

1. The following is a coded number coded using dancing men where each dancing man represents a unique digit (0, 1, 2, 3, 4, 5, 6, 7, 8 or 9) and different dancing men represent different digits:



Which of the following could be the correctly decoded number?

- (A) 201877841637      (B) 201877841222      (C) 201877841333  
 (D) 201877841444      (A) 201877841555
2. In how many different ways can a nonempty plate be made from 2 identical *Kavuns* and 3 identical *Laddus*?
- (A) 8      (B) 9      (C) 10      (D) 11      (E) 12
3. What is the largest number that can be made by using each digit 2, 0, 1 and 8 of 2018 exactly once and the operations addition and multiplication any number of times?
- (A) 10      (B) 16      (C) 18      (D) 24      (E) 25
4. How many different (non congruent) triangles are there with one side 4 cm and area 2018 cm<sup>2</sup>?
- (A) 1      (B) 2      (C) 3      (D) 4      (E) Infinitely many
5. In the table given below, each of the symbols @, #, & and \$ denotes a number. The sum of the numbers denoted by each symbol in a column is given below the column and the sum of the numbers denoted by each symbol in a row is given to the right of the row except in the second row. What is the missing number?

@	@	#	#	14
&	\$	@	&	
#	#	@	#	15
&	#	\$	@	16
21	13	12	18	

- (A) 17      (B) 18      (C) 19      (D) 20      (E) 21

27. Sarath, Ragavan and Mohamed played in an exhibition carrom event. In this event the loser of each game had to sit out the next game. In total Sarath played 9 games, Ragavan played 14 games and Mohamed played 15 games in this event. Which of the following is/are true?

- I. Sarath and Ragavan played the 13<sup>th</sup> game.  
 II. Ragavan and Mohamed played the 15<sup>th</sup> game.  
 III. There were altogether 19 games.

- (A) I only      (B) II only      (C) III only      (D) II and III only      (E) All

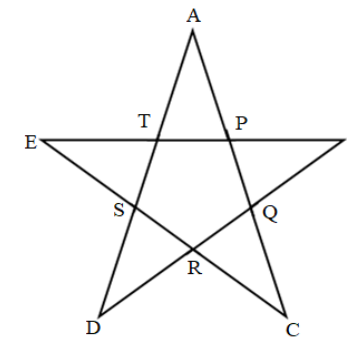
28. The increasing sequence 1, 3, 4, 9, 10, 12, 13, ... consists of all those positive integers which are powers of 3 or sums of distinct powers of 3. What is the 100<sup>th</sup> term of this sequence?

- (A) 981      (B) 2019      (C) 2018      (D)  $2^{100} - 3^{10}$       (E)  $3^{50} - 2^{50}$

29.  $a$  and  $b$  are positive integers such that  $a^b$  has exactly 5 positive divisors and  $b^a$  has exactly 7 positive divisors. How many positive divisors does  $ab$  have ?

- (A) 4      (B) 5      (C) 6      (D) 7      (E) 8

30. A pentagram is a regular pentagon with its sides extended to their point of intersection. In the pentagram  $ABCDE$  shown below  $PQRST$  is a regular pentagon.



If  $AP:PQ = m : 1$ , then what is the ratio, the area of the pentagram : the area of the pentagon?

- (A)  $(5m + 2) : (m + 2)$       (B)  $(m + 2) : (5m + 2)$       (C)  $(6m + 2) : (m + 2)$   
 (D)  $(m + 2) : (6m + 2)$       (E)  $(6 + 2m) : (1 + 2m)$