1. Nov/2023/Paper_0606/11/No.6

(a) Write $3\lg x - \frac{1}{2}\lg 4 + 2$ as a single logarithm to base 10. [3]

(b) Solve the equation $2\log_a 4 - 3\log_4 a - 5 = 0$, giving your answers in exact form. [5]

2. Nov/2023/Paper_0606/22/No.4

Solve the following equations.

(a) $\dfrac{(e^{x+1})^2}{\sqrt{e^x}} = 10$ [4]

(b) $2\log_9 y - \log_9(4y-9) = \dfrac{1}{2}$ [5]

3. March/2023/Paper_0606/12/No.4

(a) Write $3\lg x - 2\lg y^2 - 3$ as a single logarithm to base 10. [3]

(b) Solve the equation $\log_3 x + \log_x 3 = \frac{5}{2}$. [5]

4. June/2023/Paper_0606/12/No.5

(a) Find the exact solutions of the equation $6p^{\frac{1}{3}} - 5p^{-\frac{1}{3}} - 13 = 0$. [4]

(b) Solve the equation $2\lg(2x+5) - \lg(x+2) = 1$, giving your answers in exact form. [6]

5. June/2023/Paper_0606/13/No.3

(a) Write $3+2\lg a-\frac{1}{2}\lg\left(4b^2\right)$, where a and b are both positive, as a single logarithm to base 10. Give your answer in its simplest form. [3]

(b) Given that $2\log_c 3 = 7+4\log_3 c$, find the possible values of the positive constant c, giving your answers in exact form. [5]

6. June/2023/Paper_0606/21/No.4

(a) Solve the equation $5^{2y-1} = 6 \times 3^{y}$, giving your answer correct to 3 decimal places. [3]

(b) Solve the equation $e^{2x} - 4 + 3e^{-2x} = 0$, giving your answers in exact form. [4]