

9516/3  
MATHEMATICS  
Paper 3  
March/April, 2010  
Time: 2½ hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN TEACHER EDUCATION

MATHEMATICS

Paper 3

2½ hours

INSTRUCTIONS TO CANDIDATES

1. *You should have the following for this examination:*
  - *Answer booklet*
  - *Scientific Calculator and/or mathematical tables*
2. *This paper consists of **THREE** sections; A, B and C.*
3. *Answer **ALL** the questions in all the sections.*

**This paper consists of 4 printed pages.**

**Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**

### SECTION A: BASIC PREPARATION (30 marks)

1. (a) Behavioural objectives are statements which show desired change in student behaviours after successful educational instructions.  
Give **three** conditions that a good behavioural objective must meet. (3 marks)
- (b) State **six** general objectives a learner should achieve by the end of the secondary school mathematics course. (6 marks)
- (c) During a mathematics lesson, a quality assurance officer found the teacher with the following documents:
- Scheme of work  
Lesson plan  
Lesson notes  
Pupils progress records.
- He noted that one important document was missing.
- (i) Name the document that was missing. (1 mark)  
(ii) What is the importance of the document named in (c)(i) above. (3 marks)  
(iii) Outline how the checking/verification of the document should be done. (2 marks)
2. (a) A mathematics teacher intends to teach a Form two class how to determine the equation of a straight line given two points on the line.  
  
Prepare a 40 minutes lesson plan for this lesson. (12 marks)
- (b) Give **three** reasons why it is necessary for a teacher to carry out self evaluation after delivery of a mathematics lesson. (3 marks)

### SECTION B: TEACHING SKILLS (30 marks)

3. (a) Discuss **five** educational issues that a child centred mathematics curriculum would address. (5 marks)
- (b) Discuss **six** ways in which learners would benefit from relational understanding of mathematical concepts. (6 marks)
- (c) (i) Give **two** reasons that could professionally justify the provision of an alternative "lower level" Curriculum in Mathematics at Kenya Certificate of Secondary Education. (2 marks)
- (ii) What are the effects of this change to the teaching of mathematics? (2 marks)

4. (a) (i) Discuss **four** ways in which the use of mathematical activities in teaching Secondary School Mathematics would benefit the learner. (4 marks)
- (ii) Give **four** challenges that a mathematics teacher would encounter in the endeavour to practice the use of mathematical activities in the delivery of the lessons. (4 marks)
- (b) Consider the following problem given to a form two class.  
*A lamp shade is in the form of a frustum of a right cone. The top and bottom diameters are 20cm and 40cm respectively and the vertical height is 24cm. Find the surface area of the material required to make the lamp shade.*
- Outline a systematic heuristic approach that a mathematics teacher could use to assist the student to obtain the solution. (7 marks)

#### SECTION C: MASTERY OF SECONDARY SCHOOL WORK (40 marks)

5. (a) Explain the **four** stages which, according to Polya, would contribute to effective problem solving in mathematics. (4 marks)
- (b) The following is an extract from a K.C.S.E. mathematics mock examination.  
*“Determine the equation of the line that passes through (3,2) and has a gradient of  $-\frac{1}{2}$ . Give the equation in the form  $ax + by = c$ .”*
- The question proved difficult to a majority of the candidates. Some tended to find the general equation of the line in the form  $y = mx + c$ .
- (i) Explain the teaching/learning method that could have caused learners to give this unsatisfactory answer. (3 marks)
- (ii) Use **two** alternative methods of solving this problem and apply Polya’s problem solving technique to explain the process. (8 marks)
- (c) Identify **five** necessary considerations in designing an end of term examination in mathematics. (5 marks)

6. (a) Identify **five** attributes which a good mathematics textbook should have. (5 marks)

(b) State **three** ways in which the process of enquiry would be encouraged for problem solving among mathematics students. (3 marks)

(c) A teacher gave the question below to a form IV class.

*"The velocity  $V \text{ ms}^{-1}$  of a vehicle is related to the time  $t$  seconds by the formula  $V = t^2 - 2t + 3$ .*

(i) *Use the trapezoidal rule with 7 strips to determine the total distance travelled by the vehicle between  $t = 1$  and  $t = 8$  seconds.*

(ii) *Determine the exact distance travelled by the vehicle between  $t = 1$  and  $t = 8$  seconds.*

*Hence, find the percentage error in using the trapezoidal rule.*

*(10 marks)"*

Prepare a suitable marking scheme for the question. (7 marks)

(d) Discuss the professional value of maintaining the following documents by a mathematics teacher:

(i) analysis of test results;

(ii) learners' progress records.

(5 marks)

Name \_\_\_\_\_

Index Number \_\_\_\_\_

9507/1A  
ARABIC  
Paper 1A  
(ORAL SKILLS)  
D.T.E.  
March/April 2014  
Time: 40 minutes

Candidate's Signature \_\_\_\_\_

Date \_\_\_\_\_



THE KENYA NATIONAL EXAMINATIONS COUNCIL  
DIPLOMA IN TEACHER EDUCATION  
ORAL SKILLS  
EXAMINER'S COPY

Paper 1A

40 minutes

**INSTRUCTIONS TO EXAMINER**

(a) This paper consists of the following tasks:

Part I: Conversation

Part II: Reading aloud

Part III: Comprehension questions

(b) Each candidate should take a total of ten (10) minutes to read the passage and answer the Examiner's questions.

**For Examiner's Use Only**

Part	Maximum Score	Candidate's Score
I	5	
II	5	
III	20	
Total score	30	

This paper consists of 3 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

## ORAL SKILLS

### المهارات الشفوية

### توجيهات للممتحن

الخطوات المقترحة للامتحان الشفوي:

أ- يبدأ الممتحن بطرح أسئلة عامة مع الطالب مثل:

1- ما اسمك ؟

2- ما اسم المعهد الذي تدرس فيه ؟

3- متى بدأت تعلم اللغة العربية ؟

4- لماذا رغبت في تعلم اللغة العربية ؟

5- ما هي المواد الأخرى غير العربية التي تدرسها ؟ (ملاحظة: لكل سؤال درجة واحدة)

(5 درجات)

ب- يقرأ الطالب النص أمام الممتحن، ويعطيه خمس درجات إذا كانت قراءته سليمة ونطقه صحيحاً.

(5 درجات)

جـ- يُوجّه الممتحن للطالب أسئلة شفوية حول النص ويعطي لكل جواب صحيح درجتين اثنتين.

(20 درجة)

## الأسئلة

- 1- كيف عاش الإنسان في العصر القديم ؟ (2 marks)
  - 2- هل عرف الإنسان اللباس في العصر الحجري ؟ (2 marks)
  - 3- كيف كانت ملابسه ؟ (2 marks)
  - 4- كيف كانت معيشتهم ؟ (2 marks)
  - 5- من قامت بالدفاع عن القبائل ؟ (2 marks)
  - 6- كيف بدأ تشكيل الدولة ؟ (2 marks)
  - 7- من أشرف على أدوار الدولة ؟ (2 marks)
  - 8- لماذا أنشئ البرلمان ؟ (2 marks)
  - 9- ماذا يعتبر من لا يعرف استخدام الحاسب الآلي ؟ (2 marks)
  - 10- ماذا كانت نتيجة إقامة المدارس والجامعات ؟ (2 marks)
- (20 marks)