Q:1 What is the remainder when 52^{25} is divided by 7?
1. 4
2. 3
3. 6
4. –2

Q:2 If $(18^{556} + 603)$ is divided by 17 then, what will be the remainder?
1. 6
2. 7
3. 8
4. 9

Q:3 A student was asked to multiply a two-digit number by 7/8, instead of that, he divided the number by 7/8 and got the result 15 less than the original result. The sum of the digit of the number is:
1. 8
2. 9
3. 11
4. 12

Q:4 Find the difference between LCM and HCF 35 and 36.
1. 35
2. 36
3. 1259
4. 1225

Q:5 How many factors of 1080 are perfect squares?
1. 6
2. 5
3. 4
4. 3

Q:6 Which of the following numbers is divisible by 2, 3, 4, 6, 8, and 9?
1. 6756
2. 4608
3. 2408
4. 7270

Q:7 Find the greatest number that will divide 96, 148 and 73 leaving remainder 6, 4 and 1.

1. 9
2. 18
3. 5
4. 8

Q:8 If the product of the two numbers is 480 and the H.C.F. of these numbers is 10 then what is the L.C.M. of the given numbers?
1. 36
2. 24
3. 48
4. None of these

Q:9 If the number a525b973 is divisible by 33, then which of the following could be $(a \times b)$?
1. 8
2. 6
3. 0
4. None of these

Q:10 Two numbers are in the ratio of 3 : 7. If HCF and LCM of the number are 13 and 273 respectively. Find the numbers.
1. 27 and 63
2. 24 and 56
3. 21 and 49
4. 39 and 91

Answer Key

1. (2)	**2.** (4)	**3.** (3)	**4.** (3)	**5.** (3)
6. (2)	**7.** (2)	**8.** (3)	**9.** (3)	**10.** (4)

Answers and Solutions

Q:1 The correct answer is **option 2** i.e. **3.**
$\Rightarrow 52^{25}/7$
$\Rightarrow (49 + 3)^{25}/7$
Any power of 7 will be always divisible by 7
Hence, 49 will not leave any remainder when divided by 7
$\Rightarrow 3^{25}/7$
$\Rightarrow 3(9)^{12}/7$
$\Rightarrow 3(7 + 2)^{12}/7$ (Any power of 7 will be always divisible by 7)
$\Rightarrow 3(2)^{12}/7$
$\Rightarrow 3(8)^{4}/7$
$\Rightarrow 3(7 + 1)^{4}/7$ (Any power of 7 will be always divisible by 7)
$\Rightarrow 3(1)^{4}/7$
So, 3 is the remainder

Q:2 The correct answer is **Option 4** i.e. **9.**
If x^n is divided by $(x - 1)$ leaves remainder 1
So, if 18^{556} is divided by 17 leaves the remainder 1
Now, We have to find the remainder when $(1 + 603)$ is divided by 17
604 can be written as $(35 × 17 + 9)$
If it is divided by 17 leaves the remainder 9

Q:3 The correct answer is **Option 3** i.e. **11.**
Let, the required number be x
According to the question –
$x × (7/8) = x ÷ (7/8) - 15$
$\Rightarrow 7x/8 = 8x/7 - 15$
$\Rightarrow 7x/8 - 8x/7 = -15$
$\Rightarrow 8x/7 - 7x/8 = 15$
$\Rightarrow (64x - 49x)/56 = 15$
$\Rightarrow 15x = 15 × 56$
$\Rightarrow x = 56$
So, Sum of digit = $(5 + 6) = 11$

Q:4 The correct answer is **Option 3** i.e. **1259.**

LCM of 35 and 36 = $(35 × 36)$ = 1260 (LCM two simultaneous numbers is always multiple of both numbers)
HCF of 35 and 36 = 1 (HCF two simultaneous numbers is always 1)
Difference = $(1260 - 1) = 1259$

Q:5 The correct answer is **Option 3** i.e. **4.**
$\Rightarrow 1080 = (2^3 × 3^3 × 5)$
For any perfect square, all the powers of the primes have to be even numbers
So, there are four possibilities
$\Rightarrow 1, 4, 9$ and 36

Q:6 The correct answer is **Option 2** i.e. **4608.**
For a number to be divisible by the numbers 2, 3, 4, 6, 8, and 9 it is enough that the number is divisible by 8 and 9.
Divisibility rule of 8: last three digits of the given number is a multiple of 8
Divisibility rule of 9: The sum of the digits of the number is a multiple of 9
On, Satisfying both the conditions the number is 4608

Q:7 The correct answer is **option 2** i.e. **18**
Concept used :
HCF and prime factorization
Calculations :
$\Rightarrow$ Prime factors of $(96 - 6) = 90 = 2 × 3 × 3 × 5$
$\Rightarrow$ Prime factors of $(148 - 4) = 144 = 2 × 3 × 3 × 2 × 2 × 2$
$\Rightarrow$ Prime factors of $(73 - 1) = 72 = 2 × 3 × 3 × 2 × 2$
Now multiply the common prime numbers factors that appear in all the 3 numbers
$\Rightarrow$ HCF of 90, 144, 72 = $2 × 3 × 3 = 18$
Hence, 18 is the number that divides 96, 148 and 73 leaving the remainder 6, 4 and 1

Q:8 The correct answer is **option 3** i.e. **48.**
Product of two numbers = (product of L.C.M. and H.C.F. of those numbers)
$\Rightarrow 480 = 10 × L.C.M.$
$\Rightarrow L.C.M = 480/10 = 48$

Q:9 The correct answer is **option 3** i.e. **0.**
As the number is divisible by 33, it should satisfy the divisibility rules of 3 and 11

Divisibility by 3,

⇒ a525b973 = $(a + 5 + 2 + 5 + b + 9 + 7 + 3)$

⇒ $(31 + a + b)$ = 33, 36, 39, 42, 45, 48

⇒ $(a + b)$ could be 2, 5, 8, 11, 14, 17

Divisibility by 11,

⇒ a525b973 = $(3 + 9 + 5 + 5) - (7 + b + 2 + a)$

⇒ $(22 - 9 - a - b)$ = 11,0

⇒ $(a + b)$ could be 2,13

Only, $(a + b)$ = 2 satisfies

⇒ a, b = $(2, 0)$ or $(0, 2)$ = a × b = 0

⇒ a, b = $(1, 1)$ = a × b = 1

Q:10 The correct answer is **Option 4** i.e. **39 and 91.**

Let, the required number be 3x and 7x

As we know that

⇒ LCM × HCF = $(13 × 273)$

⇒ 3x × 7x = $(13 × 273)$

⇒ $21x^2 = (13 × 273)$

⇒ $x^2 = 13 × 13$

⇒ x = 13

So, Numbers = 3x = 3(13) = 39 and

⇒ 7x = 7(13) = 91

Hence, The required number is 39 and 91