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GRADE 12

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meh

Two Hour

**m<uq jk jdr mÍCIKh - 2023**

**First Term Examination - 2023**

ixhqla; .Ks;h

**COMBINED MATHEMATICS**

10

* **Answer four questions only.**

01. a). Express as a rational number **0.1 + 0.**

b). Solve the equation,

***x* -**  **= 5**

c). Solve the simultaneous equations.

***x* + y = 7**

***x*y = 6**

d). Solve the equation,

**– 24 =**

02. a). Find the domain and range of the following functions.

i. ***f* (*x*) = - 2**

ii. ***f* (*x*) =**

iii. **f (x) =**

b). The arrow diagram shows,

part of the mapping **f : x** , **x - *x***

1

0

- 1

6

0

- 12

Find, i. The values of ***a*** and ***b***

ii. The element that has an image of **8** under **f**.

iii. The two values of ***x*** for which ***f (x) = x***

c). The functions **f : *x* *x* – 5** and **g : *x* , *x* 1**

i. ii.  **o (*x*)** iii. **gg (*x*)**

03. a). State the remainder theorem and prove it.

If ***f* *(x)*** is a polynominals of degree two when ***f (x)*** is divided by **(*x* - 1)**, ***x*** and

**(*x* + 1)** the remainders are **O**, **1** and **5** respectively. Find ***f (x)***.

b). Solve the equation,

**- + = 0**

c). Express in partial fractions.

04. a). ABCD is a square of side 14 cm. Find

C

D

A

B

i. The length of the shaded region.

ii. The are of the shaded region.

b). Prove that  **+ =**

c). If **sin =**  and  **< < 2** then find value of **sin 2**

d). Show that Sin5 - Sin 7 + Cos = 0

05. a). The position vectors of three points **A, B** and **C** relative to the origin **O** are  **, 3 -**  and **9 - 5** respectively. Show that **A, B** and **C** lie on the same straight line and state the ratio of **AB : BC**

b). The position vectors of the points **A, B** and **C** relative to origin **O** are

**= 4 - 3 , = 2 + 4** and  **= 22 - 11** respectively.

Find,

i. and

ii. The angle **AC**

iii. The value of the constant  and for which  **+ =**