Fundamentals of Manufacturing

Workbook

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Editor

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Preface

This Workbook is designed to be used in conjunction with *Fundamentals of Manufacturing*, Second Edition. It provides structured practice questions for individuals preparing to take the Manufacturing Technologist (CMfgT) certification examination.

While the objective of this Workbook is to help prepare manufacturing professionals for the Certified Manufacturing Technologist exam, individuals preparing for the Certified Manufacturing Engineer exam may find it beneficial in their preparation process.

Introduction

MANUFACTURING CERTIFICATION

Manufacturing is concerned with energy, materials, tools, equipment, and products. Excluding services and raw materials in their natural state, most of the remaining gross national product is a direct result of manufacturing.

Modern manufacturing activities have become exceedingly complex because of rapidly increasing technology and expanded environmental involvement. This, coupled with increasing social, political, and economic pressures, has caused successful firms to strive for high-quality manufacturing engineers and managers.

The Society of Manufacturing Engineers has acted as a certifying body since 1971. The principal advantage of certification is that it shows the ability to meet a certain set of standards related to the many aspects of manufacturing. These standards pertain to the minimum academic requirements needed, but more importantly, they pertain to the practical experience required of a manufacturing engineer or manager.

Many persons currently employed in industry can successfully measure themselves against these standards, but they cannot provide documentation concerning their ability. The certification program is designed to provide successful candidates with documentary evidence of their abilities. The designations Certified Manufacturing Engineer (CMfgE), Certified Manufacturing Technologist (CMfgT), and/or Certified Enterprise Integrator (CEI) are bestowed upon successful candidates.

Philosophically, the purpose of manufacturing certification is to gain increased acceptance of manufacturing engineering and management as a profession and to ultimately improve overall manufacturing effectiveness and productivity.

PURPOSE AND OVERVIEW

The purpose of this Workbook, in conjunction with the *Fundamentals of Manufacturing*, Second Edition, is to provide structured practice questions for the manufacturing professional preparing to take the Certified Manufacturing Technologist (CMfgT) examination. The workbook can also serve, to a limited extent, as useful practice for individuals preparing for the Certified Manufacturing Engineer (CMfgE) examination.

The major areas of manufacturing reviewed in the Workbook include mathematics, physics and engineering science,

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materials, product design, manufacturing processes, production systems, automation and control, quality, manufacturing management, and personal effectiveness.

EXAMINATION SPECIFICS

The Certified Manufacturing Technologist examination is a three-hour, open-book exam consisting of 130 multiple-choice questions. Each major area and its relative emphasis in the exam are listed as follows:

Mathematics	2.1%
Physics and Engineering Science	9.1%
Materials	5.1%
Product Design	13.4%
Manufacturing Processes	14.1%
Production Systems	20.9%
Automated Systems and Control	5.3%
Quality	13.0%
Manufacturing Management	10.8%
Personal/Professional Effectiveness	6.2%

ADDITIONAL INFORMATION

Additional study resources for the Certified Manufacturing Technologist exam include, but are not limited to, a pencil and paper practice exam, the web-based or CD-ROM self-assessment program, and *Fundamentals of Manufacturing*, 2nd Edition. The self-assessment program (based on the same topics as the exam) will help to determine a candidate's strengths and weaknesses. Built-in bibliographic references suggest additional study materials.

For more information regarding the exam or additional resources, please contact the Society of Manufacturing Engineers by calling 313-271-1500 or email: training@sme.org. Information also can be obtained on SME's website www.sme.org/certification.

Any questions or comments regarding this Workbook are welcome and appreciated. Please direct questions and/or comments to training@sme.org.

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