OCR
RECOGNISING ACHIEVEMENT

Level 3 Certificate

Mathematical Techniques and Applications for Engineers

OCR Level 3 Certificate **H865**

OCR Report to Centres

June 2013

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the examination.

OCR will not enter into any discussion or correspondence in connection with this report.

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Overview

It was a pleasure to see so many well presented and clearly argued solutions to the questions from learners who had clearly developed a very sound understanding of the principles and techniques required for this unit.

Section A - Most learners attempted all fifteen questions.

Section B – Most learners attempted three questions.

Centres are reminded to encourage learners to attempt three questions only and spend their time on providing accurate and correct answers.

When attempting a question a few learners gave a final answer without showing any working. It is always in the best interest of the learner to show as much detail as possible because if the answer is incorrect nothing can be awarded but if information is provided of how the final answer was arrived at, marks can often be awarded for the methods employed.

Section A

Fifteen short answer questions

1 Generally well answered but in a few cases learners did not correctly state x + 8. A few learners did not complete the simplification but left it as 6x + 8 - 5x.

2 Generally well answered.

3 Generally well answered. A number of learners could not find a common denominator.

4 Generally well answered. In a few cases after finding - 6x - 8 = 2x + 6 learners could not correctly arrive at x = - 1.75.

5 A badly answered question. Most learners could not recall the formula for the subtended angle at the centre of a circle.

6 Generally well answered.

7 A badly answered question. The majority of learners did not appreciate that the response needed reference to a right-angle triangle.

8 A mixed response. A proportion of learners stated the incorrect formula for the area of a triangle given the length of three sides.

9 Generally well answered. In a few cases the rules of differentiation were not known.

10 A mixed response. Most learners differentiated sin x but a number of incorrect answers were given for 5 ln (3x)

11 A mixed response. Most learners stated the constant C but a high proportion of learners were not aware of the integral for sin 2x.

12/13/14/15 Generally well answered.

Section B

The learner had a choice of answering three questions from eight.

Question One
A very popular question.
(a) Generally well answered with a majority of learners giving the correct response of 3.037.
(b)(i)(ii) A high proportion of learners could not transpose the given equation for d and subsequently did not state a correct value for d. However a number of learners gained marks through the use of error carried forward.
(c) Generally well answered with a majority of learners stating that $d = D/\sqrt{V}$.

Question Two
A very popular question.
(a) Generally well answered.
(b)(c) A high proportion of learners calculated the correct value for A = 15 and B = 75.
(d) A high proportion of learners did a check to confirm that the values of A = 15 and B = 75 were correct.

Question Three
A fairly popular question.
(a) Generally well answered with a majority of learners giving the correct response that length b = 6.19 m.
(b) Generally well answered with a majority of learners giving the correct response that Angle C = 81.880.
(c) Generally correctly answered.

Question Four
Not a very popular question.
(a) Generally well answered with good quality diagrams.
(b) Any method of solution was not very well known.
(c) Most learners provided an answer.

Question Five
Not a popular question.
(a) A number of learners calculated correctly the gradients of the curve.
(b) It seemed that the majority of learners did not understand what 'rate of change' meant.
(c) Most learners did not gain any marks because they had difficulty with the differentiation.

Question Six
A reasonably popular question.
(a) Generally correctly answered.
(b) Generally well answered drawing a graph from the completed table in part (a). A number of interesting graphs appeared from using incorrect values from the table. However a number of learners gained marks as examiners allowed errors to be carried forward.
(c) Generally well answered.

Question Seven
A popular question.
(a)(b)(c) Generally well answered.

Question Eight
A popular question.
(a)(b)(c)(d) Generally well answered.

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