

Section - B

(Short Answers)

Note: Answer any TEN of the following questions. Each question carries 05 marks.

Q.2 If $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 6, 8\}$, show that $A \Delta B = (A - B) \cup (B - A)$.

Q.3 If $a = \sqrt[3]{\sqrt{a^3 + 3}}$ find the value of $a + \frac{1}{a}$, $a - \frac{1}{a}$ and $a^2 - \frac{1}{a^2}$.

Q.4 Simplify:

(i) $\left(\frac{18x^4y^3z^2}{6ab^2c^5}\right)^3$

(ii) $\left(\frac{3a^3b^2c^6}{xyz}\right)^{-5}$

Q.5 The measure of a diameter of the moon is 3500 km. After converting it into centimeters, write it in scientific notation.

Q.6 Find the value of y :

(i) $\log_{\sqrt{5}} 25 = y$

(ii) $\log_{55} 55 = y$

Q.7 Find the H.C.F of the following polynomial by factor method.

$9x^2 + 63x + 108$, $9x^2 - 45x - 216$ and $18x^2 + 45x - 27$

Q.8 If $a + \frac{1}{a} = 2$ prove that $a^2 + \frac{1}{a^2} = a^4 + \frac{1}{a^4} = a^3 + \frac{1}{a^3}$.

Q.9 Solve if possible by using Cramer's rule:

$x + 2y = 6$, $2x + 7y = 3$

Q.10 A mother is 21 years older than her new born baby, How old will the baby be when her age is $\frac{1}{4}$ that her mother.

Q.11 Resolve into factors: $a^4(b^2 - c^2) + b^4(c^2 - a^2) + c^4(a^2 - b^2)$.

Q.12 Define median. How do we calculate median for grouped data?

Q.13 What number must be added to each term of the ratio 5 : 27 to make it equal to 1 : 3.

Q.14 Find the solution set of the equation: $\sqrt{12x - 4} = \sqrt{4x + 8}$, and also verify the answer.

Q.15 Find the number of digits in (i) 3^{19} (ii) 9^{48}

Section - C

(Descriptive)

Note: Answer any TWO of the following questions. Each question carries 15 marks.

Q.16 (a) The product of two expressions is $12x^4 - 34x^3 + 37x^2 - 17x + 5$, if one expression is $3x^2 - 7x + 5$, find the other.

(b) Factorize: $36x^2 + 154x - 36$

Q.17 (a) Using the appropriate formula, find the values:

(i) (1104×1104)

(ii) $(98)^2$

(b) Following are the daily earnings (in Rs) of ten workers:

188, 170, 172, 125, 115, 195, 181, 190, 195, 190

Calculate: (i) Arithmetic Mean

(ii) Median

(iii) Mode

Q.18 (a) Ali standing in a stream finds that the measures of the angles of elevation of two trees, of heights 6 m and 8 m, on opposite banks in the line with him are of 30° and 45° , respectively. Find the width of the stream.

(b) Define any TWO of the following terms and illustrate with figure.

(i) Tangent to a circle

(ii) Supplement Postulate

(iii) Interior and exterior of triangle.