# Secondary School Mathematics \＆Science Competition 

## Mathematics

## Sample Past Paper 2011

Q． 1 If $k$ is a real number，then $7 k-\frac{2 k i-3}{i}$

A． $5 k-3 i$
B． $5 k+3 i$
C． $9 k-3 i$
D． $9 k+3 i$

Q． 2 Solve the inequality $\frac{x^{2}-x-6}{x^{2}+4 x-5} \geq 0$ ．

A．$-2<x<3$
B．$-5<x<-2$ or $1<x<3$
C．$x<-2$ or $-2<x<1$ or $x>1$
D．$x<-5$ or $-2 \leq x<1$ or $x \geq 3$
Q. 3 The H.C.F. and L.C.M. of $a^{3} b^{2}, ~ 3 a^{2} b^{4}$ and $21 a^{6} b$ are first evaluated. If an additional algebraic expression is considered together with these three expressions, both the H.C.F. and L.C.M. remain the same. Which of the following may be the additional algebraic expression?
I. $3 a^{3}$
II. $7 a b^{2}$
III. $21 a^{4} b^{3}$
A. I only
B. II only
C. I, III only
D. I, II and III
Q. 4 A number is randomly selected from among the positive integral factors of 5400. Find the probability that the number selected is odd.
A. $\overline{6}$
B. $\frac{-}{4}$
C. $\overline{3}$
D. $\overline{2}$
Q. 5

Evaluate $\lim _{n \rightarrow-\infty} \frac{5^{n}+3^{-n}}{5^{-n}+3^{n}}$.
A. 0
B. 3
C. 5
D. The limit does not exist.

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Answer

| 1． | A | 2. | D | 3. | C | 4. | B | 5. | A |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

