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|  | **Core mathematics C1(GCE)**  **Practice Paper 1**  (Standard A\*)  Time: 1 hour 30 minutes | |  | |
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| **Materials required for examination** | **Items included with question papers** |
| Mathematical Formulae | Nil |
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| **Instructions to Candidates**  If you need more space to complete your answer to any question, use additional answer sheets.  **Information for Candidates**  Full marks may be obtained for answers to ALL questions.  This paper has ten questions.  **Advice to Candidates**  You must ensure that your answers to parts of questions are clearly labelled.  You must show sufficient working to make your methods clear to the examiner.  Answers without working may gain no credit. | | |  |
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**1.** Find **.**Where is a constant.

**(4)**

**2.** Find the set of value(s) of  for which

(*a*) ,

**(1)**

(*b*) *x*2 + 4*x* + 4 ≥ 0.

**(2)**

**3.**

(*a*) Solve 

**(2)**

(*b*) ***Hence***, solve

**

**(4)**

**4.**

(*a*) Given that, find the exact value of 

**(3)**

(*b*) , Show that this can be written in the form of*.*Where  is

an integer to be found.

**(6)**

**5.**

**** Given that 

(*a*) Find and 

**(3)**

(*b*) Find

**(2)**

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**6.**

(*a*) Given that  and Find the value *k.*

**(4)**

(*b*) Sketch 

*y* **(3)**

(*c*)

-3 0 1 2 *x*

The above diagram shows the graph Sketchclearly showing

the coordinates of the points where the graph cross the axes.

**(4)**

**7. Figure 1**

****

*W*(6,13)

*S*(3,10)

*R*(*p*,*q*) A(10,7)

*O**x*

The points ****(*p*, *q*), ****(3, 10) and ****(6, 13) lies on a straight line and *RS* = *SW,* as shown in Fig. 1.

(*a*) Find the values of *p* and *q.*

**(2)**

(*b*) Show that

**(4)**

(*c*) Find the area of 

**(3)**

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**8.**

(*a*) ***Using***  or  Find the sum of all the integers

between 0 and 50 inclusive.

**(2)**

(*b*) Hence or otherwise find the sum of all the integers

between 0 and 50 that are ***not divisible*** by 4 or 5 or both.

**(6)**

**9.**

(*a*) Given that , find 

**(5)**

(*b*) The curve with equation passes through the point (1, 2). The gradient of the

curve is zero at the point (2, 1). Find the values of *a*, *b* and *c*.

**(6)**

(*c*) Write down the equation of the normal at the point (2, 1).

**(1)**

**10.**

(*a*) The roots of the equation are

 and . Find *a*, *b* and *c* (where *b* is a prime number).

**(5)**

(*b*)

(i) Show that  can be written in the form of 

**(2)**

(ii) ***Hence***, write down the positive root of the equation 

**(1)**

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