

TOP EDUCATIONAL INSTITUTE

END OF TERM EXAMINATION- JUNE-2013

CLASS : FORM III

SUBJECT : MATHEMATICS

TIME TABLE : 2 ½ HOURS

NAME:.....

Instructions to Students

- ❖ Answer ALL questions in the space provided.
- ❖ Please SHOW YOUR WORK Clearly.
- ❖ Show all the steps in your calculations.

1. (a) Find the reciprocal of the following. (2 MARKS)

(i) $\frac{3}{4} =$

(ii) $x/y =$ (2 MARKS)

(b) Find the value of

(i) $2^4 =$

(ii) $2^0 =$

(iii) $2^{-4} =$ (3 MARKS)

(c) Write the following numbers in standard form

(i) 2560 =

(ii) 0.000256 = (2 MARKS)

2. The diameter of a ball bearing is given by 1.6 mm correct to one decimal place. Find the range in which the diameter lies.

(5 MARKS)

3. (a) Evaluate $8 \div (-4) =$ (2 MARKS)

(b) Solve the equation $3(x - 2) - 5 = 0$ (2 MARKS)

(c) Make s the subject of the formula $v^2 = h^2 + 2as$ (2 MARKS)

(d) If $P = \frac{100 I}{RT}$, Find the value of R , When $I = 1000$,
 $T=2$ years and $P=\$1000$ (4 MARKS)

4. (1) Fill in the gaps of the following sequences.

(a) 3, , 48, 192, 768, (2 MARKS)

(b) 3, , 12, 21, , 39, (2 MARKS)

(11) Give two possible rules for continuing the following sequences.

(a) 1, 3, 7,..... (2 MARKS)

(b) 3, 6, 12,..... (2 MARKS)

5. Find the 12th term of the following sequences.

(a) $\frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6},$ (4 MARKS)

(b) 3, 2, 1, 0, -1, (4 MARKS)

(c) 1, 8, 27, 64 (4 MARKS)

6. Matrices A , B and C are defined as below.

$$A = \begin{pmatrix} 5 & 2 \\ 1 & 4 \end{pmatrix} \quad B = \begin{pmatrix} 3 & -1 \\ 4 & -3 \end{pmatrix} \quad C = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$$

Find if possible

- (a) AB (3 MARK)
- (b) $2A + B$ (3 MARKS)
- (c) A^2 (3 MERKS)
- (d) C^2 (3 MARKS)
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7. Following question is on percentages

- (a) Increase 300 by 27% (5 MARKS)
- (b) Purchase price of a book is 20.00 inclusive of VAT at 20%. Find its value before the VAT added. (5 MARKS)
- (c) A house is bought for \$6800 and sold at a profit of 15%. Find the selling price. (5 MARKS)
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8. Find the interest payable after one year, on the following sum of money invested of the given interest rates.

- (a) \$ 1000 at 9.5% (4 MARKS)
- (b) \$ 5400 at 7% (4 MARKS)
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09. (a) What annual rate of interest is necessary to give an interest of \$576 after one year on the investment of \$5600? (4 MARKS)

(b) Find the compound interest on \$ 1248 for 2 years at 12% pa (4 MARKS)

(c) A motor car bought at \$ 10 000 depreciates by 10% each Year. Find its value after 3 years. (4 MARKS)

10. (a) Find the gradient of the line $y = -2x + 3$ (3 MARKS)

(b) Find the gradient and the y – intercept of the line with equation $y = x + 6$ (3 MARKS)

(c) A line has a gradient of 5 and an intercept of 3 on the y - axis. Find its equation. (3 MARKS)

11. (a) Draw on graph paper the line with equation

(Use 1 cm = 1 Unit)

$$3x - 4y = 12 \quad (0 \leq x \leq 5) \quad (4 \text{ MARKS})$$

(b) Find the gradient of the graph (4 MARKS)

(c) Find the intercepts on the y axis. (2 MARKS)

(d) Read the value of y on the graph, corresponding To $x = 2$ (2 MARKS)

12. A ship moving with constant speed takes x minutes to cover one nautical mile. It takes z minutes to cover y nautical miles. Find a formula for x in terms of z and y . (4 MARKS)

13. This is a sequence of pairs of numbers

$(1,2), (2,5), (3,10), (4,17)$

(a) Find the next pair in the sequence (4 MARKS)

(b) Find the 10th pair in the sequence (4 MARKS)

14. If $A = \begin{pmatrix} 3 & 2 \\ -4 & 5 \end{pmatrix}$, $B = \begin{pmatrix} 0 & 5 \\ 5 & 2 \end{pmatrix}$ And $C = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

Find the matrix ABC (14 MARKS)

15. In the third year in a school 35% take word work only. 25%

Take metal work only and 20% take both subjects. What

Percentage of the third year pupils study neither?

(12 MARKS)

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