CONCEPT APPLICATION LEVEL - II

SECTION - A

- **FILL IN THE BLANKS**

Q.1   Square numbers can only have _____ number of zeros at the end.

Q.2   Numbers obtained when a number is multiplied by itself three times are known as _____.

Q.3   The number of zeroes at the end of the square of a number is _____ the number of zeroes at the end of the number.

Q.4   The smallest number by which 81 should be divided to make it a perfect cube is _____.

Q.5   If a number ends in two 9's then its cube ends in _____ number of 9's.

Q.6   The square root of a 4-digit or a 3 digit number is a _____ digit number.

Q.7   A number n is a perfect cube only if there is an integer m such that _____.

Q.8   Square of a _____ number between 0 and 1 is _____ than the number itself.

Q.9   If 'a' is a square root of 'b' then 'b' is _____ of 'a'.

Q.10   A number whose square root it exact is called a _____.

Q.11   Square root of 0.01 is _____

Q.12   When a 'n' digit number is squared, then the number of digits in the square thus obtained is _____.

Q.13   If $7^2 = 49$ and $0.7^2 = 0.49$, then $0.007^2 =$ _____.

Q.14   The square of a proper fraction is always _____ than itself.

SECTION - B

- **MULTIPLE CHOICE QUESTIONS**

Q.1   The smallest number by which 136 must be multiplied so that it becomes a perfect square is
(A) 2   (B) 17   (C) 34   (D) None of these

Q.2   The product of two numbers is 1936. If one number is 4 times the other, the numbers are
(A) 16, 121   (B) 22, 88   (C) 44, 44   (D) None of these

Q.3   The least square number exactly divisible by 4, 6, 10, 15 is
(A) 400   (B) 100   (C) 25   (D) 900

Q.4   The value of $\sqrt{388 + \sqrt{127 + \sqrt{289}}}$ is
(A) 17   (B) 12   (C) 20   (D) None of these

Q.5   A gardener arranges plants in rows to form a square. He finds that in doing so 15 plants are left out. If the total number of plants are 3984, the number of plants in each row are
(A) 62   (B) 63   (C) 64   (D) None of these

Q.6 If a is a natural number then $a^2 + \dfrac{1}{a^2}$ is always greater than or equal to

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

Q.7 If $\sqrt{0.04 \times 0.4 \times a} = 0.4 \times 0.04 \times \sqrt{b}$, then value of $\dfrac{b}{a}$ is

(A) 0.016 (B) $\dfrac{125}{2}$ (C) 0.16 (D) None of these

Q.8 The hypotenuse of an isosceles right angled triangular field has a length of $30\sqrt{2}$ m, then length of other side is

(A) $30\sqrt{2}$ m (B) 30 m (C) 25 m (D) None of these

Q.9 The sides of a triangle are denoted by x, y and z. Area of the triangle and semi perimeter of the triangle are denoted by P and q respectively. If $P = \sqrt{q(q-x)(q-y)(q-z)}$ and $x + y - z = y + z - x = z + x - y = 4$. Find P (in square units).

(A) $2\sqrt{3}$ (B) $3\sqrt{3}$ (C) $4\sqrt{3}$ (D) $6\sqrt{3}$

Q.10 Find the square root of $\dfrac{81b^2a^4}{36x^2y^6}$.

(A) $\dfrac{3ba^2}{2xy^3}$ (B) $\dfrac{3b^2a}{2x^2y}$ (C) $\dfrac{3ba}{2x^3y}$ (D) $\dfrac{3ba}{2xy^2}$

Q.11 Which of the following can be a perfect square?
(A) A number ending in 3 or 7 (B) A number ending with odd number of zeros
(C) A number ending with even number of zeros (D) A number ending in 2.

Q.12 Which of the following can be the square of a natural number 'n'?
(A) sum of the squares of first n natural numbers (B) sum of the first n natural numbers
(C) sum of first (n − 1) natural numbers (D) sum of first 'n' odd natural numbers

Q.13 Which of the following is the number of non-perfect square number' between the squares of the numbers n and n + 1?
(A) n + 1 (B) n (C) 2n (D) 2n + 1

Q.14 Which of the following is the difference between the squares of two consecutive natural numbers is
(A) sum of the two numbers (B) difference of the numbers
(C) twice the sum of the two numbers (D) twice the sum of the two numbers

Q.15 Which of the following is the number of non-perfect square number between 17^2 and 18^2?
(A) 613   (B) 35   (C) 34   (D) 70

Q.16 Which of the following is the difference between the squares of 21 and 22?
(A) 21   (B) 22   (C) 42   (D) 43

Q.17 Which of the following is the number of zeros in the square of 900?
(A) 3   (B) 4   (C) 5   (D) 2

Q.18 If a number of n-digits is a perfect square and 'n' is an even number, then which of the following is the number of digits of its square root?

(A) $\dfrac{n-1}{2}$ (B) $\dfrac{n}{2}$ (C) $\dfrac{n+1}{2}$ (D) 2n

Q.19 If a number of n-digit is perfect square and 'n' is an odd number then which of the following is the number of digits of its square root?

(A) $\dfrac{n-1}{2}$ (B) $\dfrac{n}{2}$ (C) $\dfrac{n+1}{2}$ (D) 2n

Q.20 Which of the following is a pythagorean-triplet?
(A) n, $(n^2 - 1)$ and $(n^2 + 1)$ (B) $(n - 1)$, $(n^2 - 1)$ and $(n^2 + 1)$
(C) $(n + 1)$, $(n^2 - 1)$ and $(n^2 + 1)$ (D) 2n, $(n^2 - 1)$ and $(n^2 + 1)$

Q.21 The greatest four digit number which is also a perfect square is
(A) 9701   (B) 9801   (C) 9901   (D) None of these

Q.22 The greatest perfect square of a natural number smaller than $(51)^2$ is
(A) 50   (B) 2500   (C) 3600   (D) 2551

Q.23 $\sqrt{176 + \sqrt{2401}}$ is equal to
(A) 12   (B) 13   (C) 14   (D) 15

Q.24 If $\dfrac{1872}{\sqrt{x}} = 234$, then x is equal to
(A) 8   (B) 64   (C) 256   (D) 4

Q.25 If $140\sqrt{x} + 315 = 1015$, then x is equal to
(A) 15   (B) 225   (C) 5   (D) 25

Q.26 $\dfrac{\sqrt{25} + \sqrt{121}}{\sqrt{256}}$ is equal to
(A) 2   (B) 1   (C) 3   (D) 4

Q.27 $\sqrt{110\dfrac{1}{4}}$ is equal to

(A) 10.25 (B) 10.5 (C) 10.45 (D) 10.75

Q.28 $\dfrac{(0.9)^2 + (0.1)^2 + 2\times(0.9)(0.1)}{(0.8)^3 + (0.2)^3 + 3\times(0.8)^2(0.2) + 3\times(0.8)(0.2)^3}$ is equal to

(A) $\dfrac{9}{8}$ (B) 1 (C) 2 (D) $\dfrac{91}{82}$

Q.29 If $\sqrt{24} = 4.899$, then the value of $\sqrt{\dfrac{8}{3}}$ is

(A) 2.633 (B) 1.633 (C) 1.666 (D) 2.666

Q.30 The least square number which is exactly divisible by 10, 12, 15 and 18 is
(A) 3600 (B) 900 (C) 1600 (D) 2500

Q.31 If $x * y * z = \sqrt{\dfrac{(x+2)(y+3)}{(z+1)}}$, then the value of $7 * 6 * 8 *$ is

(A) 2 (B) 9 (C) 3 (D) 4

Q.32 The value of $(0.9)^2 - (0.1)^2$ is
(A) 1 (B) 0.8 (C) 0.64 (D) 10.16

Q.33 A general wishes to arrange his 36581 soldiers in the form of a square. After arranging them he found that some of them are left over. The number of soldiers left over is
(A) 81 (B) 100 (C) 121 (D) 144

Q.34 A man plants 15129 apple trees in his garden and arrange them so that there are as many rows as there are apple trees in each row , then the number of rows is
(A) 124 (B) 125 (C) 122 (D) 123

Q.35 If $\dfrac{\sqrt{1296}}{x} = \dfrac{x}{2.25}$, then x is equal to
(A) 7 (B) 8 (C) 9 (D) None of these

Q.36 The product of two numbers is 1575 and their quotient is $\dfrac{9}{7}$. Find the numbers.

(A) 21, 75 (B) 35, 45 (C) 63, 25 (D) 105, 15

Q.37 Find the smallest square number divisible by each one of the numbers 8, 9 and 10.
(A) 360 (B) 720 (C) 3600 (D) 2500

Q.38   Find the least number which must be subtracted from 182565 to make it a perfect square
       (A) 236   (B) 40   (C) 265   (D) 65

Q.39   Find the least number which must be added to 306452 to make it a perfect square.
       (A) 460   (B) 462   (C) 464   (D) 468

Q.40   Find the greatest number of six digits which is a perfect square.
       (A) 999999   (B) 100000   (C) 998001   (D) 998000

Q.41   Find the value of $\sqrt{99} \times \sqrt{396}$
       (A) 196   (B) 197   (C) 198   (D) 199

Q.42   Find the value of $\sqrt{147} \times \sqrt{243}$
       (A) 189   (B) 181   (C) 180   (D) 294

Q.43   Find the square root of 0.00008281.
       (A) 0.0091   (B) 0.0092   (C) 0.0093   (D) 0.0094

Q.44   Find the value of $\sqrt{15625}$ and the use it to find the value of $\sqrt{156.25} + \sqrt{1.5625}$.
       (A) 13.25   (B) 13.35   (C) 13.65   (D) 13.75

Q.45   Find the square root of 2 correct to three places of decimal.
       (A) 1.401   (B) 1.141   (C) 1.414   (D) 1.410

Q.46   7396 students are sitting in an auditorium in such a manner that there are as many students in a row as
       there are rows in the auditorium. How many rows are there in the auditorium?
       (A) 96   (B) 86   (C) 87   (D) 98

SECTION - C

- **MATCH THE COLUMN**
Q.1   **Statements (A, B, C, D) in column I have to be matched with statements (p, q, r, s) in column II.**
       Column I   **Column II**
       (A)   Value of $1 - (0.5)^2$ is   (p)   33.30

       (B)   If $\sqrt{6.4} = 2.53$ then value of $\sqrt{640} + \sqrt{64}$ (q)   0.029

       (C)   Value of $\sqrt{2980}$ correct to two decimal place is   (r)   54.59

       (D)   Given $\sqrt{8.5} = 2.915$ and $\sqrt{85} = 9.320$. Value of   (s)   0.75

              $\sqrt{0.00085}$ is

Q.2   **Statements (A, B, C, D) in column I have to be matched with statements (p, q, r, s) in column II.**

Column I   **Column II**

(A)   If $\sqrt{(75.24 + x)} = 8.71$ then the value of x is   (p)   324

(B)   If $\sqrt{0.04 \times 0.4 \times a} = 0.4 \times 0.04 \times \sqrt{b}$ then the value   (q)   64

     of $\dfrac{a}{b}$ is

(C)   If $\sqrt{256} \div \sqrt{x} = 2$ then the value of x is   (r)   0.016

(D)   If $\sqrt{\dfrac{x}{169}} = \dfrac{54}{39}$ then the value of x is   (s)   0.6241

Q.3   **Match the column**

Column I   **Column II**

(A)   There are '2n' non-perfect square numbers   (p) $\dfrac{n+1}{2}$

     between the square of the number _____

(B)   For any natural number greater than 1, _____   (q) $\dfrac{n}{2}$

     are called a Pythagoren Triplet

(C)   If n is an even number of digits of a square   (r)   n and n + 1
     number then the number of digits in its
     square root are _____

(D)   If n is an odd number of digits of a square-   (s) $2n, (n^2 - 1)$ and $(n^2 + 1)$
     number then the number of digits in its
     square-root are _____