SCOBA

SENIOR FOUR

MATHEMATICS REMEDIAL

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INSTRUCTIONS: Attempt all questions.

SECTION A

1. Given that **a** = $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$ and **b** = $\begin{pmatrix} -1 \\ 2 \end{pmatrix}$ find $|\mathbf{a} + \mathbf{b}|$.

2. Rationalise $\frac{\sqrt{2}}{3-\sqrt{2}}$

3. A fuction f(x)= $\frac{3}{1-x^2}$. Find the values of x for which f(x) = 4

4. Given that S (-2, 6) and T (3, 3) are two points, find the coordinates of R if **OR**= 4**OS** + $\frac{1}{3}$**OT** and O is the origin.

5. A and B are two matrices such that A= $\begin{pmatrix} 0 & 4 \\ -3 & 7 \end{pmatrix}$ and B = $\begin{pmatrix} 5 & -1 \\ 2 & -3 \end{pmatrix}$. Find the det (A+B).

6. Given that $\log_{10}2 = 0.301$ and $\log_{10}3 = 0.477$. Without using tables or calculator evaluate $\log_{10}\left(\frac{27}{16}\right)$.

7. Use matrix method to solve the simultaneous equations

   $x - 2y = 12$

   $y + 3x = 1$

8. A three digit number is formed using each of the digits 3,2 and 5 only once.
   (a) List down the posibility space.
   (b) Find the probability that the number formed is an even number.

9. Ali deposited shs. 56,000 in a bank. The bank gives a compound interest of 15% per annum. Find the amount of money he had in the bank after two years.

10. Factorise completely $2a^2 - 32$.

SECTION B

11. The table below shows the marks scored by 90 students in a test marked out of 50 marks.

Marks(x)	Frequency(f)
15-19	1
20-24	13
25-29	29
30-34	25
35-39	19
40-44	3

(a) Represent the above data on histogram. Use your histogram to estimate the mode.

(b) Calculate the mean mark of the test, using a working mean of 27.

12.(a) Draw the graph of $y = 6 + 3x - 2x^2$ for $-2 \leq x \leq 3$, taking 2cm as one unit on the x- axis and 1cm as one unit on the y- axis.

(b) Use your graph to obtain solutions for the equations.

(i) $6 + 3x - 2x^2 = 0$

(ii) $2 + 3x - 2x^2 = 0$

END