

**NDIA**

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# PROGRAM SUMMARY AND STUDY GUIDE

## CONFIGURATION AND DATA MANAGEMENT CERTIFICATION

NDIA | Technical Information Division | Professional Certification Section  
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This document contains summary information and study guidance for individuals preparing for the NDIA Professional Certification Examination in Configuration and Data Management. It is not to be construed as a complete guide, or as a guarantee of success in the examination.

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## WHO WE ARE

The National Defense Industrial Association is the trusted leader in defense and national security associations. As a 501(c)(3) corporate and individual membership association, NDIA engages thoughtful and innovative leaders to exchange ideas, information, and capabilities that lead to the development of the best policies, practices, products, and technologies to ensure the safety and security of our nation. NDIA's membership embodies the full spectrum of corporate, government, academic, and individual stakeholders who form a vigorous, responsive, and collaborative community in support of defense and national security. For more than 100 years, NDIA and its predecessor organizations have been at the heart of the mission by dedicating their time, expertise, and energy to ensuring our warfighters have the best training, equipment, and support. For more information, visit [NDIA.org](http://NDIA.org)

# FOREWORD

This document summarizes the National Defense Industrial Association (NDIA) Certification Program and includes the examination study guide to help individuals prepare for the Configuration and Data Management (CDM) Professional Certification Examination. The study guide lists, **but does not include**, references used as a basis for the examination. Whether you are preparing for the Manager, Specialist, or Apprentice Examination, the study guide can assist you, and **it is in your best interest to review it prior to initiating a study plan**.

The references listed under Examination References should be available from the **technical library at the organization where you work**, from the sponsoring industry organization such as ANSI/IEEE. These references are also available for order from Global Engineering Documents in Englewood, CO. Department of Defense (DOD) and Military (MIL) documents are available for downloading from their website or the ASSIST Database at [www.DODssp.daps.mil](http://www.DODssp.daps.mil) or at <http://www.dsp.dla.mil/>.

This document will be updated on an annual basis (December) when significant additions/deletions or changes are required to assure current information is provided to the receipts of the information herein.

Questions or comments concerning the Professional Certification Program or this document should be directed to:

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## LEADERSHIP AND COMMITTEES

**Hon. Tim Ferguson, CCDM, CMIP**  
 Chair of Executive Board

**Mr. Greg Bernstein**  
 Vice Chair

# TECHNICAL INFORMATION

## WHO WE ARE

The Technical Information Division is concerned with all aspects of technical documentation — concept, analysis, preparation, management, control and dissemination. Fields of interest include configuration management of drawings, specifications and digital data; management of engineering drawings, specifications and standards; data management; policies and processes; computer-aided documentation techniques; and International Organization for Standardization requirements.

Both government and industry have access to a group of experienced and responsible specialists and administrators from various sectors of industry who are well qualified to assist in formulating requirements for technical documentation. Division members participate as individuals rather than representatives of their respective companies.

The division has development and administrative responsibility over the NDIA Configuration and Data Management professional certification program.

# CDM CERTIFICATION

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## PROGRAM HIGHLIGHTS

- Combined configuration and data management certification reflecting global trends in the CDM profession
- Focus on configuration and data management in commercial, government and international applications with significant data management emphasis
- Examinations based on Industry, Government and International Guidance Standards **which form the basis for current CDM processes**
- A recertification process providing currency options for previously certified professionals
- Scheduled certification preparation courses in conjunction with NDIA supported CDM focused conferences
- Examinations available on request at specified United Kingdom and other locations
- Available company on-site Preparation Course and Certification Examinations
- For those new to the CDM discipline, the Apprentice Program provides an entry level examination based on Industry, Government, and International standards, which are the foundation of current CDM processes

# NDIA CERTIFICATION

## PROGRAM SUMMARY

### WHY CDM CERTIFICATION

The configuration and data management disciplines are critically important in the design, development, production, test, integration and maintenance of complex products. These disciplines are vital and have many applications globally in both commercial and government applications. Most organizations recognize CDM processes as keystones in two of the most critical business requirements: **managing risk and controlling cost**. Thus, more often than not, CDM is a “value added” essential part of business.

Accordingly, a reliable means to identify and recognize well-qualified, experienced configuration and data management professionals is essential to establish professionalism in these disciplines. The NDIA Technical Information Division (TID) initiated CDM certification in 1990. The NDIA CDM certification program continues to be the most recognized and respected program. This is due to its continuing adherence to the qualification of candidates meeting high standards in terms of experience and knowledge. During 1990, a one-time ‘Grandfather’ program provided a vehicle for NDIA to certify individuals who had qualifying ‘lifetime experience’ of at least fifteen years direct experience in CM and DM, and a four-year college degree. More than 200 CM and DM professionals received approval as Certified Configuration Managers (CCM) and Certified Data Managers (CDM). Since 1991, individuals with the required experience and the successful completion of the examination continue to earn the NDIA certification. The UK conducted the first certifications in 2000 continue to offer certifications each year

Not surprisingly, many individuals are seeing the CDM discipline as an avenue for applying their talents in the business world. Accordingly, the NDIA TID has established a **CDM Apprentice** program that provides a method for entry-level individuals to be designated a CDM Apprentice, which sets up a progression ladder leading toward CDM Certification after attaining the NDIA experience requirements for certification. This also will allow those entering the discipline to become knowledgeable of the functional aspects of CDM and a basis to determine if they desire to continue in the discipline.

### PROGRAM ENHANCEMENTS

During the past few years, significant changes have taken place in DOD, NASA and commercial acquisition processes. DOD reform has focused on reducing reliance on DOD/MIL specifications and standards, increasing use of performance specifications, and emphasizing cost savings associated with the use of Commercial off the Shelf (COTS) and Non-Developmental Items (NDI). In a parallel manner, there have been significant increases in commercial CDM applications, many associated with the global industry use of ISO Quality Management System Standards, (which have considerable focus on configuration and data management) as well as

EIA 649, Consensus Standard for Configuration Management, and the ISO/IEC 12207-2008, Software Life Cycle Processes. These guidance documents form the basis of current CDM processes. The need to balance cost competitiveness and professional CDM processes drives these changes.

The NDIA TID certification undergoes a yearly review and update to remain current with changes in the CDM discipline. This yearly review examines new or revised Industry, Government, and International Standards for inclusion, normally following the year after their release. Examination questions are heavily weighted toward generic CDM, rather than focusing on government contract CDM; however, the majority of the individuals who apply for the NDIA CDM Certification work government contracts. NDIA offers certifications internationally as configuration and data management processes become worldwide in scope, with specific concentration in the United Kingdom. Many international applications incorporate the industry based CDM processes, developed and currently used in commercial and government contracts.. Each certification examination includes relevant ISO/IEC international guidance documents, including the ISO 9000 Quality Management system series, with primary focus on CDM subjects.

In January of 2003, the NDIA initiated a recertification program, providing an option for individual who had already received an NDIA certification. With major continuing changes in the discipline, such as those identified above, NDIA recognizes that no certification can be valid indefinitely. Recertification provides methods for those already certified to update their certification every five years. There are optional methods available. The Recertification Plan containing the policy and process is on the NDIA web site [NDIA.org/Education](http://NDIA.org/Education).

# EXAMINATION AND CANDIDATE REQUIREMENTS

NDIA has established two CDM certification levels: CDM Manager and CDM Specialist. To qualify for the Manager certification, ten years of combined CDM experience is required; for the Specialist certification, five years is required. The examinations are extensive, and include the major functions of CDM. The examination is in four parts, each consisting of objective and essay questions. Objective questions are of three difficulty levels: Easy, moderate, and difficult. Manager questions consist of moderate and difficult categories, while Specialist questions are from the moderate and easy categories. Essay questions are based on the increasing experience levels of Specialist and Manager Candidates. The passing score is 70%; the average success rate for those without specific preparation training is 52%. Examination schedules typically occur after major conferences supported by NDIA or upon request by an organization/company. The examination requires a full day to complete.

# NDIA PROGRAM BENEFITS

## BENEFITS OF THE NDIA APPRENTICE PROGRAM

The CDM Apprentice Program, initiated in September 2003, is not a Certification Program. However, candidates who successfully pass the Apprentice Examination receive a Certificate by the NDIA. To qualify for the CDM Apprentice Examination, less than five years of combined CDM experience is required. The examination is considerably less difficult than the examination required of specialist or manager level certifications, but does include the identical CDM functional knowledge as current Specialist and Manager Certification Examinations. The Examination is in four parts, each consisting of objective and essay type questions. Essay Questions are appropriate for the entry-level experience of typical apprentice candidates. The passing score is 70%. Examination schedules typically occur after major conferences supported by NDIA or upon request by an organization/company.

Many individuals have recommended the NDIA Technical Information Division initiate a recognition program for the growing number of individuals who have recently entered the CDM discipline and do not meet the minimum 5 years' experience for certification. This Apprentice program was the response to this recommendation and provides a track for those who intend to remain in the CDM field and is a formal process for working toward future Certification. It also allows the individual to achieve designation as a CDM Apprentice, and receive recognition by peers and management alike for their serious intent to progress in the discipline while they work toward Certification after having the required five years of experience. It is expected those achieving designation as a CDM Apprentice will receive some of the same benefits as NDIA Certified individuals.

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## BENEFITS OF NDIA CERTIFICATION

The Technical Information Division certification program is now in its twenty-sixth year, and those achieving the award are realizing the many benefits of certification. First, they receive recognition among their peers as experienced, exceptionally well-qualified CDM professionals who have proven themselves by meeting the high standards established by NDIA. Second, their certification is sponsored and authorized by the world's most prominent government-industry association. While there are other certification programs, none requires the combined experience and knowledge standards established by TID. **There is no equivalent certification!**

Additionally, the broad recognition of NDIA certification throughout government and industry, and internationally, has resulted in many benefits for certified individuals and the companies or agencies where they are employed. For example:

- There are RFPs requesting that developers use NDIA certified professionals to perform CDM. This has motivated more companies to support staff certification, and to hire certified staff.
- When you are NDIA certified, you can easily apply your status and knowledge to help your organization become or remain ISO certified.
- Many companies emphasize in RFP responses that NDIA certified CDM staff professionals will be working on their contracts.
- Some job descriptions now require NDIA certification to be considered prior to promotion to higher-level CDM positions.
- Increasingly, companies and government agencies sponsor employee candidates by paying certification fees and associated travel expenses. This is an important method of demonstrating support for CDM staff and the certification program.

# CERTIFICATION PREPARATION COURSE

The Certification Section of the TID Executive Board presents an intensive two-day preparation course designed to prepare individuals for the certification examination. It is available throughout the year and continues to be offered because many candidates have indicated their company or agency provide little effective training to assist CDM staff in achieving certification. Many CDM practitioners have little experience in the broad range of activities and processes of the discipline, thus the primary thrust of the course is to provide insight into functions and processes. The course includes and emphasizes industry and international CDM practices, and applicable guidance standards itemized in the study guide, as well as government acquisition policies and contracting processes. The course is conducted by NDIA Certified CDM Managers approved by the TID.

The course has a proven record of effectiveness, with an 80% plus success rate for candidates completing the course, versus 52% for others. Virtually all who complete the course have endorsed its effectiveness in providing candidates a powerful edge in the examination.

## CONTACT

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## FOR ADDITIONAL INFORMATION CONTACT

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The current course fees are listed below.

## TWO DAY PREP COURSE AND EXAMINATION

NDIA Members	\$550
Non-Members	\$580*
Two Day Prep Course and Retake Examination	\$385
Two Day Prep Course Only	\$275

## RECERTIFICATION (EXAMINATION ONLY)

NDIA Members	\$220
Non-Members (US)	\$250
Non-Members (non-US)	\$260

\*Fees include a one-year NDIA membership and are subject to change.

## EXAMINATION ONLY

NDIA Members	\$275
Non-Members (US)	\$305
Non-Members (non-US)	\$315
Retake Examination	\$110

NOTE: All application fees listed are in US Dollars. These fees apply to the Course and Examination when conducted in conjunction with the Conferences supported by NDIA listed in the schedule. Contact Chuck Billingsley for information regarding course fees at other locations. The Application Form for the Examination and Certification Course are provided at the end of this document.

# EXAMINATION SCHEDULE

An Examination Schedule is placed on the NDIA Website when locations are identified. The location and schedule for Certification Examinations may be viewed at: [NDIA.org/CDMSchedule](http://NDIA.org/CDMSchedule). When the site does not come up after clicking on the address, cut and paste the URL into the Address Bar. Contact Chuck Billingsley for additional unpublished examination locations made available throughout the year.

# TECHNICAL INFORMATION DIVISION (TID) PROFESSIONAL CERTIFICATION SECTION

The Technical Information Division (TID) Professional Certification Section manages certification activities. The Section Chair reports to the TID Executive Board Chairperson. The Section Chair champions and promotes program expansion, prepares the study guide and examinations, coordinates schedules, conducts examinations at locations determined by demand, scores examinations, requests certification awards be mailed, and maintains certification records.

Professional Certification Section members (and other individual contributors) develop the certification preparation course and Professional Certification Section members instruct the course, and administer the Examination on behalf of the NDIA. The Technical Information Division Executive Board approves Professional Certification Section membership.

**YOU MUST ACT TO BECOME NDIA CERTIFIED** The purpose of this program summary is to provide information for those interested in certification, but just knowing about the program does nothing to benefit you! If you are active in government or commercial or international CDM, and have or soon will have, the experience levels stated above, now is the time to prepare for your career advancement by attaining CDM professional status. **Remember, only you are responsible**, and most interested and qualified to manage your career! You can achieve certification through NDIA, and realize the recognition and benefits of being a certified professional. In today's business environment, you need every edge you can achieve. NDIA certification identifies and formally recognizes you as an experienced and skilled CDM professional. Ask yourself the question: in today's global environment, can I afford not to be NDIA certified as a CDM professional?

# CERTIFICATION STUDY GUIDE

## THE CONFIGURATION AND DATA MANAGEMENT EXAMINATION

The NDIA offers separate CDM examinations for manager and specialist candidates, the difference being degree of difficulty. The examination questions, based on “best practice” processes, are appropriate for the required manager and specialist experience levels. The questions reflect the guidance provided in the references listed at the end of this guide and can be answered successfully using the candidate’s knowledge and years of experience. The examination has four parts, **each consisting of 40 objective type questions and five (5) essay questions, three (3) of which must be answered.** Objective questions are valued at 40%, and essay questions are valued at 60% of total score. The Examination is closed book and requires a day to complete. The examination schedule is between 8:00am and 5:00pm, with appropriate breaks and lunch between parts, the Examination is closed book.

The Apprentice Examination questions is based primarily on “best practice” CDM processes used in commercial, government and international applications, and reflects the guidance provided in the references listed herein. Questions are appropriate for the CDM Apprentice experience level. The examinations have four parts, each consisting of 60 objective type questions; and one (1) essay question. Administration of the apprentice examination is in conjunction with the Certification Examination described above.

Following is a breakdown of the examination by subject areas.

### PART 1:

#### **CDM Functions & Principles; Identification; Engineering Drawings; Specifications; Request for Proposal’s (RFPs)**

- CM and DM Planning and Management
- Configuration Identification
- Specifications; Product Identifiers;
- CDM Responses to Requests for Proposal
- Engineering Drawings; Types; Associated Lists; Engineering Drawing Practices
- Data Item Descriptions (DIDs); Data Acquisition Documents
- Software Lifecycle Data

### PART 2:

#### **Change Management; Data Preparation and Accuracy**

- CM and DM Planning and Management
- Request for Change; Types of Change; Classification; Request for Variance
- Managing Document Changes; Engineering Drawing Revisions;
- Managing Product Configuration Information
- Contract Data Management
- Technical Data Planning
- Software CM Change Management

### PART 3:

#### **Configuration Status Accounting; CSA Systems; CSA Data; Reports; Interface Control; Software Libraries;**

- CM and DM Planning and Management
- Configuration Status Accounting Process: CSA Systems; CSA Data
- Technical Data Packages: Types; Purposes; Baselines
- Performance Measurement (Metrics)
- Organizing Product Information; Software Libraries
- Managing Interfaces; Use of ICWGs
- DFARS - Legal Aspects of Technical Data

### PART 4:

#### **Configuration Management Plan Verification and Audit; COTS/NDI Issues; International CDM: ISO Standards; Technical Data Inspection**

- CM and DM Planning and Management
- Verification: Hardware, Software; Methods and Processes
- Reviews and Audits: Types
- Developer/Customer/Supplier Audit Responsibilities; Audit Locations
- International CDM: ISO Standards
- Managing COTS Issues
- Data Accuracy - Inspection and Acceptance of Technical Data

# CERTIFICATION PREPARATION AND EXAMINATION GUIDANCE



## PREPARING FOR THE EXAMINATION

**Keep in mind the following when preparing for the certification examination:**

1. The average score for all applicants is 71%, with a scoring range from 40% to 91%.
2. Ninety percent of those who pass the examination score between 70% and 78%; Ninety percent of those not passing the examination score between 55% and 68%.
3. Reference sources for questions are approximately as follows:
  - Industry Standards 45%
  - International Standards 35%
  - MIL and DOD Standards 20%

**The following study methods are recommended:**

1. Study the reference materials and use them in preparing for the examination. Be sure to get the benefit of those with experience and knowledge in areas where you are least experienced!
2. This is not an examination of your current job; it covers the entire CDM discipline as documented in the referenced materials.

## TAKING THE EXAMINATION

### Answering Objective Questions

1. Read every word of each Multiple-Choice, True-False, or Mix-and-Match question and answer. Evaluate each answer before making your selection. Do not skim over questions and quickly select the answer you think is correct. For multiple-choice questions, eliminate 'far out' answers to increase your success rate percentage.
2. Answer every objective question! A blank answer is an incorrect answer!

## RESPONDING TO ESSAY QUESTIONS

NOTE: No specific answers are provided for sample essay questions in this study guide; however, the following is provided as guidance for preparing essay responses.

**Read the question thoroughly to assure you understand the necessary responses. All essay questions are in the following format:**

1. An introductory paragraph identifying the subject area of the question (Do not respond to this paragraph).
2. The basic question (Do not respond to this as it is so broad your answer could be too extensive for the examination time allowed).
3. The question focus points are numbered and are the specific areas you need to address in your response. Number your response accordingly. Each focus point will have an assigned point value.

When responding to focus points, it is your responsibility to convince the scoring team of your focus area knowledge. You are writing to a group of NDIA Certified CDM professionals who understand the business and they assign points based on their perception of your knowledge, as you have written it. Give thorough and complete responses that go beyond simple one-line answers in the lined pages that follow the question.

Essay question scoring is a subjective manner. There are no canned answers. However, scoring teams may use reference citations for guidance. At least three members of the team perform scoring independently; then the team lead assigns final score.

Specific references are not required when responding to the essay questions but include sufficient information in your response to convince the scoring team of your knowledge of the subject.

## PASSING THE EXAMINATION

There are two methods of passing the examination: (1) Achieve an overall total score of 70%, which requires attaining 280 of the maximum 400 points; (2) When an overall score of 70% is not achieved, each of the four examination parts are scored individually, and when 70% is achieved on any part, that part is passed. Individuals who did not pass all parts of the examination may attempt those sections again at any examination location (by application) within a 24-month period. If the examination is not completed within 24 months the examination process starts anew.

## EXAMINATION SCORING

All examination scoring is completed by at least 3 team members consisting of Technical Information Division NDIA certified individuals. The Team Lead, a Certified CDM Manager, reviews all examination scores. Certified CDM Managers score Manager level examinations. In addition, they may also score Specialist and Apprentice level examinations. Certified DCM Specialist score Specialist and Apprentice level examinations. It typically takes three weeks to receive scores. Examination candidates receive an E-mail notification with a summary of the scores for each part of the Examination. The examination booklets are not returned to candidates.

# SAMPLE EXAMINATION QUESTIONS

The following questions are provided for illustration purposes and may or may not be in the current Examination Database, references may or may not be current.

## EXAMINATION PART 1

### MULTIPLE CHOICE:

#### A Vendor Item Control drawing:

- A. Provides a description and acceptance criteria for commercial or vendor-developed items procurable from a specialized segment of industry
- B. Was formerly called a specification control drawing
- C. Is no longer used on commercial drawings
- D. A, B and C
- E. A and B

Ans: E (Ref. ASME Y14.24, Sec. 10.2)

### TRUE-FALSE:

A software configuration identification scheme should cover elements of the software engineering environment.

Ans. T (Ref. ISO 12207.2, Par. 6.2.2.1 Guidance)

### ESSAY:

To maintain effective configuration identification, there may be no more important activity than the assignment of product identifiers. All products are assigned unique identifiers so one product may be distinguished from other products; one configuration of a product may be distinguished from another; the source of a product may be determined; and the correct product information may be retrieved.

**Discuss product identifiers, levels of product identifiers, individual unit vs. group identifiers, and document identifiers.**

#### Focus on the following in your response:

1. Identify/State specific reasons for assigning product and document identifiers. (3 Points)
2. Describe the basic uses of product and document identifiers. (4 Points)
3. State specifically the developer interest in identifiers. (3 Points)
4. State specifically the customer interest in identifiers. (3 Points)
5. Explain the Identifier relationship between a part and its design document. (2 Points)

6. Describe methodology for identifying individual units of a product, versus identifying groups of units of a product. (2 Points)
7. Describe/Identify the guideline for assigning a new unique product identifier to an existing product. (3 Points)

**NOTE:** It is recommended that you provide a significant response to each focus area. Provide enough information to allow the scoring team to evaluate your level of knowledge.

References: EIA 649B IEEE 828/1042; ISO 10007; ISO TR 15846; MIL STD 973

## EXAMINATION PART 2

### MULTIPLE CHOICE:

**The process for controlling changes should be documented, and include:**

- A. A description of, justification for, and record of the change
- B. Details of how the change should be disposition
- C. Details of how the change should be implemented and verified
- D. A, B and C
- E. None of the above

Ans : D (Ref. ISO 10007 Par. 5 .4)

### TRUE/FALSE:

Software configuration management may be performed by combinations of software, methods, tools and techniques; and SCM requirements will vary considerably depending on which tools are used to implement SCM.

Ans: F (Ref: ISO TR 15846 Intro. Page 1)

### ESSAY:

Describe the primary functions necessary when processing proposed changes, including: Evaluation, Impact Assessment; Effectivity; Cost; Approval/Disapproval; Implementation; and Verification.

**Summarize significant elements of the change management process.**

Focus on the following in your response.

1. Describe/define change management (4 Points)

2. Itemize the functions/tasks of change management (6 Points)
3. For each change management function, describe the content and purpose of each (10 Points)

**NOTE:** Base the response on your experience and knowledge. The scoring team will evaluate your answer based on the accuracy and depth of information you provide in focus areas.

References: (EIA 649; EIA 649 Handbook; ISO 10007; ISO 12207-2008; IEEE 828; ISO TR 15846)

## EXAMINATION PART 3

### MULTIPLE CHOICE:

**Inspection of TDP elements includes which of the following:**

- A. A customer assigned identification
- B. Legibility and reproducibility.
- C. Accuracy of subcontractor references
- D. A, B and C
- E. None of the above.

Ans : B (Ref: MIL STD 31000)

### TRUE/FALSE:

When data provided is on physical media such as disks or tapes, appropriate identification is affixed to the media to identify its contents. When it is impractical to include the entire file identification, an additional media item with the needed complete data should be provided.

Ans : F (Ref. : EIA 649)

### ESSAY:

On acquisition contracts, there are various methods to determine the need for technical information, the type information and its delivery schedule. The information can range from design, performance and manufacturing information, to installation, operation and maintenance data.

Summarize the types of product information that may be included in a product acquisition contract (use either a commercial or DOD acquisition scenario).

Focus your response on the following:

1. Describe methods that may be used to determine the data provided (8 Points)

2. Major risk factors involved for the developer and customer. (6 Points)
3. Describe various types of technical information that developers typically prepare, and their use and value to the users. (6 Points)

**NOTE:** Base the response on your experience, training and knowledge. References: (ISO 9000; ISO 9001; EIA 649A; ISO 12207-2008; DOD 5010.12M; EIA 859)

## EXAMINATION PART 4

### MULTIPLE CHOICE:

**The configuration verification and audit function:**

- A. Ensures product quality and that a state-of-the-art design has been achieved
- B. Establishes that the performance and functional requirements defined in configuration documentation have been met
- C. B and E
- D. Identifies potential cost overruns
- E. Validates the processes used to provide adequate control and visibility

Ans. C (Ref. EIA 649 Par. 5.5)

### TRUE FALSE:

Release and delivery of software products and documentation is a formally controlled configuration management activity.

Ans : T (Ref. ISO 12207)

### ESSAY:

As in many other areas of CDM, the requirements and basics of the discipline are similar as they are applied to both hardware and software products. However, there are aspects of software that often require configuration management to use some different tools and processes, and to fully consider the varying attributes of software. Specifically, the software verification and validation process must determine if the software product fulfills the requirements.

Discuss software verification and validation processes in terms of the below subjects.

Focus your response on the following:

1. Define software verification and software verification process. (2 points)
2. Define software validation and software validation process. (2 points)
3. List the specific tasks of software verification. (4 points)
4. Describe/Itemize/List the activities for each software verification task. (8 points)
5. Describe/Itemize/List the activities of each software validation task. (4 points)

**NOTE:** No specific reference need be used in responding to this question. Include sufficient information in your response to convince the scoring team of your knowledge.

References: IEEE 12207-2008

# PROGRAM SUCCESS

When evaluating any certification program, the number of individuals certified is an important consideration and is one valid measure of its success. NDIA CDM certification is the clear industry leader, by far. Through December 2016, NDIA has certified over 2650 configuration and data management professionals.

# EXAMINATION REFERENCES



Weight numbers 1 or 2 have been assigned to references; 1 requires the most study, and 2 the least. Essay questions are based on subject matter addressed in references weighted 1. The current CDM Certification Preparation Course includes all reference document listed below. The issue of the reference document is the most current available at the end of December of the previous year.

## INDUSTRY STANDARDS

Weight	Document No.	Title
1	EIA 649	National Consensus Standard for Configuration Management
2	EIA HDBK 649	National Consensus Standard for Configuration Management
2	EIA 649-1	SAE Configuration Management Requirements for Defense Contracts
2	EIA 649-2	Configuration Management Requirements for NASA Enterprises
1	ANSI/IEEE 828	IEEE Standard for Software Configuration Management Plans
1	ANSI/IEEE 1042	Software Configuration Management [Withdrawn] still being used, thus in the reference list
1	ASME Y14.24	Types and Applications of Engineering Drawings
1	ASME Y14.34	Associated Lists
1	ASME Y14.35	Revision of Engineering Drawings and Associated Lists
2	ASME Y14.41	Digital Product Definition Data Practices
1	ASME Y14.100	Engineering Drawing Practices

## INTERNATIONAL STANDARDS

Weight	Document No.	Title
1	IEEE STD 12207-2008	Systems and Software Engineering — Software Life Cycle Processes
1	ISO/IEC/IEEE 15289	Systems and Software Engineering — Content of Life Cycle Information Products (documentation)
2	UNI CEI ISO/IEC TR 15846	Technical Report Information Technology - Software Life Cycle Processes - Configuration Management 2004-08-01
1	ISO 9000	Quality Management Systems-Fundamentals and Vocabulary
1	ISO 9001	Quality Management Systems - Requirements
2	ISO 9004	Quality Management Systems - Managing for the sustained success of an organization - A quality management approach
2	ISO 10007	Quality Management - Guidelines for Configuration Management

## GOVERNMENT STANDARDS AND SPECIFICATIONS

Weight	Document No.	Title
1	DOD 5010.12-M	Procedures for the Acquisition & Management of Technical Data
1	MIL STD 961	Defense and Program Unique Specifications Format and Content
2	MIL STD 963	Preparation Item Descriptions
1	MIL STD 973 (Notice 5)	Configuration Management [Cancelled]continues to be used, thus still in the reference list
2	MIL STD 31000	Standard Practice - Technical Data Packages
1	MIL HDBK 61	Configuration Management Guidance