CANDIDATE AND CERTIFICANT HANDBOOK

for the

CERTIFIED PRODUCTION TECHNICIAN$_{AE}$ (CPT$_{AE}$) Program

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CANDIDATE and CERTIFICANT HANDBOOK

Welcome to the Certified Production Technician$_{AE}$ (CPT$_{AE}$) certification program!

MSSC developed the CPT$_{AE}$ program to assess and certify the skills of front-line manufacturing production workers. We define front-line production workers as entry-level through first level of supervision within all sectors of the manufacturing industry. According to the U.S. Bureau of Labor Statistics, there are about 9 million jobs in this category in the U.S.

MSSC is a leading, nationwide national certification body. Those who succeed in MSSC Assessments receive industry-recognized, nationally portable MSSC credentials. The CPT$_{AE}$ program was developed by industry experts and is updated annually to ensure that the skills assessed are the most relevant to today's manufacturing employers. For more information about MSSC, please visit our website at www.msscusa.org.

INTRODUCTION

Program Description

The purpose of the Certified Production Technician$_{AE}$ program (CPT$_{AE}$) is to recognize through certification individuals who demonstrate mastery of the core competencies of manufacturing production at the front-line level (entry-level through front-line supervisor) through successful completion of the certification assessments. The goal of the CPT$_{AE}$ certification program is to raise the level of performance of production workers both to assist the individuals in finding higher-wage jobs and to help employers ensure their workforce increases the company's productivity and competitiveness.

The CPT$_{AE}$ program consists of five individual certificate modules: Safety; Quality Practices & Measurement; Manufacturing Processes & Production; Maintenance Awareness and Green Production. Candidates must earn the first four certificates to qualify for the full CPT$_{AE}$ certification (Green Production is not required for full CPT$_{AE}$).

Eligibility Requirements

Four CPT$_{AE}$ program certificates: In order to earn the CPT$_{AE}$ certification, candidates must successfully complete each of the following four assessments in the program: Safety; Quality Practices & Measurement; Manufacturing Processes & Production; and Maintenance Awareness.

Additional Requirements: MSSC does not have any other specific educational requirements in order to sit for the CPT$_{AE}$ assessment. However, MSSC strongly suggests that candidates possess at least a 10th grade reading (English) and 9th grade math level.

Training Requirements: MSSC does not require candidates to take a specific course or training program in order to sit for an assessment. However, we find that students enrolled in a training program perform better than those who do not. There are many training programs available and many used MSSC's own Authorized Courses.

MSSC Courses were developed in strict adherence to the industry-recognized, nationally validated standards upon which the Certified Production Technician (CPT) is based. These Courses, developed and delivered by Amatrol, have a proven track record of success in teaching the knowledge and skills identified in the national standards. The success rates for students taking MSSC Courses are nine points higher than those who do not (81% vs. 72%, respectively). MSSC Courses are highly interactive and utilize state-of-the-art, computer-based, simulation e-learning technologies and are delivered by MSSC-Authorized Instructors. MSSC does not authorize, review or endorse any other courses or curricula. MSSC does not require that

individuals take MSSC Courses or any other MSSC-related courses before taking an MSSC Assessment.

CERTIFICATES AND FEES

To obtain the total cost for registration and assessments, please contact your local assessment center.

Candidates are able to download from any computer a **FREE** high-quality, high-resolution copy of your MSSC certificate(s). MSSC will provide a candidate who is Full CPT-certified with a copy of their Full CPT certificate and a patch via the mail. (**Please note:** Certificates will be available for download two (2) business days after your assessment date).

Certificates:

Individual Items
$25 for one certificate + $10 shipping = $35
$5 for one patch + $10 shipping = $15
$7.50 for one wallet card + $10 shipping = $17.50

Package discounts
CPT - $45 for all (5) certificates + $10 shipping = $55

. **Refunds:**   No refunds will be issued for individuals who take the assessment or who fail to appear for a scheduled assessment. All other refund requests must be submitted in writing to accounting@msscusa.org.

NOTE: These and other assessment fees may or may not be paid by a third party including but not limited to: local, state and federal grant programs; community college credit or non-credit programs; other education or tuition based programs; employer training/certification programs; individual payment, etc.

APPLICATION PROCESS

Submission

Prior to sitting for an MSSC assessment, all candidates must register with MSSC online at http://login.msscusa.org. If you need a hard copy version, please contact MSSC at 703-739-9000

Deadlines

Application must be submitted at least 72 hours prior to the scheduled assessment date. NOTE: Individual Assessment Centers may have additional deadlines.

Special Accommodations

MSSC strives to provide a favorable environment for every participant during the assessment session. Special accommodations must be approved by MSSC. The online assessment system supports the following accommodations when requested and/or determined appropriate:

- Text to speech: audio and visual enhancements for online assessments
- Extended time: option for adding time to assessment administration sessions, to accommodate individuals with documented reading or computer operation disabilities
- Readers: additional copy of the assessment can be provided when a reader is used to accommodate individuals with documented eyesight difficulties
- MSSC does not allow for translators or translation of assessments into languages other than those of the country in which the assessment is given.

ASSESSMENT ADMINISTRATION

Development of CPT$_{AE}$ Assessment

The CPT$_{AE}$ certification program was developed to credential front-line production workers in the United States. MSSC worked with 4000 front-line workers, 700 companies, leading industrial unions, 350 subject matter experts and a public-private investment of over $9 million. In 2001, the industry-led, national production standards were formally endorsed by the National Skill Standards Board.

The MSSC National Experts Panel for Production ensures that the assessments and the standards upon which they are based are updated annually. The assessments are also reviewed annually to ensure that questions which are unclear, inaccurate or outdated are modified or deleted from the assessment item bank.

The CPT$_{AE}$ certification is awarded only when a candidate has completed the application, submitted the registration and assessment fees and successfully completed all four modular CPT$_{AE}$ assessments.

English Language Only

The CPT$_{AE}$ assessments are offered only in the English language.

Assessment

Safety: The Safety assessment consists of 83 multiple choice questions. Candidates are allowed 90 minutes to complete the assessment.

Quality Practices and Measurement: The Quality assessment consists of 85 multiple choice questions. Candidates are allowed 90 minutes to complete the assessment.

Manufacturing Processes and Production: The Production assessment consists of 89 multiple choice questions. Candidates are allowed 90 minutes to complete the assessment.

Maintenance Awareness: The Maintenance assessment consists of 89 multiple choice questions. Candidates are allowed 90 minutes to complete the assessment.

Green Production: The Green assessment consists of 94 multiple choice questions. Candidates are allowed 90 minutes to complete the assessment.

Assessment Options and Locations

MSSC offers assessments at various Authorized Assessment Centers throughout the country. To find a center near you, see this map: http://msscusa.org/locations.

Computer-Based: The primary method of delivery for MSSC assessments is through an online assessment process supported by NOCTI/The Whitener Group.

Paper/Pencil: If computers are not accessible, MSSC will make paper/pencil assessments available. Note: individuals who use the paper/pencil method will experience up to a two week delay in receiving their credentials due to the additional time required to process the scores. *If you take paper/pencil, you should bring at least two sharpened NO.2 pencils with you.*

Assessment Security

A significant component of a successful and respected professional certification credential is maintaining the security of the assessment. MSSC relies upon the ethical behavior of certificants and applicants to maintain the security of the CPT$_{AE}$ assessments. When those who seek to obtain the credential, or those who hold the MSSC credential reveal information about MSSC assessment content (other than that information published by MSSC), they violate the Affirmation and Authorization agreement all candidates agree to and accept when they apply for certification and take the assessment. They also violate the MSSC Code of Ethics.

The MSSC Board will take action against individuals who violate MSSC Board Policies and the Code of Ethics. Actions taken may include permanently barring individuals from pursuing MSSC credentials and revoking certifications from those who have been awarded the credential. MSSC will also pursue legal action against individuals or organizations who infringe upon our copyrights, proprietary rights and intellectual property.

Assessment Preparation

The MSSC Board employs strict measures to prevent the possession, reproduction and removal of assessment materials. A strategy for taking this assessment is:

1. Prepare in advance by becoming familiar with the concepts of the MSSC Production Standards. MSSC does not require that individuals take any courses, however, before taking a CPT$_{AE}$ assessment.
2. When you receive your paper exam or login to the online exam, answer the questions that you know, and skip those which you do not know the answer to or are uncertain about.
3. On the second review, go back through the questions you skipped and try to choose the best answer.
4. Use remaining time to answer any last questions and to make sure that you have answered all questions.

Assessment Admission

You are responsible for bringing your MSSC Identification Number (received upon registration) with you to the assessment and a valid photo ID. Candidates who do not possess valid identification will be denied access to the assessment. Identification must be a current government issued picture ID bearing the candidate's signature. Acceptable forms of government issued ID include a driver's license, passport, military ID, federal state or county issued ID.

You will not be permitted to take the assessment without a valid photo ID.

Assessment Rules and Procedures

The following rules and procedures will be strictly enforced on the day of the assessment.

- The assessment will begin promptly at the hour designated by the proctor and end at the stated time allowed for each particular exam offering.
- Candidates will not be allowed to enter the assessment after it starts.
- Visitors are not permitted in the assessment room.
- Pencils are not provided.
- Candidates are allowed to leave the room during the assessment with the proctor's permission. Lost time cannot be made up.
- Textbooks and notes are NOT permitted.
- Calculators and other such aids are NOT permitted (a four-function calculator is provided within the online testing system).
- Scratch paper may be permitted, but may not be taken from the assessment room.

- No cellular phones, pagers or other audible electronic devices, including watches with alarms are permitted to be used during the assessment.

MSSC will invalidate your assessment and take action in accordance with the disciplinary procedure if you access prohibited materials, have contact with anyone except proctoring staff, or engage in disruptive, unprofessional or conduct that violates the Code of Ethics at any assessment facility.

Actions / Disqualifications

The assessment center proctor or MSSC will take appropriate actions, up to and including disqualification from taking the assessment and withdrawal or revocation of certification when a candidate:

- Impersonates a candidate
- Creates a disturbance
- Gives or receives help on the assessment
- Uses a calculator or other such aid, which is prohibited during the assessment
- Attempts to remove assessment material or notes about the assessment from the assessment room
- Exhibits irregular assessment taking behavior, including consulting or attempting to consult with or give or obtain assistance during the assessment; bringing in or using unauthorized materials including cheat sheets, printed and/or other handwritten materials
- Provides false, misleading or incomplete information on the application form

Examinee Conduct

All candidates are required to sign a statement agreeing not to disclose the contents of the assessment nor remove assessment materials from the assessment room. All candidates are also required to attest to the authenticity of their credentials and the accuracy of all statements made in their application.

Cheating will not be tolerated, and all instances of suspected cheating will be fully investigated. Candidates that are caught cheating will have their assessment invalidated.

Scoring

Paper/Pencil Scoring

Answers are recorded on a separate answer sheet using a No. 2 pencil. No credit will be given for an answer written or indicated in the assessment booklet. A no response or multiple responses to a single question will be scored as incorrect. A previous mark for a changed answer must be completely erased. The proctor will provide instructions for entering information on the answer sheet. The candidate's name and other requested information must appear on the answer sheet and must be entered correctly to assure that scores will be reported correctly and promptly.

By submitting the answer sheet, the candidates are certifying that they are the person whose name appears on the answer sheet and that they will not copy or retain assessment questions or transmit them in any form to anyone else. Scores of candidates sharing such assessment information will automatically be invalidated. If an individual has obtained the CPT_{AE} certification, that certification will be forfeited for such actions. The Proctor is not allowed to respond to any inquiries about the assessment questions.

Computer-Based Scoring

Answers are recorded directly on the computer screen. If you have questions on any content specific to the assessment, the Proctor is to inform you that he/she is unable to answer content questions.

By completing the final online submission of the assessment answers, the candidates are certifying that they are the person whose name was submitted in the online registration and that they will not copy or retain assessment questions or transmit them in any form to anyone else. Scores of candidates sharing such assessment information will automatically be invalidated. If an individual has obtained the CPT_{AE} certification, that certification will be forfeited for such actions. The Proctor is not allowed to respond to any inquiries about the assessment questions.

Results

The passing score for Safety is 76 percent (76%).

The passing score for Quality Practices and Measurement is 75 percent (75%).

The passing score for Manufacturing Processes and Production is 74 percent (74%).

The passing score for Maintenance Awareness is 73 percent (73%).

The passing score for Green production is 78 percent (78%).

Assessment takers will learn at the end of their assessment whether they passed or did not pass. Based upon guidance from industry experts, MSSC has established a minimum score for passing all four CPT_{AE} exams. MSSC policy prohibits release of any assessment scores to anyone other than the Candidate. The Candidate may choose to share their scores with the Proctor or other individuals.

Candidates taking the computer-based assessments receive a result screen immediately upon completion of the assessment. You may request that the Proctor allow you to print this page. This is the only document you are allowed to take from the assessment room. This print-out reflects an unofficial assessment result.

Confidentiality Statement

Assessment results are confidential. MSSC shall not disclose information regarding assessment results or other information without the candidate's consent except: 1. as necessary for MSSC staff, authorized consultants or others with a need to know; 2. when verifying references provided by the candidate; or 3. as required by law. Candidates must request disclosure of assessment information in writing and identify the person to whom the disclosure should be made.

MSSC will publish the names of all individuals who have passed the assessment and maintain current certification. MSSC reserves the right to publish on the MSSC website the name of any certificant when a complaint about them has been upheld.

Information Release Policy

MSSC will not release any information regarding a Candidate's application or assessment administration without written authorization from the Candidate. Assessment materials and answer sheets remain the sole property of MSSC. The materials are confidential and are not available for review by any persons or agency for any reason.

During the candidate registration process, candidates will be asked to verify that they have read and understand the following:

I hereby authorize the Manufacturing Skill Standards Council (MSSC) to share my assessment results, including date(s) and location of testing, pass/fail status and assessment scores, with the following entities: federal or state or local educational authorities funding my training or assessments; employers funding my training or assessments.

[PLEASE NOTE: MSSC does not require your authorization for participation. However, some funding entities may require access to your assessment results in order to fund or allow your participation. Opting out may result in termination from the program. If you have any questions about your disclosure requirements, please contact your training and testing organization for more information.]

The Family Education Rights and Privacy Act applies to schools that receive federal funding. Under this act, MSSC is authorized to share your assessment results with: 1) federal or state or local educational authorities conducting an audit or evaluation or enforcement of education programs; 2) organizations conducting studies on behalf of schools; 3) state and local officials in connection with service students under the juvenile justice system.

Rescheduling, Cancellation and Withdrawal Policy

Should you be unable to attend the assessment at the time you scheduled, you must notify your Assessment Site Coordinator in the timeframe established by your Assessment Site. Your assessment payment will remain valid for six months from your scheduled assessment date. You are responsible for rescheduling the assessment time with your Assessment Site.

Retaking the Assessment

Candidates who do not pass the assessment may retake the assessment after a 15-day waiting period. Candidate may take the assessment up to three times (the original assessment plus two retakes) within a 45 day period from the date of their initially taking the assessment. If the Candidate does not pass the exam upon the third try, they must then wait an additional 60 days before attempting the assessment again.

RECERTIFICATION

Recertification Requirement

To ensure that the CPT_{AE} certification reflects the most current standard in the front-line manufacturing profession, full- CPT_{AE} certificate holders are required to re-certify every five years. Recertification may be obtained by earning points through continuing education and/or employment in a related field. For more information about the recertification process, please visit the website: www.msscusa.org/recertification.

APPEAL PROCESS

Right to Appeal

Candidates for the Certified Production Technician$_{AE}$ (CPT$_{AE}$) Program and Certificant have the right to file an appeal on matters relating to their application, assessment, certification, annual renewal, recertification or other matters affecting their status as a Candidate or Certificant. There are generally two types of appeals, an administrative appeal and a personal appeal.

Administrative Appeal

Candidates for the CPT$_{AE}$ program who allege inappropriate administration procedures, severe environmental assessment conditions, or for other reason challenge results of an assessment have the right to file an administrative appeal in accordance with the appeal procedures.

Certificant who believe they were unjustly denied recertification, placed on "inactive" status incorrectly, or for other reasons have the right to an administrative appeal in accordance with the appeal procedures.

Appeal Procedures

All such appeals must be filed in the office set out below within the earlier of 30 days of the assessment or notice of non-certification or recertification. The appeal fee is $50. The fee will be refunded to the candidate if the Appeal and Complaint Committee resolves the appeal in favor of the Candidate or Certificant.

Each appeal must include a statement submitted by the Candidate in writing or via email of no more than five typed pages setting out the basis of the appeal, including information as specific as the Candidate feels necessary why he or she is entitled to the relief requested.

The Appeal and Complaint Committee will consider each such written statement. The Appeal and Complaint Committee is entitled to seek further information from the applicant or any other person, organization or office that it feels appropriate and review any materials that it feels appropriate to determine the appeal. The Appeal and Complaint Committee will determine the appeal and respond to the applicant.

Appeals will be resolved within 90 days of submission. The Appeal and Complaint Committee reserves the right to waive or extend any time period set out in the procedure, or modify any process as it deems appropriate to properly determine any appeal. All steps of the Appeal and Complaint process will take place in writing unless otherwise determined by the Appeal and Complaint Committee.

Submit all Appeals along with the $50 fee to:
MSSC Certification Department
900 N Washington St, Suite 600
Alexandria, VA 22314

Personal Appeal

Candidates and Certificants dissatisfied with the actions of the Appeal and Complaint Committee have the right to a Personal Appeal with the MSSC Board. A Personal Appeal must be submitted in writing and sent to the above address. A meeting of the Board will be set up within 180 days of receipt of the Personal Appeal. Appeal and Complaint Committee members are recused from the Personal Appeal process. Any action taken by a majority of a quorum of the Board pursuant to such appeal shall be final. The Board decision shall be sent to the person submitting the appeal within ninety (90) days of the decision of the Board.

CODE OF ETHICS

This document sets for the following code of ethics for CPT$_{AE}$ certificants:
- To comply with relevant provisions of the certification scheme
- To make claims only with respect to the scope (of the standards) for which the certification has been granted
- To avoid using certification in a manner that will bring the certification body into disrepute
- To discontinue the use of all claims to certification that contains any reference to the certification body upon suspension or withdrawal of certification
- To refrain from using certification in a misleading manner
- To understand the MSSC "Key Activities" document that describes the principal production activities to which the CPT$_{AE}$ certificates and full certification applies.
- To explain that the MSSC certificates document the individual's competency to achieve the required performance level on a national certification assessment only with respect to the Key Activities related to that certificate.
- To avoid using the certification in a manner that will bring MSSC into disrepute
- To refrain from using certification in a misleading manner
- To understand that a violation of any of the above principles could lead to the suspense or withdrawal of this credential, after which the individual should discontinue the use of all claims to MSSC certification
- To refrain from altering the certification document in any way

Certificants shall, in their professional production activities, sustain and advance the integrity, honor and prestige of the CPT$_{AE}$ certification by adherence to this Code of Ethics. Certificants who intentionally or knowingly violate any provision of the Code of Ethics will be subject to revocation of the certification.

CPT$_{AE}$ LOGOS

Logo Usage

As a CPT in good standing, you may want to utilize the official CPT$_{AE}$ logo to place on your business cards; email signature or other personal identification documents.

To request an electronic version of the CPT$_{AE}$ color logo JPG please contact: MSSC at info@msscusa.org or 703-739-9000.

Please adhere to the following guidelines when using the CPT$_{AE}$ logo:
The logo may not be revised or altered in any way. The logo must be displayed in the same form as produced by MSSC and cannot be reproduced unless such reproduction is identical to the logos provided by MSSC. The CPT$_{AE}$ logo is meant to identify a Certificant as opposed to a business entity. The logo may be used only on the Certificant´s own business cards, stationery, forms showing the Certificant´s letterhead, inspection tags, and similar documents on which the name and address of the Certificant is prominently displayed.

The logo may not be used in any manner that detracts from the high ideals of MSSC or the CPT$_{AE}$ certification. The CPT$_{AE}$ logo may not be used in any manner which would tend to imply a connection between CPT$_{AE}$ and the Certificant which, in fact, may not exist. This includes any use of the logo the public might construe as an endorsement, approval or sponsorship by MSSC of a Certificant or a Certificant´s business, or which might be taken to support or encourage a Certificant´s sale of product, process or installation. A Certificant is allowed to print the logo on an advertisement or product literature. Without limiting the foregoing restrictions, the logo may in not be shown larger than 1.5 inches or 4 centimeters on a full page or proportionally on a smaller page.

If you have any questions regarding use of the logo, please contact MSSC at info@msscusa.org or 703-739-9000.

Affirmation of Proper Usage of CPT$_{AE}$ Logo

All CPT$_{AE}$ candidates and certificants sign an agreement that they will comply with the relevant provision of the CPT$_{AE}$ program described in the CPT$_{AE}$ Candidate Handbook. No person gains any rights whatsoever in the logo or its use; it remains the property of MSSC. MSSC reserves the right in its sole discretion to require the removal of the logo from any location or thing MSSC feels does not comply with these guidelines.

MSSC acts to challenge those who use the CPT$_{AE}$ designation without authority from MSSC. Penalties may include barring from pursuing the certification and publishing the names of the violators. MSSC may authorize the use of the symbol, the phrase "Certified Production Technician$_{AE}$", and the initials "C.P.T." by certificants only; provided such holder currently possesses a valid certificate issued by MSSC. An applicant/candidate who has had their applicant status terminated may appeal to MSSC in accordance with the Appeal and Complaint Process described in the CPT$_{AE}$ Applicant Handbook. Certificants whose CPT$_{AE}$ status is terminated are entitled to the same Appeal Process.

VERIFICATION OF PERSONAL DATA

Candidates and Certificants wishing to verify any personal data on file other than scores may contact MSSC at 901 N. Washington St., Suite 600, Alexandria, VA 22314; 703-739-9000 or info@msscusa.org.

ASSESSMENT CONTENT OUTLINE (WORK STANDARDS)

Safety Content Area Weighting

The following shows the relative importance of each content domain on the certification exam. When preparing for the exam, candidates should spend proportionately more time studying the content domains that are more heavily weighted.

Work in a Safe and Productive Manufacturing Workplace (5%)
   a. Ways in which manufacturing affects the national and global economies are recognized
   b. Systems of safety used by high-performance manufacturers to produce quality products at lowest possible costs are recognized
   c. Role of production workers in helping to ensure competitive levels of cost, quality and delivery in a safe work environment is identified
   d. External and internal customers are identified.

Perform safety and environmental assessments (11.5%)
   a. Potential hazards in the work are identified, reported and monitored
   b. Corrective action is taken to eliminate potential hazards
   c. Health, safety and environmental documentation and policies are thorough and regularly reviewed
   d. Inspections meet all relevant health, safety and environmental laws and regulations
   e. Inspections are performed according to company schedule and procedures
   f. Inspections are documented
   g. Inspection records are stored correctly.

Perform emergency drills and participate in emergency teams (6%)
   a. Training and certification on relevant emergency and first aid procedures are complete and up-to-date
   b. Procedures for responding to fire and electrical emergencies are clearly defined
   c. Emergency response complies with company and regulatory policies and procedures

     d. Emergency drills and incidents are documented promptly according to company and regulatory procedures

Identify unsafe conditions and take corrective action (9%)
     a. Conditions that present a threat to health, safety, and the environment are identified, reported, and documented properly
     b. Corrective actions are identified
     c. Appropriate parties are consulted about corrective action
     d. Corrective actions are taken promptly according to company procedures
     e. Ongoing safety concerns are tracked and reported until corrective action is taken

Provide safety training for all employees (11.5%)
     a. Orientation covers all topics and procedures needed to facilitate employee safety
     b. Orientation identifies needs and processes to raise safety concerns, ask questions, and receive additional training
     c. Orientation is provided on use of personal protective equipment
     d. Orientation is documented according to company requirements
     e. Orientation meets all relevant laws, policies and regulations
     f. Safety training is delivered regularly

Train personnel to use equipment safely (15%)
     a. New operators are given a complete orientation to the equipment and guidelines for ergonomic safety
     b. All important information regarding equipment safety, including material handling equipment, is communicated clearly and effectively
     c. Suggestions regarding training materials and content are made to the correct parties
     d. Evaluations and feedback are utilized to improve training materials and methods
     e. During training, trainee has the correct tools to do the job
     f. Post-training evaluation indicates that workers can operate equipment safely
     g. Training and facilitation techniques used are appropriate for trainees
     h. Quality and effectiveness of training are documented appropriately

Suggest processes and procedures that support safety of work environment (8%)
     a. Health and safety representatives are consulted in the development of suggestions
     b. Operator feedback is solicited and used to create a safer, more effective work environment
     c. Suggestions are made to correct parties, according to company procedure
     d. Suggestions are properly documented
     e. Content of suggestions appropriately responds to safety, quality and productivity issues

Fulfill safety and health requirements for maintenance, installation, and repair (13%)
     a. Communication regarding safety is made regularly to all employees
     b. Job safety analyses are reviewed regularly according to company policy
     c. Hazardous materials procedures and policies, such as Material Safety Data Sheets (MSDS) and right-to-know, are accurately followed
     d. Environmental testing of workplace is performed on a regular basis as required by company policy and regulation
     e. Equipment is audited to ensure there are no by-passes of safety guards
     f. All regulatory and company safety procedures are followed, including those related to lock-out/tag-out, confined space, and ergonomics
     g. Good housekeeping procedures are followed

Monitor safe equipment and operator performance (14%)
     a. Monitoring is performed regularly
     b. Out-of-compliance or unsafe conditions are reported immediately
     c. Corrective action is taken on out-of-compliance or unsafe conditions

    d. Equipment is checked to ensure it is operating according to safety specifications
    e. Tools are checked to ensure they are in compliance with safety specifications
    f. Accident and injury data is forwarded to appropriate personnel for inclusion in OSHA recordables
    g. Information on equipment use is gathered from operators to reveal existing or potential safety problems.
    h. All safety monitoring data is accurately documented

Utilize effective, safety-enhancing workplace practices (7%)
    a. Communications are clear
    b. Teamwork is effective
    c. Production job assignments are made properly
    d. Training programs are run efficiently

Quality Practices & Measurement Content Area Weighting

The following shows the relative importance of each content domain on the certification exam. When preparing for the exam, candidates should spend proportionately more time studying the content domains that are more heavily weighted.

Participate in periodic or statistically based internal quality audit activities (11%)
    a. Audit data are relevant and correct
    b. All relevant audit forms are completed correctly and forwarded to the proper parties in a timely manner.
    c. Conformances to quality standards are properly assessed and documented.
    d. When appropriate, include observation of operation in audit to ensure process and product meet specifications
    e. Audit performed in accordance with company and other required schedules and procedures
    f. Ongoing audits are performed to optimize the outcomes of corrective actions

Check and document calibration of gauges and other data collection equipment (6%)
    a. Calibration schedule is followed according to specifications
    b. Instrument certification is checked by reviewing documentation and through observation during use
    c. Instruments out of calibration are promptly recalibrated or referred to the appropriate parties for recalibration repairs

Suggest continuous improvements (6%)
    a. Potential improvements are recognized through observation and data analysis
    b. Measurable & data-driven benefits to the company/customers/employees are included in suggestions
    c. Suggestions are made according to proper procedures and documentation.
    d. Suggestions show that all relevant data were reviewed before making suggestions

Inspect materials and product/process at all stages to ensure they meet specifications (17%)
    a. Sampling and inspection occur according to schedule and procedures
    b. Inspection tools and procedures are selected and used correctly
    c. The calibration of testing equipment is verified
    d. Materials are inspected against correct specifications
    e. Products, processes and materials that do not meet specifications are identified promptly
    f. Implementation of corrective actions is verified through spot checks
    g. Inspection documentation is properly documented and reported to the correct parties

Document the results of quality tests (9%)
    a. Data forms are checked to ensure that they are complete and accurate

    b. Information is evaluated and interpreted correctly
    c. Data is forwarded to correct parties
    d. Correct analytical tools, including statistical process controls (SPC), are selected and used properly
    e. Reports are stored properly for the specified time frames

Communicate quality problems (8%)
    a. Quality problems are reviewed with production operators
    b. Quality problems are communicated promptly to appropriate parties
    c. Quality problems are documented according to established processes
    d. Defect trends are summarized and reported to appropriate parties

Take corrective actions to restore or maintain quality (13%)
    a. Appropriate corrective actions are identified and approvals received when needed
    b. Recommendations for action are clear, concise and supported by data
    c. Recommendations are made promptly to the appropriate parties
    d. Adjustments are made in a timely manner to eliminate deviations and bring the process back into control
    e. Adjustments and follow-up product quality checks are properly documented in correct format
    f. Corrective action/quality improvements are implemented in a standardized manner

Record process outcomes and trends (11%)
    a. Records on quality process are maintained to appropriate standards.
    b. Outcomes of quality processes are charted according to appropriate methods and standards.
    c. Data on quality process performance is accurate
    d. Quality process performance data is analyzed to identify trends.
    e. Quality process performance data is reported to appropriate parties in a timely manner
    f. Previous documentation on similar process issues is examined to identify possible solutions

Identify fundamentals of blueprint reading (9%)
    a. Objects are effectively visualized in a drawing
    b. Blueprint features are correctly identified
    c. Dimensions of an object in a technical drawing are accurately read and understood
    d. The functions of sectional drawings are recognized

Use common measurement systems and precision measurement tools (10%)
    a. Both U.S. measurement and standard international metric systems are used and converted
    b. Parts are measured correctly using a machinist's rule and tape measure
    c. Part dimensions are measured correctly using a caliper and micrometer
    d. A computer is used correctly to measure data from a digital gauge

Manufacturing Processes & Production Content Area Weighting

The following shows the relative importance of each content domain on the certification exam. When preparing for the exam, candidates should spend proportionately more time studying the content domains that are more heavily weighted.

Identify customer needs (10%)
    a. The different and common needs of internal and external customers are recognized
    b. Customer contact about product aspects and printed specifications is maintained to ensure understanding of needs

    c. Customer needs are reviewed on a regular basis
    d. Customer specifications are up-to-date
    e. Customer needs are communicated effectively to others including shift-to-shift, co-workers, and managers
    f. Issues preventing customer needs from being met are addressed proactively

Determine resources available for the production process (10%)
    a. Raw materials are checked against work orders
    b. Tools and equipment are checked against work orders
    c. Discrepancies are communicated to the proper parties
    d. Necessary resources are at the workstation when required
    e. Workers with appropriate skills are scheduled according to production needs

Set up and verify equipment for the production process (11.5%)
    a. Proper repairs and adjustments are made to production equipment prior to putting into service
    b. Set-up meets process requirements and product specifications.
    c. First piece or production run meets specifications
    d. Set-up procedures are documented for repeatability
    e. Set-up meets ergonomic and other relevant health, safety, and environmental standards
    f. Set up meets equipment specifications

Set team production goals (8%)
    a. Team goals are specific, measurable, and achievable
    b. Team goals are aligned with customer and business needs c. Team goals focus the team in order to meet team objectives
    d. Team goals are documented and communicated to all parties

Make job assignments (8%)
    a. Jobs assignments match skills with the production work to be done
    b. Job assignments maximize the use of available skills
    c. Job assignments ensure business and customer needs are met
    d. Workers are notified of job assignments effectively

Coordinate work flow with team members and other work groups (11.5%)
    a. Production schedules are met effectively
    b. Team members are notified of schedule requirements in a timely way
    c. Production workflow runs efficiently
    d. Downtime is minimized
    e. Relationships with others facilitate effective workflow
    f. Workers actively participate in meetings and problem-solving groups

Communicate production and material requirements and product specifications (11.5%)
    a. Communication reflects knowledge of production requirements, levels, and product specifications
    b. Communication reflects knowledge of material specifications and delivery issues and schedules
    c. Communication demonstrates knowledge of customer and business production needs
    d. Communication is initiated cross-functionally and made in a timely and accurate manner to the correct parties
    e. Communication is clear and relevant to production and products
    f. Communications are tracked and documented, as appropriate

Perform, monitor and document the process to make the product (9%)

a. Process control data indicate that the manufacturing process is meeting product specifications
b. Manufacturing process cycle time meets customer and business needs
c. Product meets customer specifications
d. Products are labeled appropriately for compliance or non-compliance
e. Production operations comply fully with all health, safety, and environmental policies and practices

Document product and process compliance with customer requirements (9%)
a. Documentation of compliance is legible
b. Documentation of compliance is written in the appropriate format and correctly stored
c. Documentation of compliance is forwarded to the proper parties
d. Documentation is complete and "sign off" is obtained
e. Products are labeled appropriately for compliance or non-compliance

Prepare final product for shipping or distribution (11.5%)
a. Packaging materials meet packaging and shipping specifications, including proper labeling and safety requirements
b. Completed documentation of customer packaging and shipping instructions accompany product to next destination
c. Product availability is communicated to the proper parties in a timely manner
d. Product and all relevant information—such as quantity, destination, and packaging instructions--are checked against the work order
e. Product is correctly stored or staged for shipping
f. All laws and regulations with regard to labeling, packaging, and transport are followed.
g. Material handling procedures are followed to prevent product damage

Maintenance Awareness Content Area Weighting

The following shows the relative importance of each content domain on the certification exam. When preparing for the exam, candidates should spend proportionately more time studying the content domains that are more heavily weighted.

Perform preventive maintenance and routine repair (26%)
a. Preventive maintenance schedule is prepared and checked as appropriate
b. Preventive maintenance is performed to schedule
c. Preventive maintenance is documented completely and in a timely manner
d. Repair needs are communicated to the correct parties using the right procedures and forms
e. Any necessary repair work is checked through follow up
f. Necessary supplies are available to perform preventive maintenance
g. Preventive maintenance schedules, documentation, equipment needs and outstanding repairs are communicated effectively from shift-to-shift, to team members, to managers and to others as required
h. All safety procedures are followed when doing repairs

Monitor indicators to ensure correct operations (16%)
a. Current equipment performance is regularly compared to optimal equipment operations
b. Abnormal equipment conditions are investigated
c. Abnormal equipment conditions are corrected in a timely manner
d. Equipment is monitored to ensure that the corrective action solved the problem
e. Documentation of equipment repair history is complete, up-to-date and accurate

Perform all housekeeping to maintain production schedule (23%)
a. Tools are stored in the proper location
b. Materials are stored in a safe manner

    c. Unsafe conditions are identified and reported promptly
    d. Corrective action is taken to correct unsafe conditions
    e. Workstation clean and clear of safety hazards
    f. Scheduled housekeeping inspections are passed
    g. Workstation to organized to maximize efficiency

Recognize potential maintenance issues with basic production systems, including knowledge of when to inform maintenance personnel about problems with (35%)
    a. Electrical systems
    b. Pneumatic systems
    c. Hydraulic systems
    d. Machine automation systems
    e. Lubrication processes
    f. Bearings and couplings
    g. Belts and chain drives
    h. High vacuum systems
    i. Laser systems

Green Production Content Area Weighting

The following shows the relative importance of each content domain on the certification exam. When preparing for the exam, candidates should spend proportionately more time studying the content domains that are more heavily weighted.

Train workers in environmental issues (13%)
    a. The basic characteristics of a "green" manufacturing environment, including new trends and their impact on production workers, the company and society are included in workforce training
    b. The benefits of workplace environmental assurance programs to the worker, the company and society are included in workforce training
    c. Environmental training for employees is conducted both at time of hire and on a recurrent basis
    d. Required environmental training is documented
    e. Environmental training courses account for the latest technology advancements are prepared
    f. Input from Instructors and the results of course evaluations are incorporated into routine updates of environmental training courses

Implement and promote environmental programs, projects, policies or procedures (12%)
    a. Regulatory compliance is documented
    b. Company, local, state and federal environmental policies and procedures are communicated and posted as required
    c. Practices inconsistent with established environmental policies and procedures are identified and reported
    d. Violations are reported
    e. Materials supporting environmental assurance programs are written consistent with needs of the intended audience
    f. Environmental assurance materials are kept on file and made readily accessible

Conduct environmental incident and hazard investigations (10%)
    a. Environmental incidents and hazards, including near misses, are investigated
    b. Environmental investigation findings are documented
    c. All environmental investigations and audits are reviewed and assigned corrective actions
    d. Prescribed actions to correct environmental problems have been checked and implemented

Conduct preventive environmental inspections (10%)
   a. Conditions that present a threat to the environment are identified, reported and documented
   b. Potential environmental hazards in the work area are identified, reported and monitored
   c. Corrective action is taken to eliminate potential hazards
   d. Environmental documentation required from workers is gathered and policies are followed
   e. Inspections and audits include all relevant and required environmental laws and regulations

Monitor environmental aspects at each stage of production (16%)
   a. Environmental issues involved in production processes are recognized
   b. Relevant environmentally significant aspects in the production process are identified for each stage of production and continuously monitored and checked to determine whether practical environmental improvements can be made
   c. Equipment is programmed to control and monitor the environmental impact of production processes at each stage
   d. Environmental indicators and gauges are monitored according to established procedures and computers and/or other instruments are used to inspect and analyze results
   e. Consumption and conservation of resources are monitored throughout the production process
   f. Environmentally impactful agents are monitored in the production process to reduce environmental impact
   g. Energy use, areas of energy waste and emissions leakage in industrial facilities and production processes are monitored and evaluated
   h. Opportunities for enhancing energy-efficiency and reducing energy-related carbon emissions are identified and evaluated

Implement continuous improvement in environmental assurance practices (7%)
   a. Root causes or problems are prioritized and inspected according to established hierarchy
   b. Worker knowledge of policies and procedures for environmental issues is maintained
   c. Meetings with all relevant groups to educate individuals about environmental assurance programs and developments are held
   d. Workers are encouraged to make suggestions to management for improvement in environmentally-related practices

Use advanced materials in production to reduce weight and increase life (18%)
   a. Designated equipment is used to monitor, measure and handle advanced materials
   b. Cost-effective production line energy efficiency measures are taken and documented
   c. Instruments are read and interpreted to ensure required controls, including Personal Protective Equipment (PPE)
   d. Environmental controls/levels required for production with advanced materials are used
   e. Environmental and quality requirements of advanced materials are adhered to
   f. Advanced materials, surplus and waste are handled according to established requirements to minimize waste
   g. Identify opportunities to reduce materials and volume of waste

Reprocess materials by recycling and reuse throughout product life cycle to optimize waste reduction (13%)
   a. Waste and used or rejected materials are sorted to determine which should go to re-cycling and which can be reused or repurposed inside the company
   b. Waste designated for recycling is placed into prescribed containers
   c. Recycling activities are coordinated with contractors or other third-party representatives
   d. Materials designated for reuse or repurpose are coded and labeled
   e. Rejected products are assessed to determine whether the product should be repaired, reused or recycled

     f.   Rejected products are broken down by designated personnel when necessary for reuse, repurpose or recycling

CPT$_{AE}$ SAMPLE QUESTIONS

The following questions are provided for your reference when preparing to take a CPT assessment. These questions will not appear on any CPT assessment. Answers to the sample assessment questions are located at the end of this section.

1. A process to verify actual inventory on hand on a continuous basis throughout the year is
    a. Annual physical inventory
    b. Cycle count
    c. Barcode tracking system
    d. Inventory intake check

2. A worker must lift a box weighing 12 pounds frequently during the day. The company should _____.
    a. Provide a step ladder
    b. Do nothing, it is not that heavy
    c. Arrange to move the box to a comfortable height
    d. Be sure that the person is tall enough to do the job

3. A lean manufacturing technique that focuses on creating a clean and orderly work area is?
    a. Poka-Yoka (mistake proofing)
    b. 5S program
    c. Jidoka (building quality in)
    d. Kanban (pull system)

4. Items susceptible to decay or spoilage are _____.
    a. Flammable
    b. Retardant
    c. Fragile
    d. Perishable

5. The size of the drill bit is stamped on the _____.
    a. Lands
    b. Flutes
    c. Margin
    d. Shank

6. Solve for Productivity:
    a. 16.55 pph
    b. 441 pph
    c. 16.33 pph
    d. 78.83 pph

$$T = (H_S \times D) - (H_B \times D)$$
$$N = N_P - N_S$$
$$P = N/T$$

H_S = 6 hours/day
D = 5 days
H_B = 0.5 hours/day
N_S = 6

7. In the 5S lean strategy, what is the first step?
    a. Sustain
    b. Shine
    c. Sort
    d. Standardize

8. What should you do if you notice oil dripping on parts you are producing?
   a. Call a plumber
   b. Notify your supervisor
   c. Shut down and fix the leak
   d. Ignore it and keep running

9. Which document follows a product throughout the manufacturing process?
   a. Material Safety Data Sheet
   b. Bill of Material
   c. Routing Sheet
   d. Bill of Lading

10. What document is kept by the trucker and specifies handling and hazardous material information?
   a. Packing Slip
   b. Bill of Lading
   c. MSDS
   d. Shipping Manifest

Answer Key

1. b
2. c
3. b
4. d
5. d
6. c
7. c
8. b
9. c
10. d

CPT~AE~ APPLICATION CHECKLIST

MSSC requires Candidates to complete an online registration process. If you do not have Internet access, you may request a paper application from your Assessment Site Coordinator or directly from MSSC at info@msscusa.org or 703-739-9000.

To avoid potential delays in completing your online registration, use this checklist to carefully review the required information before beginning the registration process.

Have you…
- Read this Candidate Handbook cover-to-cover?
- Arranged for payment of the correct registration and assessment fees?
- Reviewed the MSSC Code of Ethics?

Note: During the registration process, you will be asked to confirm your receipt and conformance to the policies of this Candidate Handbook and receipt and acceptance of the MSSC Code of Ethics. You are responsible for reading these documents and adhering to their requirements.