GRADE 11 EXAMINATION
NOVEMBER 2007

MATHEMATICS: PAPER I
(LO1 AND LO2)

ANSWER BOOKLET

MARKING GUIDELINES

The marking guide is a working document prepared for use by teachers as they assess the Grade 11 externally set examinations.

There may be different interpretations of the marking guidelines but the teacher should keep as closely as possible to the suggested way of assessing. When in doubt, a teacher should check with another member of the cluster or with the relevant Assessment Specialist.

IEB Copyright © 2007

QUESTION 8

On a particular day, the depth of water, y metres, at the entrance of a tidal harbour x hours after midday is given by the formula:

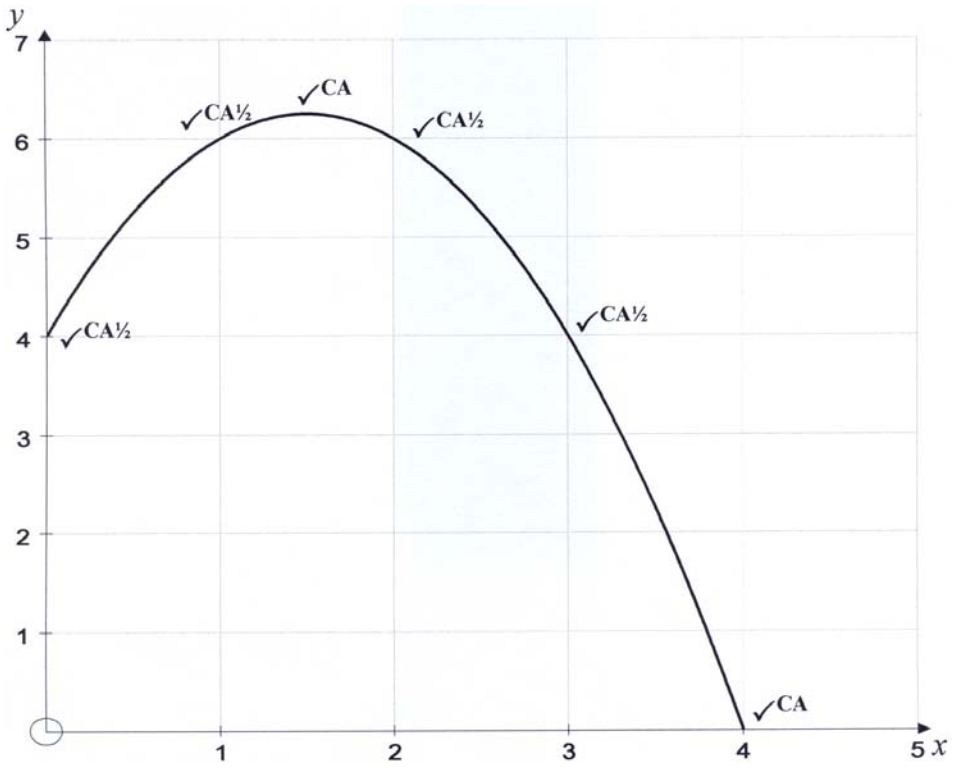
$$y = -x^2 + 3x + 4 \quad \text{for} \quad 0 \leq x \leq 4$$

(a) Complete the table (in the Answer Booklet)

x (hours after 12:00)	0	1	1,5	2	3	4
y (depth in metres	**4**	6	**6,25**	**6**	4	**0**
	✓½		✓½	✓½		✓½

(2)K

(b) Draw a graph of y against x.



(4) K

(c) What is the depth of water at the harbour entrance at midday?

_____

For $x = 0, y = 4$

_____

∴ **At midday, water is 4 m deep.** ✓CA

_____ (1) RP

(d) Determine when during the afternoon the entrance is dry.

_____

For $x = 4, y = 0$

_____

∴ **At 4 pm entrance is dry.** ✓CA

_____ (1) RP

IEB Copyright © 2007

(e) Determine the maximum depth of water at the entrance and when during the afternoon this occurs.

Maximum depth of 6,25 m at 1:30 pm

✓CA

(2) RP

(f) A large ferry requires at least 6 m of water for it to be able to enter the harbour. Determine between which times of the afternoon the ferry can safely enter the harbour.

Between 1 pm and 2 pm depth of water is more than 6 m, so ferry can enter.

✓CA ✓CA

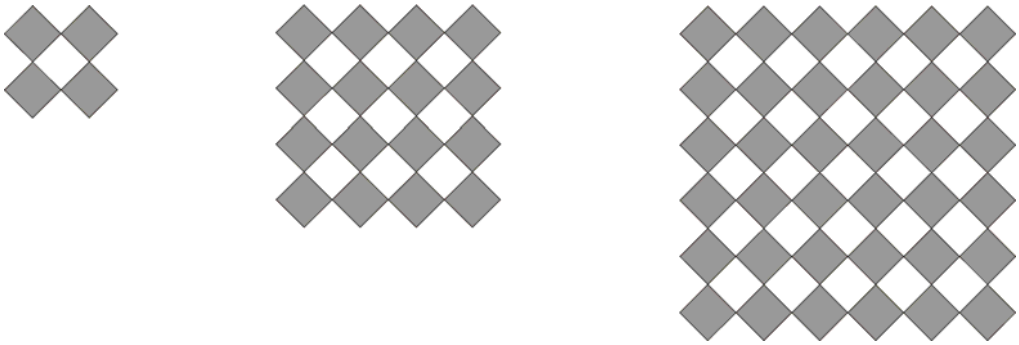
(2) PS

12 marks

QUESTION 9(B)

(b) Consider the following shapes created with shaded and white tiles:

Figure 1 **Figure 2** **Figure 3**



(1) Complete the table (in the Answer Booklet):

Figure No.	1	2	3	**4**	6	11
No. of Shaded tiles	4	**16**	36	**64**	144	**484**
No. of White tiles	1	**9**	**25**	**49**	**121**	**441**
Total No. of tiles	5	**25**	**61**	113	**265**	**925**
		✓A	✓A	✓A	✓A	✓A

(5) RP/CP/PS

IEB Copyright © 2007

(2) Hence determine a formula for the total number of blocks in the n^{th} figure.

No. of Shaded tiles = $(2n)^2$ ✓CA

No. of White tiles = $(2n-1)^2$ ✓CA

$\therefore$ **Total No. of tiles = $4n^2 + 4n^2 - 4n + 1$**

= $8n^2 - 4n + 1$ ✓CA (3)

8 marks

IEB Copyright © 2007