CONCEPT APPLICATION LEVEL - II

SECTION - A

- **FILL IN THE BLANKS**

Q.1   If we divide the sum of any 2-digit numbers ab and ba by (a + b), then the quotient is _____.

Q.2   The difference between two 2-digit numbers ab and ba, where a > b is divided by 3. The quotient is _____.

Q.3   If the difference of 582 and 285 is divided by 11, the quotient is _____.

Q.4   The sum of three 3-digit numbers zyz, yzx and zxy is divided by (x + y + z), the quotient is _____.

Q.5   If $1x \times x = 9x$, then find the value of x. _____.

Q.6   If N ÷ 2 leaves a remainder of 0, then what might be the ones digit of N ? _____.

Q.7   Write a 3-digit number which is divisible by 4 and 8 but not by 32. _____.

Q.8   All even natural numbers which are divisible by 3 are also divisible by 6. Is true ? _____.

Q.9   Standard form of 0.000000000839 is _____.

Q.10   Cube of 14 is = _____.

SECTION - B

- **MULTIPLE CHOICE QUESTIONS**

Q.1   Which occupies more space : 1 kg gold or 1 kg cotton?
       (A) Gold   (B) Cotton   (C) Both   (D) None

Q.2   Which encloses more area if their perimeters are same - an equilateral triangle or a square?
       (A) Equilaterals   (B) Square   (C) Both equal   (D) None

Q.3   I am as much older than my brother who is 10 years as I am younger than my father who is 70 years. How old I am?
       (A) 40 years   (B) 30 years   (C) 20 years   (D) 10 years

Q.4   The sum of the digits of a 2-digits number is 12. If the digits are reversed, the new number decreases by 36. Find the number.
       (A) 48   (B) 84   (C) 75   (D) 57

Q.5   The product of two 2-digit numbers is 1665. The product of their units digits is 35 and that of tens digits is 12. Find the numbers.
       (A) 37, 45   (B) 47, 35   (C) 67, 25   (D) 65, 27

Q.6   If * and ⊙ are two operations such that a * b = a + b + 2 and a ⊙ b = a × b − 4, find
       (i) (3 * 4) ⊙ 5 and   (ii) 3 * 4 (4 ⊙ 5)
       Are they equal?
       (A) Yes   (B) No   (C) Can't say   (D) Can't be determined

Direction (Q.7 to 9) : Choose digits (0 – 9) for each letter which satisfy the following. Each letter has different value.

Q.7 $x^y = y^x$
   (A) x = 2, y = 4   (B) x = 4, y =2   (C) x = 3, y = 2   (D) x = 2, y = 3

Q.8 $\dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z} = 1$
   (A) 2, 3, 6   (B) 1, 1, 1   (C) 3, 3, 3   (D) 3, 2, 6

Q.9 $X \times Y \times YZ = XXX$
   (A) 2, 3, 7   (B) 4, 3, 2   (C) 1, 2, 3   (D) 2, 1, 7

Q.10   Use the symbols $+, -, \div, \times$ and $\sqrt{}$ to write the numberal 9 using 4 fours. For example, $44 \div 44 = 1$ or $4 + 4 + 4 - \sqrt{4} = 10$.
   (A) $4 + 4 + 4 \div 4$ (B) $4 + 4 - 4 \div 4$ (C) $4 + 4 - (4 \div 4)$ (D) $4 + 4 + (4 \div 4)$

Q.11   Select a number, add 2, now multiple by 3 then subtract 6 and lastly divide by 3. What do you get?
   (A) always 3   (B) Never 3
   (C) Always number itself   (D) sometimes number itself

Q.12   Select a number between 1 and 100. Add 28, then multiply by 6 and subtract 3. Now divide by 3 and then subtract 3 more than the original number. Now add 8, subtract 1 less than the original number. Lastly multiply by 7. Find the answer.
   (A) 427   (B) 320   (C) Number itself   (D) 420

Q.13   The sum of the digits of a 2-digit number is 7. If the number obtained by interchanging the digits is 27 more than the original number, find the original number.
   (A) 25   (B) 52   (C) 43   (D) 34

Q.14   The sum of the digits of a 2-digit number is equal to 12. The digit in one's place is 3 times the digit in tens place. Find the number.
   (A) 39   (B) 93   (C) 57   (D) 75

Q.15   The sum of the digits of a 2-digit number is 10. The digit in one's place is nine times the digit at ten's place. Find the number.
   (A) 91   (B) 19   (C) 90   (D) None

Q.16   The sum of digits of a 2-digit number is 14. If the digits are reversed, the new number decreases by 36. Find the number.
   (A) 95   (B) 96   (C) 69   (D) 59

Q.17   The smallest three digit number divisible by 3 is :
   (A) 100   (B) 101   (C) 102   (D) 103

Q.18   If a number 93*5 is divisible by 9, the possible digit which can replace * is :
   (A) 1   (B) 2   (C) 3   (D) 4

Q.19   If 23* is divisible by 11, the possible digit which can replace * is :
        (A) 1   (B) 2   (C) 3   (D) 4

Q.20   If the sum of the digits of the number is 33, then the number is divisible by :
        (A) 3 only   (B) 9 only   (C) neither 3 nor 9   (D) 3 and 9 both

Q.21   If a number is divisible by 10, then the number is also divisible by :
        (A) 2 only   (B) 5 only   (C) neither 2 nor 5   (D) 2 and 5 both

Q.22   The number 6912 is divisible by :
        (A) 2 and 3   (B) 2 and 9 only   (C) 3 and 9 only   (D) 2; 3 and 9

Q.23   A number having 0 at unit's digit is divisible by :
        (A) 2 only   (B) 5 only   (C) 10 only   (D) 2, 5 and 10

Q.24   If a number 87*2 is divisible by 9, the possible digit which can replace * is :
        (A) 1   (B) 2   (C) 3   (D) 4

Q.25   Largest three digit number divisible by 5 and 10 both is :
        (A) 999   (B) 995   (C) 990   (D) 900

Q.26   If 56*72 is divisible by 11, the possible digit which can replace * is :
        (A) 6   (B) 2   (C) 3   (D) 4

Q.27   If [1 X 2 Y 6 Z] is a number divisible by 9, then the least value of X is :
        (A) 0   (B) 1   (C) 9   (D) 5

Q.28   The number 2 8 2 2 1 is divisible by which of the following :
        (A) 2   (B) 3   (C) 6   (D) 9

Q.29   Which of the following is one's digit of a number, when divided by 5 gives a remainder of 3 ?
        (A) 8   (B) 3   (C) 3 or 8   (D) none of these

Q.30   If the 4-digit number 2 X Y 7 is exactly divisible by 3, then which of the following is the least value
        of $(X + Y)$?
        (A) 3   (B) 4   (C) 6   (D) 9

Q.31   If a number is divisible by 2, then which of the following cannot be a one's digit in it ?
        (A) 0   (B) 1   (C) 2   (D) 4

Q.32   A is a digit and 3A15 is a multiple of 9. Which of the following can be the value of A ?
        (A) 1 or 9   (B) 0 or 8   (C) 0 or 7   (D) 0 or 9

Q.33   The value of A and B in   A   1   is :
                                  + 1   B
                                  _____
                                     B   0

        (A) A = 9, B = 9   (B) A = 7, B = 9   (C) A = 7, B = 7   (D) A = 9, B = 7

Q.34   Sum of an even number and an odd number is :
        (A) an even number (B) an odd number   (C) a multiple of 3   (D) a multiple of 5

Q.35   Sum of (10a + b) and (10b + a) is always divisible by :
        (A) 11   (B) 9   (C) 7   (D) 3

Q.36   Expanded form of 729 is :
        (A) 7 2 9   (B) 7 + 2 + 9
        (C) 7 × 10 + 2 × 10 + 9   (D) 7 × 100 + 2 × 10 + 9

Q.37   If a number is divisible by both 4 and 6 then it is always divisible by :
        (A) 24   (B) 12   (C) 36   (D) 48

Q.38   The number 1 + 6354 is divisible by :
        (A) 5   (B) 9   (C) 7   (D) 6

Q.39   In the following cryptarithms value of Q is
$$\begin{array}{r} PQ \\ \times\,P3 \\ \hline 57Q \\ \hline \end{array}$$

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

Q.40   Multiple of 11 closest to 10,00,000 is :
        (A) 99991   (B) 99999   (C) 999999   (D) 999899

Q.41   Least value of A such that 36825A6 is divisible by 11 is :
        (A) 2   (B) 3   (C) 4   (D) 7

Q.42   The number divisible by 15 is
        (A) 9554   (B) 9555   (C) 8555   (D) 7555

Q.43   What should be added to $\dfrac{-7}{10}$ to get $\dfrac{19}{30}$?

        (A) $\dfrac{3}{4}$ (B) $\dfrac{14}{15}$ (C) $\dfrac{4}{3}$ (D) $\dfrac{12}{5}$

Q.44 $x^m \times x^n =$
        (A) $x^{m \times n}$ (B) x^{m+n} (C) $x^m \times n$ (D) $x^m + x^n$

Q.45   Which of the following number is a perfect square number ?
        (A) 840   (B) 841   (C) 1088   (D) 1368

Q.46   Multiplicative inverse of $\dfrac{-4}{9} \times \dfrac{12}{7}$ is :

        (A) $-\dfrac{21}{16}$ (B) $\dfrac{16}{21}$ (C) $\dfrac{-16}{21}$ (D) $\dfrac{-13}{16}$

Q.47   Cubes of the numbers ending with 7 ends with :
        (A) 3   (B) 2   (C) 9   (D) 1

Q.48 Sanchi is now 12 years old and Sam is two years old. In how many years will Sanchi be three times as old as Sam? **[IMO-2016]**

(A) 3   (B) 4   (C) 5   (D) 6

Q.49 The sum of the digits of a 2-digit number is 7. If the digits are reversed, the number formed is 9 less than the original number. Find the number. **[IMO-2016]**

(A) 40   (B) 43   (C) 49   (D) 53

Q.50 While solving a problem, by mistake, Minakshi squared a number and then subtracted 25 from it rather than first subtracting 25 from the number and then squaring it. But she got the answer right. What was the given number? **[IOM-2016]**

(A) 13   (B) 38   (C) 48   (D) 58

SECTION - C

Q.1 **Match the following**

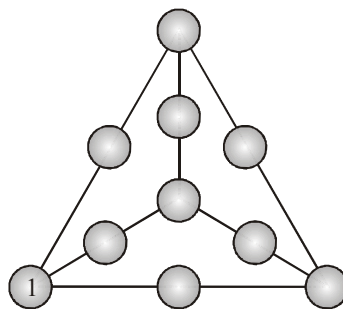|	Column I		Column II
(A)	If N ÷ 2 leaves a remainder 1, then one's digit of N is	(p)	1 or 6
(B)	If 36 D is multiple of 3 and D is a digit then value of D is	(q)	1, 3, 5, 7 or 9
(C)	If N ÷ 5 leaves a remainder 1, then one's digit of 'N' is	(r)	1
(D)	If D is a digit and the number 21D5 is divisible by 9. The value of D is	(s)	0, 3, 6 or 9

SECTION -D

MAGICAL FIGURES

Q.1 Fill in the boxes with 2-digit prime numbers so that the sum of the numbers horizontally and vertically is 123.

(A) 23
(B) 17
(C) 71
(D) 61
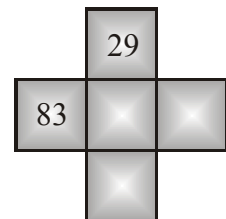
Q.2 Place the digits 1 to 9 on the number star so that the three digits on each of the lines add up to :

(A) 12   (B) 13