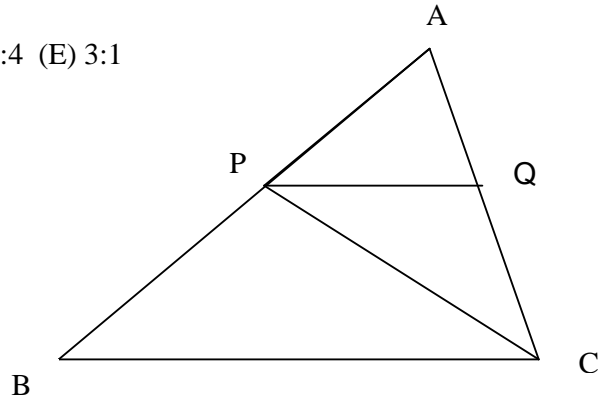


- What is the largest sum obtain if the different letters are assigned different digits in the addition problem of $BEST + OF + LUCK$?
(A) 18 423 (B) 13 140 (C) 18420 (D) 13142 (E) 19 423
- When the result of $10^{2005} + 2005$ is written in decimal representation the sum of the digits is
(A) 1 (B) 7 (C) 8 (D) 3 (E) 9
- The number of pairs (x,y) where x and y are positive integer solution of $200x + 5y = 2005$ is
(A) 10 (B) 7 (C) 8 (D) 3 (E) 9
- ABC is a triangle, and P and Q are the midpoints of AB and AC . Then area of PQC : area of ABC is

- (A) 1:4 (B) 4:1 (C) 1:3 (D) 3:4 (E) 3:1



- If $a \otimes b =$ the Highest Common Factor of a and b , then the value of $10 \otimes (24 \otimes 27)$ is
(A) 1 (B) 3 (C) 2 (D) 10 (E) 27
- A four digit number x can have as digits only 1's and 2's. If $x > 2005$ and x is even, the number of possible value of x is
(A) 10 (B) 8 (C) 3 (D) 4 (E) 5
- Sanath batting from the start of an over bats through two consecutive over (he faces all twelve balls) and scores 51 runs in ones, twos, fours, and sixes. The least number of sixes he hit can be
(A) 1 (B) 2 (C) 3 (D) 4 (E) 5
- The average of the following one hundred numbers; 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, ..., 97, 98, 99, 100 is
(A) 49.5 (B) 50.5 (C) 50.05 (D) 49.25 (E) 50
- $(1990)^3 + 3(1999)^3 + 2 \times 1999$ equals
(A) 8 0006 004 000 (B) 6 999 998 000 (C) 7 999 998 000
(D) 7 006 004 000 (E) 7 999 999 999

10. In the magic square shown on the right a, b, c, d, e and f are numbers such that the sum of 3 numbers in each row, column, and diagonal is 21. The value of c is

a	2	b
c	7	d
e	f	6

- (A) 8 (B) 4 (C) 12 (D) 10 (E) 11

11. Which of the smallest number in

$$\{\sqrt[3]{7} - \sqrt[3]{6}, \sqrt[3]{8} - \sqrt[3]{7}, \sqrt[3]{9} - \sqrt[3]{8}, \sqrt[3]{10} - \sqrt[3]{9}, \sqrt[3]{11} - \sqrt[3]{10}\}$$

- (A) $\sqrt[3]{7} - \sqrt[3]{6}$ (B) $\sqrt[3]{8} - \sqrt[3]{7}$ (C) $\sqrt[3]{9} - \sqrt[3]{8}$
 (D) $\sqrt[3]{10} - \sqrt[3]{9}$ (E) $\sqrt[3]{11} - \sqrt[3]{10}$

12. What is the maximum number of points of intersection possible if 3 circles and a straight line are drawn on a paper?

- (A) 4 (B) 10 (C) 12 (D) 8 (E) 6

13. The remainder when 2005^{2005} is divided by 100 is

- (A) 5 (B) 25 (C) 50 (D) 75 (E) 0

14. let a and b be numbers and $a \otimes b =$ the maximum of a and b . Then which of the following is (are) true for all numbers a and b ?

I $a \otimes b = b \otimes a$ II $(a \otimes b) \otimes c = a \otimes (b \otimes c)$

III $a \otimes (b + c) = (a \otimes b)(a \otimes c)$ (Here + is the ordinary addition)

- (A) All (B) III only (C) I and III only (D) None (E) I and II only

15. If x is a positive number less than 1, which one of the following is correct?

- (A) $\frac{1}{x} < \frac{x}{x+1} < \frac{1}{x^2}$ (B) $\frac{x}{x+1} < \frac{1}{x} < \frac{1}{x^2}$ (C) $\frac{1}{x} < \frac{1}{x^2} < \frac{x}{x+1}$
 (D) $\frac{1}{x^2} < \frac{x}{x+1} < \frac{1}{x}$ (E) $\frac{x}{x+1} < \frac{1}{x^2} < \frac{1}{x}$

16. The letters in *PEACE* are written one on each of cards. If two cards are picked randomly what is the probability of getting at least one *E*?

- (A) $\frac{4}{25}$ (B) $\frac{2}{5}$ (C) $\frac{4}{10}$ (D) $\frac{7}{10}$ (E) $\frac{3}{10}$

17. The sum of the angle ($\alpha, \beta, \delta, \gamma, \theta$) at the five points of a star inscribed in a circle is

- (A) 100° (B) 150° (C) 180° (D) 200° (E) 360°

18. In the correctly worked out addition problem below different letters represent different digits.

$$\begin{array}{r} \text{B E S T} \\ \text{O F} \\ \hline \text{L U C K} \end{array}$$

The value of *E* is

- (A) 1 (B) 7 (C) 8 (D) 3 (E) 9

19. If a sequence of numbers a_1, a_2, a_3, \dots is given by $a_{n+1} = \frac{1}{1-a_n}$ for $n > 1$ and $a_1 = \frac{1}{4}$, then the value of a_{2005} is

- (A) $\frac{1}{4}$ (B) $\frac{4}{3}$ (C) -3 (D) $-\frac{1}{2}$ (E) $\frac{2}{3}$

20. If $n! = n \times (n-1) \times (n-2) \times \dots \times 3 \times 2 \times 1$, then which of the following is (are) true?

- I. $\frac{100!}{96!} > \frac{50!}{45!}$ II. $\frac{100!}{96!} > \frac{50!}{45!}$ III. $\frac{100!}{96!} > \frac{50!}{40!}$

- (A) I only (B) I and II only (C) All (D) None (E) III only

21. In the Land of Liars there are two important clans – the Blue Clan and the Green Clan. Green Clansmen speak the truth only between 12 midnight and 1 a.m. and Blue Clansmen speak the truth only between 1 a.m. and 2a.m. outside these times they all lie! At a late night party a Blue and a Green are chatting, and another person approaches them and ask the time not sure of where it is 12.30a.m. One of them (Person X) says, “It’s 12.30a.m. “and the other (Person Y) says, “ He lied “. Assuming that the time was either 12.30a.m. or 1.30a.m. What can you conclude?

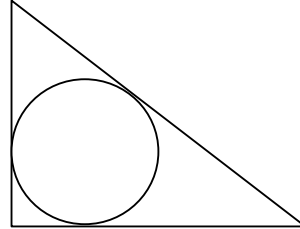
- (A) X is a Green and Y is a Blue (B) X is a Blue and Y is a Green
(C) Correct time was 12.30a.m. (D) Correct time was 1.30a.m.
(E) Nothing

22. If $a^2 + b^2 + c^2 = 1$ and $a^3 + b^3 + c^3 = 1$ then the value of $a + b + c$ is

- (A) 1 (B) 3 (C) 4 (D) 5 (E) 7

23. The largest area of a right triangle having positive integer side lengths and a circle of radius 2 inscribed, is

- (A) 24 (B) 30 (C) 54 (D) 60 (E) 48



24. Three distinct corners of a cube of volume 1 m^3 are P , Q and R . Which of the following could be the area of the triangle PQR in square meters?

- I $\frac{1}{2}$ II $\frac{1}{\sqrt{2}}$ III $\frac{\sqrt{3}}{2}$

- (A) I only (B) I and II only (C) All (D) None (E) III only

25. which of the following is (are) true for all positive integers n if $f(n)$ = the product of all the distinct prime factors of n for $n > 1$?

- I. $f(n) \neq f(n+1)$ II. $f(n+1) \neq n$
 III. If $f(f(n)) = f(n)$ then $f(n) = n$ and if $f(n) = n$ then $f(f(n)) = f(n)$

- (A) I only (B) I and II only (C) All (D) None (E) III only

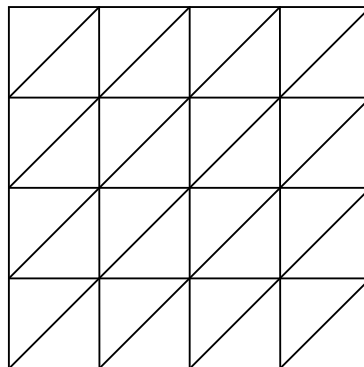
26. Which of the following is (are) true for the sequence 12, 1212, 121212, 12121212,.....?

- I. 36 divides the 51st term II. 1010101010101 divides the 7th term
 III. 72 does not divide any term

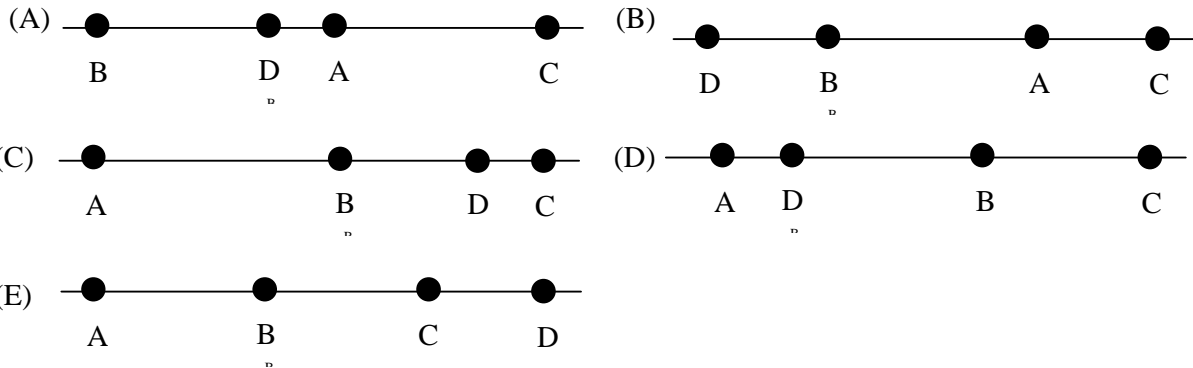
- (A) All (B) I and II only (C) I only (D) I and III only (E) None

27. What is the least number of colors you need to color all the triangles in the following diagram so that no two triangles having a common side have the same color?

- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6



28. A, B, C, D , are points on a line and $AC = 2AB = 3BD$. If $5BD = 2DC$ which one of the following depict the data ?



29. If a, b, c, d , are positive integers then the number of different positive integer values

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d} \text{ can take is}$$

- (A) None (B) 5 (C) 4 (D) 10 (E) 6

30. If a, b, c, d , and $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d}$ are positive integers, and $a < b < c < d$, the number of solution of

$$\frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d} > 1 \text{ is}$$

- (A) None (B) 1 (C) 2 (D) 3 (E) 4

Answer

1	A
2	C
3	A
4	A
5	A
6	D
7	C
8	B
9	C
10	D
11	E
12	C
13	B
14	E
15	B
16	D
17	C
18	E
19	A
20	D
21	A
22	A
23	B
24	C
25	B
26	A
27	A
28	D
29	C
30	B