

(b) Express $2\log 3 - \frac{1}{2}\log 16 + \log 12$, as a single logarithm. [3]

(c) Draw parallelogram ABCD with AB = 6 cm, AD = 5 cm and $\angle DAB = 45^\circ$. [4]

Join diagonals AC and BD. Let them intersect at O.

Q. 3.

(a) Evaluate: $\left(\frac{8}{27}\right)^{\frac{2}{3}} - \left(\frac{1}{3}\right)^{-2} - (7)^0$ [3]

(b) Find the value of 'a' and 'b' if $(2a + b, a - 2b) = (7, 6)$ [3]

(c) Show that a quadrilateral with vertices $(0, 0)$, $(5, 0)$, $(8, 4)$ and $(3, 4)$ is a rhombus. Also find its area. [4]

Q. 4.

(a) Using Pythagoras theorem, prove that the area of an equilateral triangle of side 'a' is $\frac{\sqrt{3}}{4} \times a^2$. [3]

(b) The difference between the exterior angle of a regular polygon of n sides and a regular polygon of $(n + 2)$ sides is 6. Find the number of sides. [4]

(c) Evaluate $\frac{4}{\tan^2 60^\circ} - \frac{1}{\cos^2 30^\circ} - \tan^2 45^\circ$ [3]

SECTION - B (40 Marks)

(Answer any four questions from this Section)

Q. 5.

(a) Graphically solve the following equations: [4]

$3x - 5y + 1 = 0$; $2x - y + 3 = 0$ [Use 1 cm = 1 unit on both the axes]

(b) A man starts his job with a certain monthly salary and earns a fixed increment every year. If his salary was Rs. 1500 after 4 years of service and Rs. 1800 after 10 years of his service, what was his starting salary and what is the annual increment? [3]

(c) If $x = \frac{1}{\sqrt{2}-1}$, then prove that $x^2 - 6 + \frac{1}{x^2} = 0$ [3]

