



# JAFFNA HINDU COLLEGE

## First Term Examination - 2019

Grade - 09

Mathematics

Time : 2.30 Hours

### Part I

(Write your answers in this questions paper)

- 1) Write the next two terms of the number pattern 5, 9, 13, .....
- 2) Express 45 as binary number.
- 3) Simplify :  $6\frac{1}{3} - 2\frac{1}{2}$
- 4) A vender sell a product with 15% profit and he got the profit Rs. 600, So find the product cost.
- 5) Expand and simplify :  
 $3(x - 2y) + 2x + 5y$
- 6) Find the sublimentary angle of  $(x + 10)^\circ$
- 7) Length, width, height of a container is 10cm, 5 cm, 3 cm respectively, So find the volume of the container.

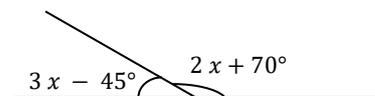
8) Factorize :  $a^2b - b^2a$

9) Simplify :  $2\frac{3}{5} + \frac{3}{5} \times \frac{2}{3}$

10) Write down the numbers which are use in **base five**.

11) The mark price of a item is Rs. 60, 000, then 8% discount give for sale from it, So find the selling price.

12) Find the angle  $x$  from the diagram.

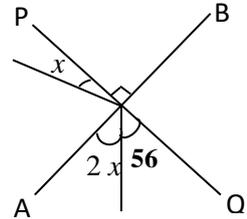


13) Find the 12<sup>th</sup> term of a number patten. Which general term if  $11 - 3n$ .

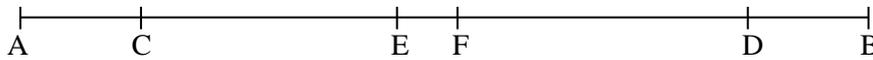
14) Find the value of  $a^4$  if  $a = -3$ .

15) Express in  $l$ ,  $0.08 m^3$ .

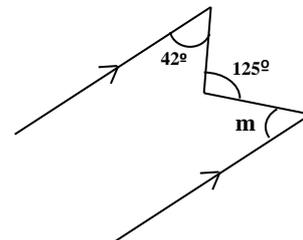
16) Find the value of angle  $x$ . (AB, PQ are straight lines)



17) In the straight line AB,  $AF = BE$ ,  $CE = DF$  then show that  $AC = BD$ .



18) Find the angle  $m$  in the figure.



19) Expand and simplify :

$$(3 - x)(4 + x)$$

20) Find the value of following by using knowledge of factorization.

$$105^2 - 5^2$$

(20 x 2 = 40 Marks)

## Part II

- ❖ Write your answers in this questions paper
- ❖ Write the answer to 5 question out of 6.

1) A pattern created by using matchsticks is shown as below. Answer the following questions by using these figures.



Fig (1)

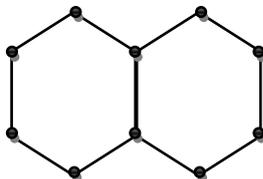


Fig (2)

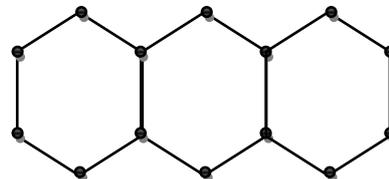


Fig (3)

i. Fill in the table.

Figure	Number of match sticks.
<i>1</i>	
<i>2</i>	
<i>3</i>	

ii. Find the number of match stricks, which are use to create  $n^{\text{th}}$  figure.

iii. Create an expression to number of match stricks needed to create  $(n - 1)^{\text{th}}$  figure.

iv. Find the number of matchsticks to create  $12^{\text{th}}$  figure.

v. Mathan says “71 match stricks enough to create figure (15).” Is it correct? Give the reason?

[3+2+2+2+3=12]

2) 1. Expand and simplify :  
 $3(x - 2y + 1) - 2(x - 3y)$

2. Length of a rectangle plate is  $(x + 5)$  and breadth is  $(x + 3)$ , then three units reduced from its length and 4 units reduced from its breadth to create a new rectangle plate.

i. Write an expression to length of new rectangle plate.

ii. Write an expression to breadth of new rectangle plate.

iii. Construct an expression to find the **Area of previous rectangle** by using knowledge of factor expand and simplify.

iv. Find the **Area of removed plate** by using part iii, iv.

[3+2+2+2+3=12]

3) 1. Write the answers the following questions by using A 1 O B O <sub>two</sub> as a **binary number**.

i. Write the numbers which are use to B.

ii. What is the place value of A.

iii. Change the above binary number to decimal number if  $A = B = 1$ .

2. Find,

i.  $1001_{\text{two}} + 110_{\text{two}} + 101_{\text{two}}$

ii.  $1011_{\text{two}} + 111_{\text{two}}$

3. Fill in the blank boxes.

$$\begin{array}{r} 101\boxed{\phantom{0}}1_{\text{two}} \\ - \boxed{\phantom{0}}011_{\text{two}} \\ \hline 1\boxed{\phantom{0}}10_{\text{two}} \end{array}$$

[1+1+2+3+2+3=12]

4) a) Rangan travelled by train  $\frac{3}{4}$  of a journey, travelled  $\frac{4}{5}$  of its remaining and travelled the remaining distance after travelled train and bus by walked.

1) Express the balance distance after travelled by train as a fraction of the total distance.

2) Express the distance he travelled by bus as a fraction of total distance.

3) Find the fraction of walked distance as a fraction of total distance.

4) Find the total travelling distance if walked distance is 750 m.

b) Factorize.

1)  $x^2 - 2x - 15$

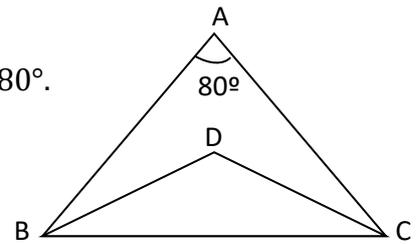
2)  $8x^2y^2 - 50z^2$

[1+2+2+2+2+3=12]

5) a) Consider given diagram and here

$$\widehat{ABD} = \widehat{CBD}, \widehat{ACD} = \widehat{BCD}, \widehat{ABC} = \widehat{ACB}, \widehat{BAC} = 80^\circ.$$

i. Show that  $\widehat{CBD} = \widehat{BCD}$

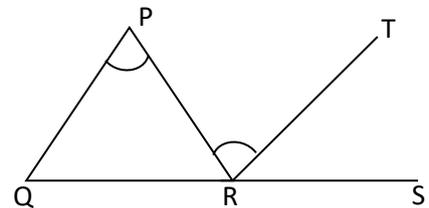


ii. Find the angle of  $\widehat{CBD} + \widehat{BCD}$ .

iii. Find the angle  $\widehat{BDC}$ .

b) In the following diagram  $\widehat{QPR} = \widehat{PRT}$ .

i. Write the relation between straight lines QP and RT, Give the reason.



ii. Write the angle equal to  $\widehat{PQR}$ .

iii. Show that  $\widehat{PRS} = \widehat{PQR} + \widehat{QPR}$ .

[3+2+2+2+1+2=12]

6) a) In a phone shop, mark price of a phone fixed with 20% profit of its buying price. Then give 4% discount from the mark price when the sale of phone.  
i. Find the buying price of phone? If suthan got discount Rs. 960 when buying a phone.

ii. Find the mark price of the phone.

iii. Find the purchasing price of phone, when this phone purchase from product company.

b) Find the value of follows. If  $m = -\frac{1}{5}, n = -3$ .

1)  $25 mn$

2)  $10 m - 3n$

[3+2+3+2+2=12]