CAMBRIDGE TECHNICALS

OCR
Oxford Cambridge and RSA

CAMBRIDGE TECHNICALS LEVEL 3 (2016)

Examiners' report

ENGINEERING

05822–05825, 05873

Unit 3 January 2021 series

Contents

Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

A full copy of the question paper and the mark scheme can be downloaded from OCR.

Unit 3 series overview

This Level 3 paper examined the principles of mechanical engineering. It followed a similar format to previous papers and included several recurring topics and question types.

The paper appeared to be accessible with most candidates attempting all the questions. The exceptionally small number of candidates and centres makes it more difficult than usual to identify improvements and/or areas for improvement applicable to centres in general.

Responses indicated that most candidates understood what was required and were able to answer questions depending on their level and knowledge and preparation.

Candidates who did well on this paper generally did the following:	***Candidates who did less well on this paper generally did the following:***
• made use of appropriate engineering language. • showed clear working in all calculations. • converted units into standard units before carrying out any calculation. • used moment of area method to find coordinates of a centroid and used a tabular format to show workings clearly for these questions. • showed familiarity with bending of beams including the calculation of reaction forces and bending moments.	• made careless mistakes in calculations. • used incorrect engineering language. • scored low marks on some recurring topics. • omitted to answer some questions or parts of questions.

Common misconceptions

The responses indicated that there were relatively few misconceptions. Candidates who performed well did so by applying a good understanding of the specification items successfully. Candidates who performed less well were limited more by a lack of preparation and understanding than by misconceptions.

Key teaching and learning points – comments on improving performance

Centres should continue to encourage candidates to present their work clearly and to provide guidance and examples on what this means in practice.

Centres should continue to ensure that candidates are familiar with the key recurring question types. This includes:

- finding the position of the centroid of complex uniform irregular shapes by applying a moment of area method and using a tabular presentation.
- bending of beams problems involving the calculation of bending moments and/or sketching of bending moment diagrams for simply supported or cantilever beams with point loading.
- demonstrating an understanding of the conditions for equilibrium including the use of the principle of moments when analysing simple systems in equilibrium.

Guidance on using this paper as a mock

This paper provides good coverage of the key parts of the specification and is similar in style and structure to papers from earlier sessions. It is suitable for use as a mock examination or for other internal assessments.

Supporting you

Review of results

If any of your students' results are not as expected, you may wish to consider one of our review of results services. For full information about the options available visit the OCR website.

Supporting you through 2020-2021

Our priority is supporting you and your students as you prepare for summer 2021 exams. We'll update our website information regularly with resources, guidance and key information.

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- Teachers
- Students
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- Assessment specialists

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