Name…… stream…….

GERSHIBON CHRISTIAN HIGH SCHOOL

Term II Examinations-
S.3 Mathematics paper two
456/2
Time:2 ½ hours

Instructions

- *Answer all questions in section A and any five questions in section B*
- *Silent scientific non-programmable calculators may be used*
- *Show all your workings clearly*
- *Neat and organized work is a must*

***SECTION A** (40 Marks)*

1. Find the HCF and LCM of 432 and 522. (04 marks)
2. Without using tables or calculators simplify $3\ log2 + \ log200 - log1.6$ (04 marks)
3. Express 0.321321……as a fraction in its simplest form (04 marks)
4. Given that a*b= $\frac{(a+b)(a-b)}{a+b}$ work out (5*3)*2. (04 marks)
5. Given that $\sqrt{8}$ + $2\sqrt{2}$ + $\sqrt{50}$ = $x\sqrt{y}$. Find the values of x and y. (04 marks)
6. Give that A=$\begin{pmatrix} 2 & -1 \\ 3 & 5 \end{pmatrix}$ and B= $\begin{pmatrix} 3 & 1 \\ 0 & 2 \end{pmatrix}$ find AB. (04 marks)
7. Find the equation of a the line passing through points A(3,4) B(5,10) (04 marks)
8. Solve the simultaneous equation (04 marks)

   $x - y = 2$

   $y - 2x = -7$
9. Factorize $a^2 - b^2$ and hence evaluate $7.6^2 - 2.4^2$ (04 marks)
10. Given that $303_n = 78_{ten}$. Find the value of n where n is a natural number. (04 marks)

SECTION B

11. (a). Factorize $25a^2 - 36b^2$ completely. (04 marks)

(b). Without using tables or calculators evaluate $\frac{5.2x8.4+1.6x5.2}{7.6^2-2.4^2}$ (04 marks)

(c). Given that $a^2 - b^2 = 48$

$a + b = 12.$

Find the values of a and b. (04 marks)

12. (a). Express $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ in the form $x + y\sqrt{z}$. Hence find the values of $x, y \; and \; z$. (06 marks)

(b). without using tables or calculators simplify (06 marks)

$$\frac{(\sqrt{63}+\sqrt{28})}{(\sqrt{63}-\sqrt{28}\,)}$$

13. (a). Express 0.38686……..as a fraction in its simplest form. (04 marks)

(b). Simplify $\frac{1}{2}\log_{10} 16 - 2\log_{10}\left(\frac{b}{5}\right) - \log_{10} b^2$ (04 marks)

(c). Evaluate without using tables or calculators $\left(\frac{1}{32}\right)^{\frac{-2}{5}}$ x$\left(\frac{81}{16}\right)^{\frac{-1}{4}}$ (04 marks)

14. (a). Given matrices A= $\begin{pmatrix} 2 & 3 \\ -1 & 4 \end{pmatrix}$ B=$\begin{pmatrix} 4 & 2 \\ 3 & 8 \end{pmatrix}$ evaluate $3A - B$ (04 marks)

(b). Given matrix R=$\begin{pmatrix} 3y & -25 \\ -3 & y \end{pmatrix}$. Find the values of y if matrix R is singular (04 marks)

(c). given matrices A=$\begin{pmatrix} 2 & 3 \\ -1 & 4 \end{pmatrix}$ B= $\begin{pmatrix} 2 & 0 \\ 1 & 3 \end{pmatrix}$ find

(i). $P = AB$

(ii). P^{-1} (04 marks)

15. (a). Given $135_n = 75_{ten}$ find n where n is a natural number. (04 marks)

(b). factorize $3x^2 + 8x + 5$. Hence solve $3x^2 + 8x + 5 = 0$. (04 marks)

(c). Form a quadratic equation with roots $(-2, -3)$

16. (a). Solve the equation

$\frac{3x-1}{2} - \frac{2x-1}{3} = \frac{5-x}{4}$ (04 marks)

(b). A stretch of land on a map of scale 1:50000 has an area of 30cm^2. Determine the actual area in km^2

(04 marks)

(c). A ladder $2\ m$ long can lean safely against a vertical wall. If it reaches $1.2m$ up the wall, calculate the angle between the ladder and the wall.

(04 marks)

17. (a). Two shirts and a pair of trousers cost sh 12,000 while one shirt and a pair of trousers cost sh 15,000. Find the

(i). cost of a pair of trousers and a shirt.

(ii). cost of 3 pairs of trousers and 2 shirts. (04 marks)

(b). Use the elimination method to solve the simultaneous equations. (04 marks)

$$3p - 2q = 8$$

$$P + 5q + 3 = 0$$

END

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