

GREENLAWNS SCHOOL, WORLI
TERMINAL EXAMINATION
MATHEMATICS

STD: IX
DATE: 01/10/19

MARKS: 80
TIME: 2½ hrs

Answers to this Paper must be written on the paper provided separately. You will not be allowed to write during the first **15 minutes**. This time is to be spent in reading the question paper. The time given at the head of this Paper is the time allowed for writing the answers. Attempt all questions from Section A and any four questions from **Section B**. All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer. Omission of essential working will result in loss of marks.

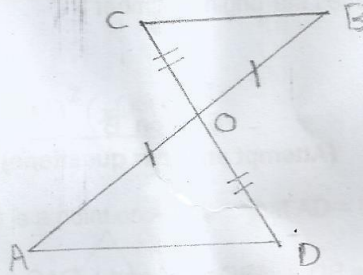
The intended marks for questions or parts of questions are given in brackets [].

Section A

(Attempt all questions of this section)

Question 1

- a. $\frac{7+3\sqrt{5}}{3+\sqrt{5}} - \frac{7-3\sqrt{5}}{3-\sqrt{5}} = p+q\sqrt{5}$, find the value of p and q, where P and q are rational numbers. [3]
- b. Find amount on Rs 16000 for 2 years at 15% interest being compounded annually. [3]
- c. In the adjoining figure OA = OB and OD = OC show that
- $\Delta AOD = \Delta BOC$
 - AD // CB

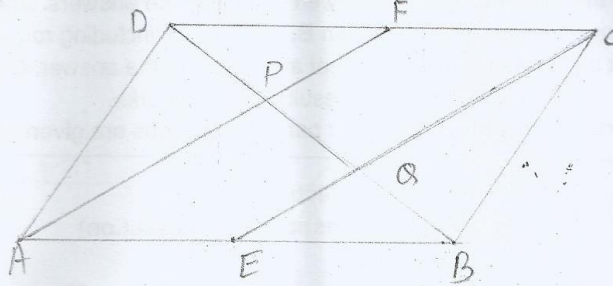


Question 2

- a. At what rate percent per annum compound interest will Rs 5000 amount to Rs 5832 in 2 years. [3]
- b. Factorize: $x^2y^2 - xy - 72$ [3]
- c. Construct a regular hexagon of side of 3.5 cm and draw a circumcircle on it. [4]

Question 3

- a. If $2x - 3y + 5 = 0$, then find the value of $8x^3 - 27y^3 - 90xy + 125$. [3]
- b. The present population of a village is 5408. If it is increased at the rate of 4% every year, what was its population two years ago? [3]
- c. In the adjoining figure ABCD is a parallelogram and E and F are the midpoint of the sides AB and CD respectively. Show that the line segment AF and EC trisect the diagonal BD. [4]



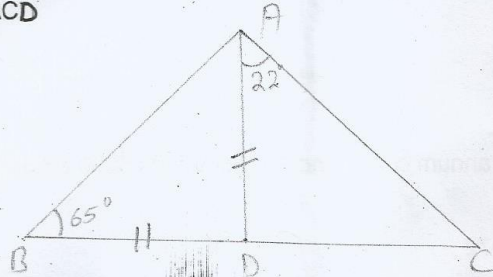
Question 4

- a. Solve: $x + y = 5.5$ and $x - y = 0.9$. [3]
- b. $2\log + \log 5 - \frac{1}{2}\log 36 - \log \frac{1}{30}$. [3]
- c. The sum of the digit of a two digit numbers is 7. If the digits are reversed, the new number increased by 3 equals 4 times the original number [4]

Section B
(Attempt any four questions)

Question 5

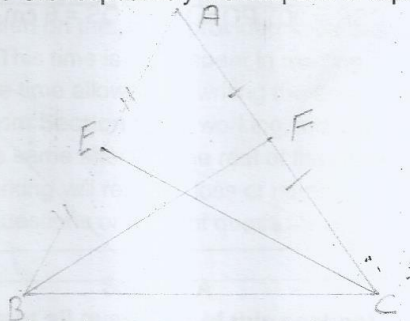
- a. In the adjoining figure $AD = BD$, $\angle ABC = 65^\circ$ and $\angle DAC = 22^\circ$
i. Find $\angle ACD$ [3]



- b. If $\log(x + 1) + \log(x - 1) = \log 11 + 2\log 3$ find x [3]
- c. solve graphically the equation $4x - 3y = 0$ and $2x + 3y - 18 = 0$ [4]

Question 6

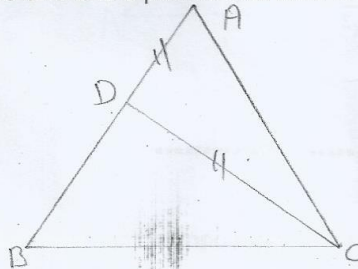
- a. The points A (2, a), B (a, 5) and C (5, 5) are the vertices of a ΔABC right angled at B. Find the value(s) of 'a'. [3]
- b. In the adjoining figure, E and F are respectively the midpoint of equal sides AB and AC of ΔABC , show that $BF = CE$. [3]



- c. The marks out of 100 of 50 students in a test are given below.
 5, 35, 6, 35, 18, 36, 12, 36, 85, 32, 20, 36, 22, 38, 24, 50, 22, 39, 74, 31, 25, 54, 25, 64, 25, 70, 28, 66, 58, 25, 29, 72, 31, 82, 31, 84, 31, 82, 37, 21, 32, 84, 32, 92, 35, 95, 34, 92, 35, 5
- i) Taking a class interval of 0 - 10, 10 - 20, - - - - - construct frequency as well as cumulative frequency table for given data
- ii) Find how many students score is less than 40. [4]

Question 7

- a. Simplify : $\frac{(x^{(a+b)})^2 (x^{(b+c)})^2 (x^{(c+a)})^2}{(x^a x^b x^c)^4}$ [3]
- b. In ΔABC , $AB = AC$ and D is a point on AB such that $AD = DC = BC$, Show that $\angle BAC = 36^\circ$. [3]

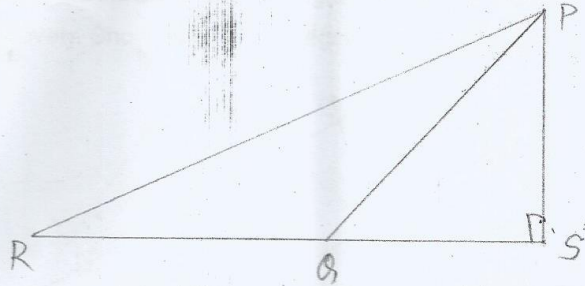


- c. Draw the histogram for the following frequency distribution [4]

Marks obtained.	Below 15	Below 30	Below 45	Below 60	Below 75	Below 90
No of students.	15	27	54	72	81	87

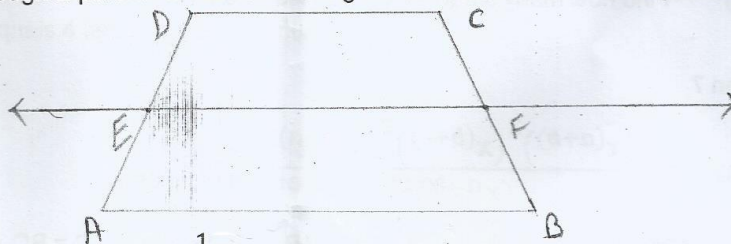
Question 8

- a. Find the area and perimeter of a square whose diagonal is 10 cm long [3]
 b. Factorize: $(x^2 - y^2)z + (y^2 - z^2)x$ [3]
 c. In the given figure $\angle PSR = 90^\circ$, $PQ = 10$ cm $QS = 6$ cm and $RQ = 9$ cm calculate the length of PR . [4]



Question 9

- a. Rational the denominator of $\frac{1}{\sqrt{3} - \sqrt{2} + 1}$ [3]
 b. In the adjoining figure, ABCD is trapezium in which $AB \parallel DC$ and E is the midpoint of AD. A line is drawn through E parallel to AB intersecting BC at F. Show that F is midpoint of BC. [3]



- c. $x = 2 - \sqrt{3}$ then find value of $x^3 - \frac{1}{x^3}$. [4]
