )  
1) BDG 2) CEH 3) DFI 4) EGJ
50. ABYZ, CDWX, ..... , GHST ( )  
1) EFVU 2) EFUV 3) FEUV 4) FEVU
51. 2A4, 3E5, 4I6, ..... , 6U8 ( )  
1) 5M7 2) 5N7 3) 5O7 4) 5P7
52. STOP, STPO, SOTP, SOPT, SPTO,..... ( )  
1) SPOT 2) STPO 3) SOPT 4) SOTP
53. BE : HK :: ..... : TW ( )  
1) MP 2) NP 3) NQ 4) MQ
54. 10 : 37 :: ..... : 101 ( )  
1) 25 2) 26 3) 57 4) 75
55. 100 : 10000 :: ..... : 625 ( )  
1) 0.625 2) 62.5 3) 6.25 4) 625
- Note : Q (56-65) : Pick the Odd thing out.
56. 1. 23 - 29 2. 3 - 5 3. 13 - 17 4. 7 - 19
57. 1. 35 2. 45 3. 55 4. 65
58. 1. 348 2. 384 3. 843 4. 834
59. 1. 77 2. 63 3. 36 4. 43
60. 1. 5 2. 10 3. 29 4. 66

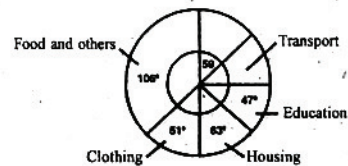
61. 1.  $\frac{2}{5}$  2.  $\frac{2}{7}$  3.  $\frac{5}{11}$  4.  $\frac{7}{15}$
62. 1. KLM 2. ABC 3. XYZ 4. PQR
63. 1. ERP 2. REP 3. PRS 4. PER
64. 1. AN 2. GS 3. DQ 4. JW
65. 1. P4A 2. D9I 3. D25Y 4. Y9I

Note : For question Nos. (66 to 70) L is the straight line that fits the data given in the table below. Answer question Nos. 66 to 70 using the data.

x	-2	0	2	-1	1
y	0	2	4	1	3

66. Area of the triangle formed by (-2, 0), (0, 2), (2, 4) is ( )  
1) 3 2) 2 3) 1 4) 0
67. Slope of the line L is ..... ( )  
1) 1 2) 1/2 3) 2 4) 3
68. Which of the following points lies on the line L ? ( )  
1) (3, 4) 2) (2, 3) 3) (3, 5) 4) (2, 1)
69. Y - intercept of the line L is ..... ( )  
1) 4 2) 3 3) 1 4) 2
70. The equation of the line L is ..... ( )  
1)  $x + y = 2$  2)  $y = x + 2$   
3)  $2y = x + 2$  4)  $x = y + 2$

The given pie diagram show monthly expenditure of a family on various items monthly income of the family is given to be Rs. 36,000. Basing on these, answer question Nos. 71 to 75.



71. The amount spent monthly on food and others is : ( )  
1) Rs. 5,300 2) Rs. 10,680  
3) Rs. 10,800 4) Rs. 10,600
72. The ratio of amounts spent monthly on housing to clothing is ( )  
1) 21 : 18 2) 27 : 23 3) 21 : 17 4) 22 : 17
73. The amount spent monthly on transport is ( )  
1) Rs. 3,200 2) Rs. 3,400  
3) Rs. 4,300 4) Rs. 5,200
74. The amount of spent of education in one full year is ( )  
1) Rs. 56,400 2) Rs. 54,600  
3) Rs. 48,000 4) Rs. 56,800