

29-01

**MAR THOMA RESIDENTIAL SCHOOL TIRUVALLA**

**FIRST TERMINAL EXAMINATION 2019-20**

**CLASS:9**

**MATHEMATICS**

**MAXMARK:80**

**Attempt any eight questions**

**TIME:2½h**

**QUESTION-1**

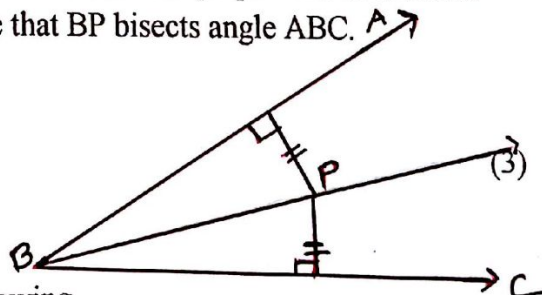
- a) If  $x \neq 0$  and  $3x + \frac{1}{3x} = 6$ , find the value of  $27x^3 + \frac{1}{27x^3}$ . (3)
- b) Using proper steps write the following in ascending order  $2\sqrt[3]{5}$  and  $3\sqrt[3]{2}$ . (3)
- c) Out of 65 datas the mean of 35 datas is 42 and the mean of remaining numbers is 36; find the mean of all the 65 datas. (4)

**QUESTION-2**

- a) The mean weight of 35 students of a class is 55 Kg. Two students of weight 58Kg and 52 Kg left the school. Find the mean weight of remaining students. (3)
- b) Factorise:  $p^6 - 7p^3 - 8$ . (3)
- c) Rohit went to bank to withdraw Rs 4000. He asked the cashier to give Rs 50 and Rs 100 notes only. Rohit got 50 notes in all. Find how many notes of Rs 50 and Rs100 he received. (4)

**QUESTION-3**

- a) In the figure P is any point in the angle ABC such that perpendicular's drawn from P on AB and BC are equal. Prove that BP bisects angle ABC.



- b) Find the value of 'a' and 'b' in the following  
$$\frac{\sqrt{7}-2}{\sqrt{7}+2} = a\sqrt{7} + b.$$
 (3)
- c) Ramesh borrows Rs 40,000 at 12 percent compound interest. If he repays 16,800 at the end of 1<sup>st</sup> year and 19,360 at the end of 2<sup>nd</sup> year, find the amount of loan outstanding at the beginning of the third year. (4)

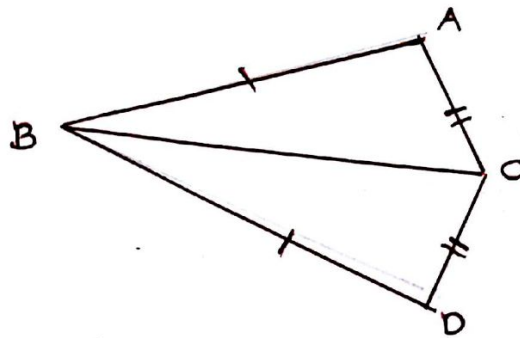
**QUESTION-4**

- a) Find the mean and median of the data 48,92,64, 76,52,51,63,71,and 35. If 52 is replaced by 66; what will be the new median? (3)

- b) Solve the following linear equations  $2x+2y-3=0$  and  $x+2y+1=0$ . (3)
- c) Evaluate  $\frac{3-\sqrt{5}}{3+\sqrt{5}} + \frac{3+\sqrt{5}}{3-\sqrt{5}}$ . (4)

**QUESTION-5**

- a. The mean of 48 observations is 34. Later on it was discovered that two items were misread as 32 and 79 instead of 82 and 19. Find the correct mean? (3)
- b. Calculate the amount if Rs 20,000 is lend at compound interest for 2 years and the rate for the successive years are 8% per annum and 10% per annum respectively. (3)
- c. In the figure  $AB= DB$  and  $AC= DC$ . If  $\angle ABD=58^\circ$ ,  $\angle DBC=(2x-4)^\circ$ ,  $\angle ACB=(y+15)^\circ$   $\angle DCB= 63^\circ$  find the values of  $x$  and  $y$ . (4)



**QUESTION-6**

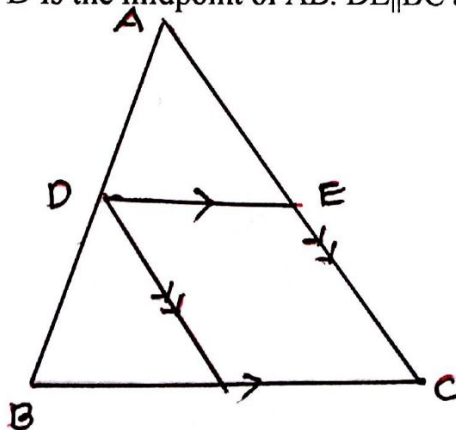
- a. If  $a^2-5a+1=0$  and  $a \neq 0$  find (i)  $a + \frac{1}{a}$  (ii)  $a^2 + \frac{1}{a^2}$  (iii)  $a^2 - \frac{1}{a^2}$  (3)
- b. Factorise  $(2x-3y)^2 + 3(2x-3y) - 10$ . (3)
- c. Find the mean of the following data: (3)
- 33,25,35,27,29,31,31,36,34,26
- (i) Show that the sum of the deviations of all the given observations from the mean is zero. (4)

**QUESTION-7**

- a. Factorise  $9a^2 + 3a - 8b - 64b^2$ . (3)
- b. Construct a frequency distribution table from the following cumulative frequency distribution

Class interval	5-10	10-15	15-20	20-25	25-30
Cumulative frequency	18	30	46	73	90

- c. In the given figure, D is the midpoint of AB.  $DE \parallel BC$  and  $DF \parallel AC$ . Prove that  $DE=BF$  (4)



### QUESTION-8

- a. What sum of money will amount to Rs 3630 in 2 years at 10% per annum compound interest. (3)
- b. Using property evaluate  $39^3 + (-27)^3 + (-12)^3$ . (3)
- c. If the numerator of a fraction is decreased by 1 its value becomes  $\frac{2}{3}$ , but if the denominator is increased by 5 its value becomes  $\frac{1}{2}$ . What is the fraction. (4)

### QUESTION-9

- a. If  $a - b - c = 3$  and  $a^2 + b^2 + c^2 = 77$  find  $ab - bc + ca$ . (3)
- b. Expand  $(5x - 3y + 2)(5x + 3y + 2)$ . (3)
- c. Construct a combined histogram and frequency polygon for the following distribution (4)

Class interval	11-20	21-30	31-40	41-50	51-60
frequency	3	7	4	6	2

(4)