Single Correct Answer Type

1. If $x<-3$, $y\geq 1$ then which of the following is TRUE

   (A) $xy\leq -3$ (B) $xy\geq -3$ (C) $x+y\leq -2$ (D) $x+y\geq -2$

2. a,b,c,d,e be real numbers such that

   $a+b<c+d$

   $b+c<d+e$

   $c+d<e+a$

   $d+e<a+b$

   Then the largest & smallest among them are

   (A) a,b (B) a,d (C) d,a (D) d,b

3. Which of the following is TRUE

   (A) $\sqrt{64}=\pm 8$ (B) $\sqrt{(-8)^2}=-8$ (C) $\sqrt{(-8)^2}=8$ (D) $\sqrt{(-8)^2}=\pm 8$

4. Let $a_1=1, a_2=2$ and $a_{n+2}=a_n a_{n+1}+1\ \forall n\in\mathbb{N}$. Then which of the following is TRUE?

   (A) a_{99} is even, a_{100} is odd. (B) a_{99} is odd, a_{100} is even.

   (C) a_{99} is even, a_{100} is even. (D) a_{99} is odd, a_{100} is odd.

5. If $\log(x+y)=\log\left(\frac{4y-4x}{3}\right)$ then $\log x-\log y$ is equal to

   (A) $\log 6$ (B) $\log 7$ (C) $\log 2$ (D) $\log 3$

6. Let x and y are two numbers such that $x>y$. Then which of the following is always TRUE

   (A) $\frac{x}{y}>1$ (B) $\frac{x}{y}>\frac{y}{x}$ (C) $|x|>|y|$ (D) $\frac{1}{x}<\frac{1}{y}$

7. Let set $A=\{1,2,\{1,2,3\}\}$. Then which of the following is TRUE

   (A) $\{1,2\}\in A$ (B) $\{1,2\}\subseteq A$ (C) $\{1,2,3\}\subseteq A$ (D) $3\in A$

8. Let A,B,C are three sets of numbers. Then the set containing the numbers which are belongs to exactly two of the sets A,B,C is

   (A) $(A\cap B)\cup(B\cap C)\cup(C\cap A)$ (B) $(A\Delta B)\cup(B\Delta C)\cup(C\Delta A)$

   (C) $(A\cup B\cup C)-(A\cap B\cap C)$ (D) $(A\cup B\cup C)-(A\Delta B\Delta C)$

9. Let A,B,C are three sets such that $A\cap B\cap C=\phi$. If each of the sets $A\Delta B$, $B\Delta C$ and $C\Delta A$ have 100 elements each, then the number of elements in $A\cup B\cup C$ is

   (A) 100 (B) 150 (C) 250 (D) 300

10. Let $x_1,x_2,.....,x_{30}$ are 30 non zero numbers such that $x_k+x_{k+1}=c$ where $1\leq k\leq 29$. If $x_{10}=a$, $x_{15}=b$ then $x_{20}+x_{25}=$

    (A) $2(a+b)-c$ (B) $a+b-c$ (C) $2c-(a+b)$ (D) $c-(a+b)$

11. Let S be the set $\{1,2,3,.....,10\}$. $A=\{1,2,3,4,5\}$ is a subset of S. Then number of subsets B of S such that $A\cap B=\{5\}$ are

(A) 2^4 (B) 2^5 (C) 2^9 (D) None of these

12. Let $d_1,d_2,d_3,.....,d_k$ are all divisors of k including 1 and k. If $d_1+d_2+d_3+.....+d_k=360$. Then the value of $\frac{1}{d_1}+\frac{1}{d_2}+.....+\frac{1}{d_k}$ is

(A) $\frac{360}{k}$ (B) $\frac{k}{360}$ (C) $\frac{360}{k^2}$ (D) $\frac{k^2}{360}$

13. If $\log_a x=\frac{1}{p},\log_b x=\frac{1}{q},\ \log_c x=\frac{1}{r}$ then the value of $\log_{abc} x$ is

(A) pqr (B) $\frac{1}{pqr}$ (C) $p+q+r$ (D) $\frac{1}{p+q+r}$

14. In a class if atleast 90% are good in studies, 80% are good in sports and 70% are good in music. Then the percentage of students who are good in atleast all the three are

(A) 20 (B) 30 (C) 40 (D) 50

15. If $x=\log_3 5$ then $\frac{1}{x+1}+1$ is

(A) $\log_6 18$ (B) $\log_4 20$ (C) $\log_5 20$ (D) $\log_{15} 45$

Integer Type (answer between 0 to 99)

16. There are 100 students in a class. 50 of them failed in Maths, 45 of them failed in Physics, 40 of them failed in Chemistry and 32 of them failed exactly in two subjects. One student passed in all the three subjects. Then number of students who failed in all the three subjects are

17. The number of real solutions of the equation $|2x-[x]|=4$, where $[x]$ denotes greatest integer $\le x$

18. If $S=\sum_{k=1}^{99}\frac{1}{2\left[\sqrt{k}\right]+1}$ where $[x]$ denotes greatest integer $\le x$ then the value of S is

19. If $\log_x(a+b)-\log_x(a-b)=\log_x\left(\frac{a}{b}\right)$ then $\frac{a^2}{b^2}+\frac{b^2}{a^2}$ is

20. In a class of 80 students numbered 1 to 80, all odd numbered students knows Cricket, students whose numbers divisible by 5 knows Foot ball and students whose numbers are divisible by 7 knows Chess. The number of students who doesn't know any of the three are

21. A number $a_n(1\le n\le 29)$ defined as

$$a_n=\begin{cases}2, & \text{if } n \text{ is divisible only by 2 but not by 3 and 5}\\ 3, & \text{if } n \text{ is divisible only by 3 but not by 2 and 5}\\ 5, & \text{if } n \text{ is divisible only by 5 but not by 2 and 3}\\ 0, & \text{in all other cases}\end{cases}$$

Then $\sum_{n=1}^{29}a_n=$

22. a,b,c,d,e are distinct integers such that $(a-6)(b-6)(c-6)(d-6)(e-6)=45$ then the value of $a+b+c+d+e$ is

23. If $2a+3b+5c=9$ and $2a+b-c=7$ then the value of $a+b+c$ is

24. Let $S(N)$ and $P(N)$ denote the sum and product of a two digit number N. For example $S(26)=8$, $P(26)=12$. The number of two digit numbers N such that $S(N)+P(N)=N$ are

25. How many different integers possible by adding any three elements from the set $\{1,4,7,10,13,16,19\}$

KEY

1.	A	2.	A	3.	C	4.	D	5.	B
6.	D	7.	B	8.	D	9.	B	10.	A
11.	C	12.	A	13.	D	14.	C	15.	D
16.	2	17.	4	18.	9	19.	6	20.	28
21.	38	22.	35	23.	4	24.	9	25.	13

❇ *Wish You all the Best* ❇