

## **FACTORS & REMAINDER ASSIGNMENT 2**

- Q1.** If all the factors of  $N$  are arranged in increasing order then product of 13th and 36th factors is equal to  $N$ . Find the number of factors of  $N$
- Q2.** How many 3 digit numbers have less than 5 prime factors?
- Q3.** A number  $N$  has 27 factors. Let  $x$  represent the maximum number of prime factors of  $N$  and  $y$  the minimum number of prime factors of  $N$ . Find the value of  $y - x$ .
- Q4.** How many prime factors 555,555,555,555 has
- Q5.** Number of factors of  $P$  is  $Q$ . Number of factors of  $Q$  is  $R$ . Number of factors of  $R$  is  $S$  and number of factors of  $S$  is 3. If  $P$  is smallest such number then what is the sum of digits of  $P$ ?
- Q6.**  $2^{30} + 3^{30}$  has only two prime factors that have two digits find sum of these two prime factors
- Q7.** Find the number of factors of  
 $N = 2^6 \cdot 3^4 \cdot 5^4$  which are perfect squares?
- Q8.** Find the smallest number that has exactly 18 factors ??  
A- 216  
b- 180  
c- 200  
d- Nota
- Q9.** What would be the sum of last two digits of  $169^{141} - 141^{169}$
- Q10.** What is the remainder when  $2014^{2015}$  is divided by 121  
a) 34 b) 25 c) 26 d) 37
- Q11.** What would be remainder when  $13!$  is divided by 17
- Q12.** The remainder when  $22^{23} + 10^{35}$  is divided by 45 is  
(a) 2 (b) 11 (c) 8 (d) none
- Q13.**  
 $1^7 + 2^7 + 3^7 + \dots + 100^7$  when divided by 202. What is remainder?

**Q14.** Find the remainder when  $2^{600} - 10^{540}$  is divided by 1994

**Q15.** What is the remainder when  $17^{432}$  is divided by 109?

**Q16.** What will be remainder when  $(67^{67} + 67)$  is divided by 68

**Q17.** What will be the remainder when  $7^{727}$  is divided by 13

**Q18.** What would be the remainder when  $99!$  is divided by 9999

**Q19.** Find the no of factors of  $2^{17} \times 3^{15} \times 5^{12} \times 7^9$  which are perfect cubes?

**Q20**A three digit number pqr has exactly three factors. What can be definitely said about the number of factors of the six digit number pqrpqr have?

- 1) The number of factors is definitely less than 20
- 2) The number of factors is definitely greater than 20
- 3) The number of factors is a perfect square
- 4) None of the three statements above is definitely true

## **ANSWER KEYS**

Ans1) 48

Ans2) All numbers

Ans3) -2

Ans4) 8

Ans5) 6

Ans6) 74

Ans7) 36

Ans8) 180

Ans9) 08

Ans10) 34

Ans 11) 3

Ans 12) 8

Ans13) 0

Ans14) 0

Ans15) 1

Ans16) 66

Ans17) 6

Ans18) 4950

Ans 19) 720

Ans20) D

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