

### DEPARTMENT OF EDUCATION

### LOWER SECONDARY SCHOOL CERTIFICATE EXAMINATIONS

# MATHEMATICS

Tuesday

4th October 2011

Time allowed: 3 hours

Candidates are advised to fully utilise the time allocated



### **INSTRUCTIONS TO CANDIDATES:**

(To be read out by the External Invigilator before the start of the examination)

There are 46 questions in this paper worth 50 marks. Attempt ALL questions, even if you are not sure of some of the answers.

The Examination is divided into three parts:

PART A:	Multiple Choice	(Questions 1 to 25)
PART B:	Short Answer	(Questions 26 to 45)
PART C:	Extended Response	(Question 46)

The Answer Sheet is part of the Examination Booklet. Take out the middle pages and remove the Answer Sheet by tearing along the perforation. You may use the blank sheet for rough work.

Write your candidate number, name and school name in the space given on the **Answer Sheet**.

For each question in **PART A** choose the best answer and write its LETTER in the space given on the Answer Sheet.

For each question in **PART B and C** work out the answer(s) and write the answer(s) in the space(s) given on the **Answer Sheet.** 

If you find a question very difficult, do not spend too much time thinking about it. Leave the question out and go on with the rest of the paper. If you have time at the end, return to the difficult questions and think about them more carefully.

Write your answers in **BLUE** or **BLACK** ink (pen or biro).

If you decide to change an answer, make your correction as shown below so that it is clear to the markers what your final answer is. Do NOT use correction fluid on your answer sheet.



Hand in **BOTH** the Answer Sheet and the papers used for rough work at the end of the examination.

Extra time will not be allowed to complete the examination under any circumstances.

The penalty for cheating or assisting others to cheat in national examinations is non-certification.

### DO NOT TURN OVER THE PAGE AND DO NOT WRITE UNTIL YOU ARE TOLD TO START.

### PART A: (Questions 1 to 25) : 1 mark each

For each question choose the best answer by writing A, B, C or D in the space provided on the ANSWER SHEET.

 $\left(\frac{3x+12}{7}\right) = 12$ 

### **QUESTION 1**

Solve this equation,

A.	16	В.	24
C.	26	D.	72

### **QUESTION 2**

A length of fabric 46.8 metres long was divided in the ratio 2:3:1. Find the length of the smallest proportion of the ratio.

A.	7.8 m	В.	11.2 m
C.	15.6 m	D.	23.4 m

### **QUESTION 3**

A sales person receives a commission of 2.5% of the selling price of any vehicle that she sells. How much commission would she earn for selling a car worth K20 000?

A.	K200	Β.	K300
C.	K400	D.	K500

### **QUESTION 4**

A salesman earns K200 per week plus K40 commission for each item he sells. How many items does he need to sell to earn a total of K2640 in two weeks?

A.	33	В.	56
C.	61	D.	66

### **QUESTION 5**

 $12ab - 3a + 9a^2$  fully factorized is,

A.	3a(4b - 1 + 3a)	Β.	$3(4ab - a + 3a^2)$
C.	a(12b - 3 + 9a)	D.	3ab(4 - 1 + 3a)

### **QUESTION 6**

The sum of the set of numbers 1, 8, 2, \_\_\_\_, 13, 7 is 42. What is the missing number?

A.	12	B. 11	C. 10	D. 5

### **QUESTION 7**

This pie graph below shows how the Oliver family spends its fortnightly budget of K630.00.



How much of the family's income is spent on school fees?

A.	K210.00	В.	K21.00
C.	K20.10	D.	K12.00

### **QUESTION 8**

A pencil and two biros cost K1.80. Two pencils and a biro cost K1.20. What is the cost of two pencils?

A.	K1.80	В.	80t
C.	40t	D.	20t

### **QUESTION 9**

A 52 pack card is shuffled and one card is dealt. The probability that it is a diamond is;

A. 
$$\frac{1}{52}$$
 B.  $\frac{1}{13}$  C.  $\frac{1}{4}$  D.  $\frac{3}{4}$ 

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### **QUESTION 10**

A machine fills 1000 bottles in 5 minutes. How many bottles will it fill in 2 minutes?

A. 200 B. 300 C. 400 D. 500

### **QUESTION 11**

Find the shaded area of the compound shape in  $cm^2$ .

Use  $\pi = 3.14$ 



### **QUESTION 12**

Find the total surface area in  $cm^2$  of the triangular prism below.



### **QUESTION 13**

Solve the simultaneous equations; y = 5x + 1 and y + x = 13

### **QUESTION 14**

Bob bought a television set priced at K4000. He bought it on hire purchase by paying K215 per month for 2 years. How much interest did Bob pay?

A.	K580	В.	K1160
C.	K5160	D.	K5040

### **QUESTION 15**

The gradient of the line joining the points (-5,3) and (2,-4) is:

A. 
$$\frac{7}{3}$$
 B. -1 C.  $\frac{1}{3}$  D.  $\frac{1}{7}$ 

$$\operatorname{Simplify}\left(\frac{12\,p}{3}\right)^{-2}$$

A. 
$$\left(\frac{3p}{12}\right)^2$$
  
B.  $\left(\frac{3}{12p}\right)$   
C.  $\left(\frac{1}{16p^2}\right)$   
D.  $\left(\frac{1}{4p^2}\right)$ 

### **QUESTION 17**

Triangle ABC is similar to triangle EFG.



What is the length in centimetres of the corresponding side to AB?

# **QUESTION 18**

A certain number represented by x is divided by three and then subtracted from eight giving the result of four. Which of these is the correct equation?

A. 
$$x - \frac{8}{3} = 4$$
  
B.  $\frac{8 - x}{3} = 4$   
C.  $8 - \frac{x}{3} = 4$   
D.  $8 - x = \frac{4}{3}$ 

### **QUESTION 19**

When simplified;  $\frac{7ab}{9} \div \frac{5b}{6}$ 

٨	<u>14a</u>	D	$35ab^2$
А.	15	D.	54
C	54	D	<u>42a</u>
C.	$35ab^2$		45

# **QUESTION 20**

What is 3789 written in scientific notation?

A.	$3.789 \times 10^3$	B.	$37.39 \times 10^2$
C.	3.739 x 100	D.	3.789 x 1000

# **QUESTION 21**

The algebraic expression giving the area of the triangle is:



# **QUESTION 22**

Find the value of the pro-numeral b in degrees for the diagram below.



# **QUESTION 23**

Find the shaded area in this rectangle in m<sup>2</sup>



# **QUESTION 24**

Calculate the radius of a circle in cm whose area is  $12.56 \text{ cm}^2$ . Use  $\pi$ =3.14

A. 1.0 B. 1.5 C. 2.0 D. 2.5

# **QUESTION 25**

Four 1-litre bowl of fruit punch were set out at a party. After the party 1 bowl was empty, 2 were half full and 1 was three quarter full. How many litres of fruit punch had been used?

A. 
$$3\frac{3}{4}$$
 B.  $2\frac{3}{4}$  C.  $2\frac{1}{4}$  D.  $1\frac{3}{4}$ 

### PART B (Questions 26 to 45) : 1 mark each.

Work out your answer and write it in the spaces provided on the ANSWER SHEET.

# Use the bar graph below to answer questions Q26 and Q27.



### **QUESTION 26**

How many families participated in the survey?

### **QUESTION 27**

How many children were there altogether?

### **QUESTION 28**

*a-2*, *a-1*, *a*, a+1, and a+2 are five numbers. Find the mean of these five numbers.

### **QUESTION 29**

The sum of 4 consecutive odd numbers is 72. Find the third number.

# Questions 30 and 31 refer to the information below.

The table shows the number of glasses of water drunk by a group of students.

Number of glasses drunk	1	2	3	4	5	6
Frequency	10	3	5	2	6	4

#### **QUESTION 30**

Find the number of students who drank less than 3 glasses of water

### **QUESTION 31**

Find the number of students who drank four and less number of glasses of water

### **QUESTION 32**

If 5x+10=2x+4. The value of x is?

### **QUESTION 33**

A dice is rolled once. What is the probability of scoring an even number? Give your answer as a fraction in its simplest form.

### **QUESTION 34**

The mean score of four girls was 64. A fifth girl scored 54. What was the mean score of the five girls?

# Use the graph below to answer Questions 35 and 36.



### **QUESTION 35**

Between which of the three intervals (A,B or C) was the car travelling the fastest?

### **QUESTION 36**

How long in minutes did the car stop?

### **QUESTION 37**

Simplify the expression to its simplest form.

$$\frac{2x^n y^4}{2x^{n-1} y^3}$$

### **QUESTION 38**

Find the y-intercept of a straight line passing through the point (2,4) whose gradient is 3.

### **QUESTION 39**

A ship sails on a bearing of 150° for a distance of 35km.



How far east is the ship from its starting point?

# Use the table below to answer questions 40 and 41.

A survey was conducted where students were asked to estimate how many hours in one week they use to carry out some form of exercise.

Below is the result of the survey.

Number of hours	Frequency		
0-2	3		
3-5	7		
6-7	18		
8-9	9		
≥ 10	3		

### **QUESTION 40**

How many students exercise 8 hours and more each week?

### **QUESTION 41**

What is the percentage of students that exercise less than 6 hours in a week?

### **QUESTION 42**

What are the coordinates of the point of intersection of the two lines?



### **QUESTION 43**

Komboni is three years younger than Ambassi. The sum of their age is 37.

How old is Komboni?

### **QUESTION 44**

Every day Wayne arrived 5 minutes late for work. Each year he works 5 days per week for fortyeight weeks. Find the total number of hours that Wayne is late in one year.

### **QUESTION 45**

Find the perimeter of this compound shape in cm. Use  $\pi = 3.14$ 



# PART C: EXTENDED RESPONSE

### **QUESTION 46**

Refer to the table below to answer the following questions.

A boat-hire company charges the following rates for one of its outboard motor boats.

Daily Hire Cost			
1 day	2 – 5 days		
K1000.00	K800.00		
Fuel Cost: K3.50 per litre			

- a) If Sheila was to hire the boat for 4 days and also buy 50 litres of fuel, how much altogether would she pay?
- b) How much was spent on fuel if the total cost of hire in 3 days was K1550.00?
- c) If the rate of fuel consumption is 2 litres per kilometre, how many litres of fuel would be used if the boat is to covers a distance of 100km?
- d) The boat travels at a speed of 80km per hour. How long does it take to travel 240km?
- e) The capacity of the boat's fuel tank is 25 litres. At the rate of 2 litres per kilometre, what percentage of fuel will be left in the fuel tank if a distance of 10 km is covered?

# END OF EXAMINATION