

**MATHEMATICS**

**21/10/2019**

**8h30 am -11h30am**

**SENIOR FOUR END OF YEAR EXAMINATIONS, 2019**

**SUBJECT: MATHEMATICS**

**COMBINATIONS:**

**PHYSICS-CHEMISTRY-MATHEMATICS (PCM)**

**MATHEMATICS-CHEMISTRY-BIOLOGY (MCB)**

**MATHEMATICS- PHYSICS- COMPUTER SCIENCE (MPC)**

**MATHEMATICS-COMPUTER SCIENCE –ECONOMICS (MCE)**

**MATHEMATICS –PHYSICS- GEOGRAPHY (MPG)**

**MATHEMATICS-ECONOMICS-GEOGRAPHY (MEG)**

|  |
| --- |
|  **/100** **Marks:** |

**DURATION: 3 HOURS**

**INSTRUCTIONS:**

1. Do not open this question paper until you are told to do so.
2. Answer all questions: **100 marks**
3. Use only a **blue** or **black** pen.

**S4 MATHEMATICS END OF YEAR EXAM, 2019**

**ANSWER ALL QUESTIONS (100MARKS)**

1)Solve simultaneously, by elimination method (**5marks)**



2)Calculate the value of sin *θ* in the following triangle. (**3marks)**



3)Solve the quadratic equation (**4marks)**

4)Factorize (**5marks)**

5)the following equations show the model of a given market for a commodity x.



Determine

 a) The equilibrium cost of the commodity for the model below **(4marks)**

 b) The equilibrium quantity of a commodity. **(4marks)**

6) If and 

Find

a) **(3marks)**

b) **(3marks)**

c) **(3marks)**

d) **(3marks)**

7)For the function 

 a) Find the slope function of **(4marks)**

b) Find the slope oftangent to the function  at the point where 

**(2marks)**

8) If 

Find  and interpret its meaning **( 6 marks)**

9)Find the equation of normal to  at the points where 

 **(5marks)**

10)If A and B are two vectors such that 

Find

a) **(3marks)**

b) **( 3marks)**

11)Show that the vectors

 and  are linearly dependent **( 10marks)**

12) Show that matrices A and B are inverse each other such that  and **( 6marks )**

13)Find the equation of straight line passesthrough points  and 

**(4marks)**

14) Given that  is the equation of the circle . Find

a) Its Centre (**3marks)**

b) its radius (**2marks)**

15) The table below shows the marks obtained by S3 Students in a Physics Test out of 100

|  |  |  |  |
| --- | --- | --- | --- |
| 40 | 56 | 40 | 56 |
| 56 | 62 | 51 | 62 |
| 62 | 62 | 62 | 70 |
| 70 | 70 | 75 | 70 |
| 75 | 78 | 75 | 78 |

1. Complete the frequency table below (**8marks**)

|  |  |  |
| --- | --- | --- |
| Marks, | Frequency  |  |
| 40 | 2 |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| 75 | 3 |  |
|  |  |  |
|  |  |  |

1. Calculate the mean marks (**3marks)**
2. What is the modal marks (**2marks)**
3. Find the highest marks (**1mark)**
4. Find the lowest marks (**1mark)**