

Mar Thoma Residential School, Tiruvalla

Second Terminal Examination - 2018-19 Time : 2½ hr

Std IX

Mathematics

M.M : 80

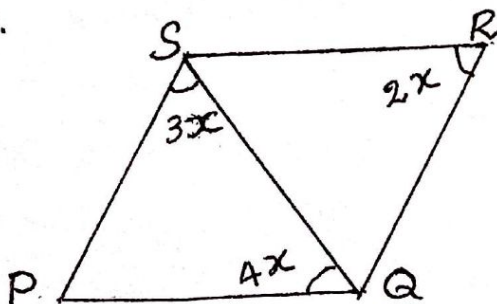
Section A (Answer all questions)

- I. a) Evaluate $3 \cos 80^\circ \operatorname{cosec} 10^\circ + 2 \cos 59^\circ \operatorname{cosec} 31^\circ$. [3]
 b) Calculate the distance between A (5, -3) and B on the Y-axis whose ordinate is 9. [3]
 c) Find (i) Mean and (ii) Median for the following observations 10, 47, 3, 9, 17, 27, 4, 48, 12, 15. [4]
- II. a) Each interior angle of a regular polygon is 135° . Find (i) the measure of each exterior angle. (ii) the number of sides of the polygon. (iii) name the polygon. [3]
 b) Evaluate $3 \log 2 - \frac{1}{3} \log 27 + \log 12 - \log 4 + 3 \log 5$ [3]
 c) Construct a frequency polygon for the following frequency distribution, using a graph sheet. [4]

Marks	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100
No. of Students	7	18	26	37	20	6

- III. a) X, Y, Z are the midpoints of the sides PQ, QR and RP respectively of ΔPQR . (i) If $PQ = 6.4$ cm, find YZ (ii) If $XZ = 2.7$, find QR. [3]
 b) Evaluate; $\sin 60^\circ \cos 45^\circ - \cos 60^\circ \sin 45^\circ$. [3]
 c) Show that the points (1,4), (5,4) and (5,5) form a right angled triangle. [4]

IV. a)



From the figure, find the four angles, P, Q, R and S of the parallelogram P Q R S. [3]

- b) Solve for x ; $\log (x - 1) + \log (x + 1) = \log_2 1$. [3]
 c) Construct a regular hexagon of side 3 cm. [4]

Section B (Answer any 4 questions)

- V. a) P, Q, R are the midpoints of the sides AB, BC and CA of an isosceles ΔABC in which $AB = BC$. Prove that ΔPQR is also isosceles. [3]
 b) AB is a diameter of a circle with centre C (-2, 5). If A (3, -7), find, the length of radius AC. [3]

c) If $\sin A = \frac{5}{13}$, evaluate $\frac{5 \sin A - 2 \cos A}{\tan A}$

VI a) Construct a parallelogram ABCD in which $AB = 6.4$ cm, $AD = 5.2$ cm and the perpendicular distance between AB and DC is 4 cm. [4]

b) Find the values of

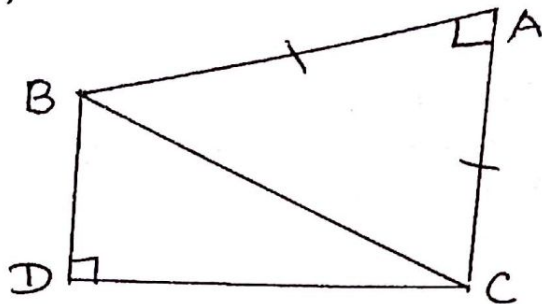
(i) $\log_2 0.125$ [5]

(ii) $\sin^2 30 + \tan^2 45 + \cos^2 60$ [2]

[3]

VII a) Solve graphically the following system of linear equations (Use graph sheet) $x - 3y = 3$; $2x + 3y = 6$. Also, find the area of the triangle formed by these two lines and the Y-axis. [6]

b)



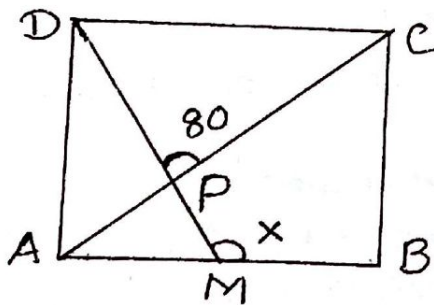
In the given figure, $AB = AC$, $\angle A = \angle D = 90^\circ$, $BD = 18$ cm and $DC = 24$ cm. Calculate the length of AB correct to two places of decimal. Also, find the perimeter of quadrilateral ABDC. [4]

VIII a) Show that $\tan 48^\circ \tan 23^\circ \tan 42^\circ \tan 67^\circ = 1$. [5]

b) The median of the following observations, arranged in ascending order is 22. Find x. 8, 11, 13, 15, x+1, x+3, 30, 35, 40, 43. [3]

c) The angles of a pentagon are $3x+4$, $x+20$, $3x-5$, $2x+10$ and $4x-9$. Find x and the value of each angle. [4]

IX a)

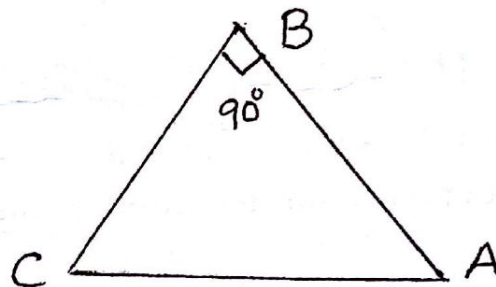


ABCD is a square, $\angle DPC = 80^\circ$
Find the value of x. [3]

b) From the given figure, find:-

(i) $\sin A$ (ii) $\cos C$

(iii) $\tan A$



[3]

c) The marks of 25 students in a subject are given below:

45, 48, 23, 35, 30, 15, 11, 40, 0, 29, 48, 12, 3, 50, 30, 18, 11, 30, 15, 42, 23, 45, 2, 3, 43. The maximum mark is 50. Make a frequency distribution table. [4]