1. If $A \neq 0$ and
$$\begin{array}{r} ABCD \\ \times \quad E \\ \hline 2006 \end{array}$$
then the value of B is

(A) 0 (B) 2 (C) 3 (D) 6 (E) 8

2. $\frac{2006}{2005}$ is **not** equal to

(A) $\frac{2008006}{2007005}$ (B) $\frac{20062006}{20052005}$ (C) $\frac{200602006}{200502005}$ (D) $\frac{20064012}{20054010}$ (E) $\frac{206}{205}$

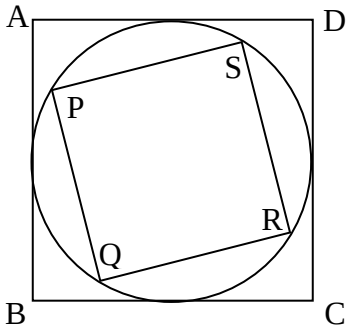
3. The remainder when $10^{2006} + 2006$ is divided by 9 is

(A) 0 (B) 2 (C) 5 (D) 6 (E) 7

4. There was a plate of *Kevuns* on a table. Abdul, who first saw the plate, ate two thirds of the *Kevuns.* Meena, who came after Abdul ate half of the remaining *Kevuns* and gave the two remaining *Kevuns* to Kamal. How many *Kevuns* were there on the plate when Abdul saw it?

(A) 6 (B) 8 (C) 10 (D) 12 (E) 16

5. In the following diagram *ABCD* and *PQRS* are squares. Then $\frac{\text{Area } ABCD}{\text{Area } PQRS}$ is



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

6. If x_1, x_2 and x_3 take only 1 and –1, the number of different values $x_1x_2 + x_2x_3 + x_1x_3$ can take is

(A) 1 (B) 2 (C) 3 (D) 4 (E) 6

7. Two rectangles overlap each other in such a manner that the overlapping portion is $\frac{1}{10}$th of the first rectangle and $\frac{1}{4}$th of the second rectangle. What percentage of the total non-overlapping area is the overlapping area?

(A) $8\frac{1}{3}\%$ (B) 35% (C) $7\frac{9}{13}\%$ (D) 12% (E) $9\frac{2}{3}\%$

8. Ramani was asked to square the number *x*, subtract 32 and then divide the result by 7. She instead took the square root of *x*, added 32 and multiplied the result by 7. Her answer was 245. If Ramani had worked the problem correctly, what would her answer have been?

(A) 3 (B) 5 (C) 7 (D) 9 (E) 11

9. For integers *x* and *y* we define $M(x,y)$ as the maximum of *x* and *y* and $m(x, y)$ as the minimum of *x* and *y*. Then $M(M(-1, m(-3, 0)), m(5, M(-3, -2)))$ equals

(A) –3 (B) –2 (C) –1 (D) 0 (E) 5

10. The central digit of the product $1111 \times 2006\,2006\,2006\,2006$ is

(A) 0 (B) 2 (C) 4 (D) 6 (E) 8

11. If any letter in the addition problem of *BEST+OF+LUCK* is assigned either 1 or 2, how many different values can the sum take?

(A) 36 (B) 144 (C) 81 (D) 576 (E) 98

12. Let A=(1,1) and B=(2,2). If the coordinates of C are nonnegative integers and ABC is an isosceles triangle then the area of ABC could be

(I) $\frac{1}{2}$
(II) 1
(III) $\frac{3}{2}$

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

13. The remainder when $200^{2006}6^{2006}+2006$ is divided by 8 is

(A) 0 (B) 2 (C) 5 (D) 6 (E) 7

14. The largest element in the set $\{2^{12036},3^{10030},4^{8024},5^{6018},6^{2006}\}$ is

(A) 6^{2006} (B) 5^{6018} (C) 4^{8024} (D) 3^{10030} (E) 2^{12036}

15. If each term after the first term in a sequence $a_1, a_2, a_3, \ldots$ is the product of the nearest two terms before it and if $a_9 = 8$ and $a_{10} = -32$, then a_1 equals

(A) $\frac{1}{4}$ (B) $-\frac{1}{8}$ (C) $\frac{1}{8}$ (D) 4 (E) –4

16. If $\frac{2006}{9999}$ is written in the decimal representation as $0.a_1a_2a_3a_4\ldots$ then a_{2006} is

(A) 0 (B) 1 (C) 2 (D) 3 (E) 6

17. How many points with integer coordinates in the *Oxy* plane lie on the line segment joining (0,0) and (300,90)?

(A) 29 (B) 30 (C) 31 (D) 32 (E) 33

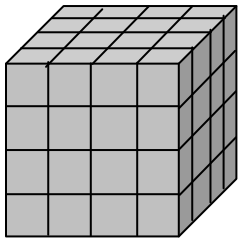
18. $\frac{5^{2006}}{3^{2004}+5^{2005}}$ is a number between

(A) 1 and 2 (B) 2 and 3 (C) 3 and 4 (D) 4 and 5 (E) 5 and 6

19. Let n be a positive integer. How many positive integers are there such that n^2+105 is a perfect square?

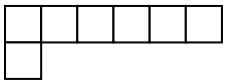
(A) 0 (B) 2 (C) 4 (D) 6 (E) Infinitely many

20. What is the least number of colours you need to colour the squares on the surface of the cube made of 48 identical cubes as shown below so that no two squares having a common edge have the same colour?



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

21. What is the length of a side of the smallest square that can be tiled without overlap by using the tile shown below? Each 'box' of the tile is a square of side 1.



(A) 6 (B) 7 (C) 8 (D) 12 (E) 14

22. Murali bowled 8 overs continuously without any top spinners; 12 *Doosras* (the one that goes the other way) and 36 off breaks. If he bowled at least 3 *Doosras* successively, what can you conclude?
(A) He bowled at least 3 off breaks successively
(B) He bowled at least 4 off breaks successively
(C) He bowled at least 5 off breaks successively
(D) He bowled at least 6 off breaks successively
(E) Nothing

23. If different letters in the addition problem of *BEST+OF+LUCK* are assigned different digits, then which of the following could be the sum?

(I) 2006 (II) 3006 (III) 40006

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

24. Which of the following is (are) true if $f(n) =$ the sum of the distinct primes that divide n for $n > 1$

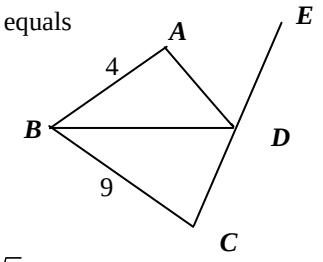
(I) If $f(n)$ is a prime then n is a prime

(II) $f(f(n)) < f(n)$

(III) If $f(n) = 3$, then $n < 1000$

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

25. In the diagram shown below $A\hat{B}D = C\hat{B}D = A\hat{D}E$ and AB=4, BC=9 . The length of BD equals



(A) $6\sqrt{2}$ (B) 6 (C) $\sqrt{13}$ (D) $3\sqrt{6}$ (E) 36

26. Colombo phone numbers comprise of precisely seven digit numbers that begin with a two. Out of these numbers how many numbers have exactly four zeros with the seven digits adding up to 6?

(A) 30 (B) 45 (C) 50 (D) 15 (E) 35

27. Imagine that that the format of the *VB Final* has been changed to seven games with the team winning 4 games declared as the winner. Suppose that in the new format Sri Lanka has won Game 1 and Australia has won Games 2 & 3. If the two teams have an equal chance of winning, what is the probability of Sri Lanka winning the *VB* trophy by winning the 7^{th} game?

(A) $\frac{1}{2}$ (B) $\frac{1}{16}$ (C) $\frac{3}{16}$ (D) $\frac{1}{8}$ (E) $\frac{1}{4}$

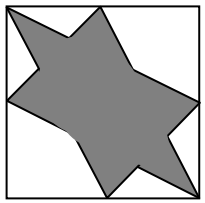
28. In the Land of Liars there are two important clans – the Blue Clan and the Green Clan. Green Clansmen speak the truth only between 12 midnight and 1 a.m. and Blue Clansmen speak the truth only between 1 a.m. and 2 a.m. – Outside these times they all lie! At a late night party a Blue and a Green are chatting, and another person approaches them and asks one of them (Person *X*) whether he is a Green. *X* points to the other one (Person *Y*) and says, "He is the Green". 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) The time was 12.30a.m.
(D) The time was 1.30a.m.
(E) Nothing

29. Martians, the hypothetical inhabitants of the planet Mars, love playing the following two-player game: Take a pile of 49 counters and each player takes turns removing less than 7 counters from the pile and the player who finishes the pile wins. Then,

(A) the winning strategy for the first player is to always leave a multiple of 6 counters
(B) the winning strategy for the second player is to always leave a multiple of 7 counters
(C) the winning strategy for the first player is to always leave a multiple of 5 counters
(D) the winning strategy for the second player is to always leave a multiple of 5 counters
(E) no player has a winning strategy

30. The shaded region has been drawn by connecting midpoints and corners of a square of side 1 as in the figure. What is the area of the shaded region?



(A) $\frac{1}{3}$ (B) $\frac{3}{5}$ (C) $\frac{1}{2}$ (D) $\frac{1}{\sqrt{2}}$ (E) $\frac{2}{3}$

Answers

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