***STANDARD FORM***

***Summary:***

***1.*** *Standard form is a way of expressing a number in the form*  *where*  *and* ***n*** *is an integer*

***2. (i)*** *To express a number in standard form, we shift the decimal point until the digit part* ***A*** *is between* ***1*** *and* ***10.*** *This digit* ***A*** *has a decimal point placed after the first digit.*

***(ii)*** *The power part*  *shows how many places to move the decimal point*

***3.*** *The rules of indices apply to calculations in**standard form*

***EXAMPLES:***

***1.*** *Express the following numbers in standard form****:***

***(i) 25000 (ii) 3860 (iii) 568⋅3 (iv) 74⋅8 (v) 3⋅584 (vi) 4000***

***(vii) 0⋅435 (viii) 0⋅000263 (ix) 0⋅007 (x) 0⋅00356 (xi)*** 

***(xii)***  ***(xiii)***  ***(xiv)*** 

***(xv)***  ***(xvi)*** 

***2.*** *By**expressing each of the numbers in standard form, evaluate the following****:***

***(i) 0⋅0004 × 0⋅002 (ii) 0⋅005 × 0⋅00004 (iii) 800000 × 0⋅0005***

***(iv)*** ** ***(v)*** ** ***(vi)*** **

***3.*** *By**expressing each of the numbers in the form*  *where* ***n*** *is even****,*** *evaluate the following****:***

***(i)*** ** ***(ii) 0⋅02 × 0⋅0015 (iii) 1500 × 40000***

***4.*** *By**expressing each of the numbers in the form*  *where* ***n*** *is even****,*** *find**the square root of****:***

***(i) 0⋅25 × 0⋅64 (ii) 0⋅16 × 0⋅09 (iii) 0⋅0036 × 0⋅25 (iv) 0⋅0081 × 0⋅0004***

***5.*** *Without using a calculator, evaluate the following give your answer in standard form****:***

***(i)***  ***(ii)*** 

***(iii)***  ***(iv)*** 

***6.*** *Without using a calculator, evaluate****:*** **

***7.*** *Without using a calculator, evaluate****:*** **

***EER:***

***1.*** *Without using a calculator, evaluate****:*** **

***2.*** *Without using a calculator, evaluate****:*** **

***3.*** *Without using a calculator, evaluate****:*** **

***4.*** *Without using a calculator, evaluate****:*** ***give your answer in the form* *where*  *and* ***n*** *is an integer*

***LOGARITHMS***

***Summary:***

***1.*** *The logarithm of* ***x*** *to the base* ***a*** *is written as*

***2.*** *The following rules apply to logarithm****:***

***(i)***

***(ii)***

***(iii)***

***(iv)***

***(v)***

***(vi)***  *implies that* 

***(vii)***  *implies that* 

***(viii)***  *is sometimes written as* 

***EXAMPLES:***

***1.*** *Without using a calculator simplify:*

***(i)***   ***(ii)***   ***(iii)*** 

***(vi)***  ***(v)***  ***(vi)*** 

***(vii)***  ***(viii)***  ***(vii)*** 

***2.*** *Without using a calculator simplify:*

***(i)*** 

***(ii)*** 

***(iii)*** 

***(iv)*** 

***(v)*** 

***(vi)*** 

***(vii)*** 

***(viii)*** 

***(ix)*** 

***(x)*** 

***(xi)*** 

***(xii)*** 

***(xiii)*** 

***3.*** *Express the following as a single logarithm****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***(iv)*** 

***4.*** *Solve the simultaneous equations*





**5.** *Solve for* ***x*** *in the equations****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***(vi)*** 

***6.*** *Use logarithm tables to write down the logarithm of the following numbers****:***

***(i) 1826 (ii) 25 (iii) 6⋅25 (iv) 37⋅28***

***(v) 0⋅0812 (vi) 0⋅2147 (vii) 0⋅0025 (viii) 0⋅0007***

***7.*** *Use the fact that* *and*  *to find****:***

***(i)***  ***(ii)***  ***(iii)*** 

***(iv)***  ***(v)***  ***(vi)*** 

***(vii)***  ***(viii)***  ***(ix)*** 

***8.*** *Use logarithm tables to write down the logarithm of the following numbers****:***

***(i)***  ***(ii)***  ***(iii)***   ***(iv)*** 

***(v)***  ***(vi)***  ***(vii)***  ***(viii)*** 

***(ix)***  ***(x)***  ***(xi)***  ***(xii)*** 

***9.*** *Use the fact that*  *and* *to*

*find****:***

***(i)***  ***(ii)***  ***(iii)***  ***(iv)*** 

***(v)***  ***(vi)***  ***(vii)***  ***(viii)*** 

***(ix)***  ***(x)***  ***(xi)***  ***(xii)*** 

***(xiii)***  ***(xiv)***  ***(xv)***   ***(xvi)*** 

***10.*** *Use the fact that* *and*  *to find****:***

***(i)***  ***(ii)***  ***(iii)***  ***(iv)*** 

***(v)***  ***(vi)***  ***(vii)***  ***(viii)*** 

***11.*** *Use logarithm tables or a calculator to find the value of* ***x*** *for which****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***(iv)*** 

***(v)*** 

***12.*** *Use the fact that*  *and**to find:*

***(i)*** *hence obtain the value of* *correct to* ***3*** *decimal places.*

***(ii)*** *hence obtain the value of* *correct to* ***3*** *decimal places.*

***13.*** *Given that*  *and*  *find the value of****:***

***(i)***  *hence find the value of* *correct to* ***3*** *decimal places****.***

***(ii)***  *correct to* ***one*** *significant figure.*

***14.*** *Given that* *and*  *without using tables or a*

*calculator, find the value of* ***x*** *for which****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***(vi)*** 

***(v)*** 

***15.*** *Use logarithm tables to evaluate the following:*

***(i)***  ***(ii)***  ***(iii)*** 

***(iv)***   ***(v)***  ***(vi)*** 

***(vii)***   ***(viii)***  ***(ix)*** 

***(ix)***   ***(x)***  ***(xi)*** 

***16.*** *Solve for* ***x*** *in the following equations****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***(iv)*** 

***(v)*** 

***17.*** *Make* ***n*** *the subject in this formula*  *hence find* ***n*** *when*

***r = 20, P = 2000*** *and* ***A = 3456.***

***18 .*** *A sum of* ***Sh. 400,000*** *is invested in a bank that gives* ***15%*** *compound interest*

*per annum. Find how long it will take to accumulate an amount of* ***sh529,000.***

***EER:***

***1.*** *Without using a calculator, simplify:*

***(i)*** 

***(ii)*** 

***(iii)*** 

***(iv)*** 

***(v)*** 

***(vi)*** 

***(vii)*** 

***(viii)*** 

***(ix)*** 

***(x)*** 

***2.*** *Express the following as a single logarithm****:***

***(i)*** 

***(ii)*** 

***(ii)*** 

***3.******(i)*** *Find the prime factors of* ***150.*** *Hence*

***(ii)*** *find*  *given that*  *and*



***4.***  *Solve for* ***x*** *in the equation****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***(iv)*** 

***(v)*** 

***(vi)*** 

***5.*** *Use the substitution*  *to solve for* ***x*** *in the equation****:***



***6.*** *Use the fact that*  *and* ***x = 4*** *to find the value of* 

***7.*** *Given that*  *find the value of* ***x*** *correct to* ***two*** *decimal places*

***8.*** *Make* ***n*** *the subject in this formula*  *hence find* ***n*** *when*

***r = 5, a = 0⋅48*** *and* ***T = 60.***

***9 .*** *A sum of* ***Sh. 400,000*** *is invested in a bank that gives* ***15%*** *compound interest*

*per annum. Find how long it will take to accumulate an amount of* ***sh529,000.***

***10 .*** *A sum of* ***Sh. 200,000*** *is invested in a bank that gives* ***20%*** *compound interest*

*per annum. Find how long it will take to accumulate an amount of* ***sh345,600.***

***11.*** *Givent that* *and**find* 

***12.*** *Use the fact that* *and* *to find* 

***13.*** *Given that*  *and*  *use tables to evaluate*

*correct to* ***three*** *significant figures*

***14.*** *Given that*  *and*  *find* 

***15.*** *Use the fact that*  *to find* 

***16. (i)*** *Show that*

***(ii)*** *Without using tables or a calculator, find* 

***17.*** *Use the fact that* *and*  *to find****:***

***(i)***  ***(ii)***  ***(iii)***  ***(iv)*** 

***(v)***  ***(vi)***  ***(vii)***  ***(viii)*** 

***18.*** *Use the fact that* *and*  *to find* 

***19.*** *Use the fact that*  *to find****:***

***(i)***  ***(ii)***  ***(iii)*** 

***20.*** *Use the fact that*  *to find****:***

***(i)***  ***(ii)*** 

***21.*** *Find* ***x*** *if****:***

***(i)***  ***(ii)*** 

***(iii)***  ***(iv)*** 

***22.*** *Given that* *and*  *without using tables or a*

*calculator, find the value of****:***

***(i)*** 

***(ii)*** 

***(iiii) x*** *if*  

***23.*** *Given that*  *use tables to find the value of* ***x*** *correct to* ***three***

*significant figures*

***24.*** *Use logarithm tables to evaluate the following:*

***(i)***  ***(ii)***  ***(iii)*** 

***(iv)***    ***(v)***  ***(vi)*** 

***(vii)***  ***(viii)***  ***(ix)*** 

***(ix )***   ***(x)***  ***(x)***  ***(xii)*** 

***(xiii)***  ***(xiv )***  ***(xv)*** 

***(xvi)***  ***(xvii)***  ***(xviii)*** 