

NAME _____ INDEX NUMBER _____

SCHOOL _____ DATE _____

EVALUATION OF NUMERIC EXPRESSION

<i>KCSE 1989 – 2012 Form 1 Mathematics</i> <i>Answer all the questions</i>		Working space
1.	1990 Q1 P1 Without using tables evaluate (4 marks) $\sqrt{\frac{29.16}{0.025 \times 4.8}}$	
2.	1990 Q3 P1 Without using tables evaluate (4 marks) $\sqrt{\frac{153 \times 0.18}{0.68 \times 0.32}}$	
3.	1992 Q 1 P1 Without using mathematical tables evaluate (3 marks) $\frac{0.18 \times 4}{\sqrt{3.24 \times 4}}$	Working space

4.	<p>1995 Q 1 P1</p> <p>Without using logarithms tables evaluate (3 marks)</p> $\sqrt{\frac{384.16 \times 0.0625}{96.04}}$	
5.	<p>1996 Q 1 P2</p> <p>Evaluate without using mathematical tables</p> $\sqrt{\frac{0.0625 \times 2.56}{0.25 \times 0.08 \times 0.5}}$	
6.	<p>1997 Q1 P2</p> <p>Evaluate without using mathematical tables</p> $\frac{1.9 \times 0.032}{20 \times 0.0038}$	<p>Working space</p>

7.	<p>1998 Q 1 P1</p> <p>Evaluate without using mathematical tables</p> $1000 \left(\sqrt{\frac{0.0128}{200}} \right)$	
8.	<p>2004 Q 1 P1</p> <p>Without using logarithm tables evaluate</p> $\frac{0.015 + 0.45 \div 1.5}{4.9 \times 0.2 + 0.07}$	
9.	<p>2005 Q 2 P1</p> <p>Express the numbers 1470 and 7056, each as a product of its prime factors</p> <p>Hence evaluate $\frac{1470^2}{\sqrt{7056}}$ Leaving the answer in prime factor form (3 marks)</p>	
10.	<p>2006 Q 1 P1</p> <p>Without using mathematical tables or a calculator evaluate (4 marks)</p> $\frac{3\sqrt{675 \times 135}}{\sqrt{2025}}$	<p>Working space</p>

11.	<p>2007 Q 1 P1 Evaluate without using mathematical tables or a calculator</p> $\frac{0.0084 \times 1.23 \times 3.5}{2.87 \times 0.056}$ <p>Expressing the answer as a fraction in its simplest form (2 marks)</p>	
12.	<p>2009 Q 1 P1 Without using mathematical tables or calculators, evaluate (3 marks)</p> $\frac{\sqrt{5184}}{6 \times 18 \div 9 + (5 - 3)}$	
13.	<p>2012 Q12 P1 Without using mathematical tables or a calculator, solve the equation $2 \log_{10} x - 3 \log_{10} 2 + \log_{10} 32 = 2$ (3 marks)</p>	

EVALUATION OF NUMERICAL EXPRESIONS MARKING SCHEME

NO	SOLUTION	MARKS														
1.	$\sqrt{\frac{2916}{100}} \div \left(\frac{25}{1000} \times \frac{48}{10}\right)$ $\sqrt{\frac{2916}{100}} \times \left(\frac{1000}{25} \times \frac{10}{48}\right)$ $= \sqrt{243}$ $= 15.588$ $= 15.59$ <p style="text-align: right;">1990Q1</p>	4M														
2.	$= \sqrt{\frac{15 \times 0.18}{0.68 \times 0.32}}$ $= \sqrt{153 \times \frac{18}{100} \times \frac{100}{68} \times \frac{100}{32}}$ $= \sqrt{126.5625}$ $= 11.25$ <p style="text-align: right;">1991Q3</p>	4M														
3.	$= \frac{0.72}{1.8 \times 2} = \frac{0.72}{3.6}$ $= 0.2$	3M														
4.	$\frac{19.6 \times 0.25}{9.8}$ $= \frac{4.9}{9.8} = \frac{1}{2}$ $= 0.5$	3M														
5.	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">No</td> <td style="width: 50%; border-bottom: 1px solid black;">Log</td> </tr> <tr> <td>36.15</td> <td>1.5581</td> </tr> <tr> <td style="border-bottom: 1px solid black;">0.02573</td> <td style="border-bottom: 1px solid black;">2.4104</td> </tr> <tr> <td></td> <td>1.9685</td> </tr> <tr> <td style="border-bottom: 1px solid black;">1.938</td> <td style="border-bottom: 1px solid black;">0.2874</td> </tr> <tr> <td></td> <td>1.6811 ÷ 3</td> </tr> <tr> <td></td> <td>(3 ÷ 2.6811) ÷ 3</td> </tr> </table> $7.829 \times 10^1 1.8937$ $= 0.7829 \text{ or } 0.7828$ <p style="text-align: right;">1996Q1</p>	No	Log	36.15	1.5581	0.02573	2.4104		1.9685	1.938	0.2874		1.6811 ÷ 3		(3 ÷ 2.6811) ÷ 3	M1 M1 A1 3marks
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7.	$\frac{100\sqrt{(0.0064)}}{100}$ $1000^{\frac{(0.08)}{10}}$ 1000×0.008 $= 8$ <p style="text-align: right;">1998Q11</p>	A1 2																											
8.	$\frac{0.015 + 0.45 - 1.5}{4.9 \times 0.2 + 0.07}$ $= \frac{0.015 + 0.3 + 0.3}{0.98 + 0.07}$ $= \frac{0.315}{1.05}$ $= 0.3$ <p style="text-align: right;">2004Q1</p>	M1 M1 A1 2 marks																											
9.	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; border-bottom: 1px solid black;">2</td> <td style="width: 20%; border-bottom: 1px solid black;">1470</td> <td style="width: 20%; border-bottom: 1px solid black;">7056</td> </tr> <tr> <td style="border-bottom: 1px solid black;">2</td> <td style="border-bottom: 1px solid black;">735</td> <td style="border-bottom: 1px solid black;">1764</td> </tr> <tr> <td style="border-bottom: 1px solid black;">2</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;">882</td> </tr> <tr> <td style="border-bottom: 1px solid black;">2</td> <td style="border-bottom: 1px solid black;"></td> <td style="border-bottom: 1px solid black;">441</td> </tr> <tr> <td style="border-bottom: 1px solid black;">3</td> <td style="border-bottom: 1px solid black;">735</td> <td style="border-bottom: 1px solid black;">441</td> </tr> <tr> <td style="border-bottom: 1px solid black;">3</td> <td style="border-bottom: 1px solid black;">245</td> <td style="border-bottom: 1px solid black;">147</td> </tr> <tr> <td style="border-bottom: 1px solid black;">5</td> <td style="border-bottom: 1px solid black;">49</td> <td style="border-bottom: 1px solid black;">49</td> </tr> <tr> <td style="border-bottom: 1px solid black;">7</td> <td style="border-bottom: 1px solid black;">7</td> <td style="border-bottom: 1px solid black;">7</td> </tr> <tr> <td style="border-bottom: 1px solid black;">7</td> <td style="border-bottom: 1px solid black;">1</td> <td style="border-bottom: 1px solid black;">1</td> </tr> </table> $1470 = 2 \times 3 \times 5 \times 7 \times 7$ $= 2 \times 3 \times 5 \times 7^2$ $7056 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7 \times 7$ $= 2^4 \times 3^2 \times 7^2$ $\frac{1470^2}{\sqrt{7056}} = \frac{2^2 \times 3^3 \times 5^2 \times 7^4}{2^2 \times 5^2 \times 7^3}$ $= 3 \times 5^2 \times 7^3 \text{ ans}$ <p style="text-align: right;">2005Q2</p>	2	1470	7056	2	735	1764	2		882	2		441	3	735	441	3	245	147	5	49	49	7	7	7	7	1	1	M1 B1 A1 3 marks
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7	1	1																											

10.	$\frac{3\sqrt{675 \times 135}}{\sqrt{2025}}$ $= \frac{3\sqrt{3^3 \times 5^2 \times 5}}{3^4 \times 5^2}$ $= \frac{3^2 \times 5}{3^2 \times 5} = 1$ <p style="text-align: right;">2006Q1</p>	M1 A1 2 marks
11.	$\frac{0.0084 \times 1.23 \times 3.5}{2.87 \times 0.056}$ $\frac{84 \times 123 \times 35}{287 \times 56 \times 100}$ $= \frac{9}{40}$ <p style="text-align: right;">2007Q1</p>	M1 M1 2 marks
12.	$\frac{\sqrt{5184}}{6X - 18 \div 9 + (5 - 3)}$ $\frac{\sqrt{2^6 \times 3^4}}{6X - 18 \div 9 + 8}$ $\frac{\sqrt{2^3 \times 3^2}}{\frac{6X - 18}{72} - 4} = -18$ <p style="text-align: right;">2009Q1</p>	M1 M1 A1 3 marks
13.	$\frac{1}{0.216} = 4.630$ $\frac{\sqrt[3]{0.512}}{0.216} = 0.8 \times 4.630$ $= 3.704$ <p style="text-align: right;">2012Q2</p>	B1 M1 A1 <hr/> 3

