Information Technology Engineers Examination

Outline of ITEE

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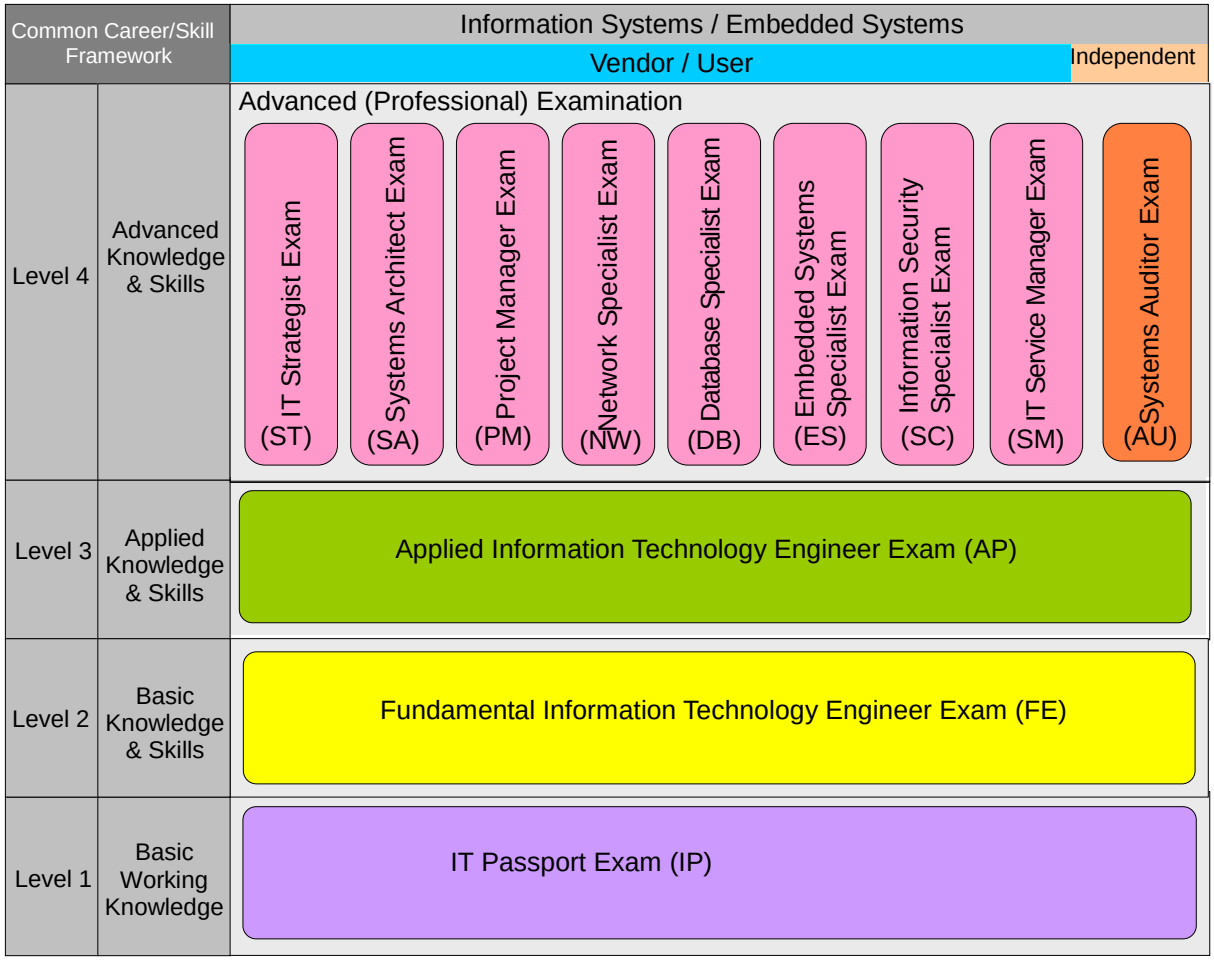
INFORMATION-TECHNOLOGY PROMOTION AGENCY, JAPAN

Contents

1. Examination categories

The Information Technology Engineers Examination consists of 12 Exam categories in total., i.e. the "IT Passport Examination" associated with Level 1, of the "Common Career/Skill Framework[1]", the "Fundamental Information Technology Information Engineer Examination" associated with Level 2 , the "Applied Information Technology Engineer Examination" associated with Level 3, and the 9 Advanced Examinations associated with Level 4.

[Exam Categories]



[1] http://www.ipa.go.jp/jinzai/itss/csfv1.html (Japanese only)

2. Typical examinees

The typical examinees, tasks and roles, expected technology level, and corresponding levels for each examination category are shown below.

(1) Information Technology Passport Examination [IP]

Typical examinees	Individuals who have basic knowledge of information technology that all business workers should commonly possess, and who are doing information technology related tasks, or trying to utilize information technology in their tasks in charge.
Tasks and Roles	Individuals who have acquired common basic knowledge of information technology that a business worker should possess, and utilize information technology in their tasks as well as perform the following activities: a) Understand information devices and systems to use, and utilize them. b) Understand the tasks in charge, identify problems of those tasks, and act to provide required solutions. c) Perform acquisition and utilization of information safely. d) Support task analysis and systemization activities under the guidance of superiors.
Expected Technology Level	The following basic knowledge is required as a business worker in order to determine information devices and systems, and to perform his/her tasks in charge as well as facilitate systemization. a) Knowledge of computer systems and networks to determine the information devices and systems to use, and knowledge of how to utilize office tools. b) Knowledge of corporate activity and related tasks in order to understand the tasks in charge. Also, in order to identify issues of the tasks in charge and provide required solutions, systematic thinking and logical thinking as well as knowledge of problem analysis and problem solving methodologies are required. c) Ability to act in accordance with relevant laws and regulations as well as various information security provisions in order to utilize information safely. d) Knowledge of development and operations of information systems in order to support analysis and systemization of tasks.
Correspond-ing Level	Corresponds with Level 1 of the Common Career/Skill Framework for the 5 Human Resource Models (Strategist, Systems Architect, Service Manager, Project Manager, and Technical Specialist)

(2) Fundamental Information Technology Engineer Examination [FE]

Typical examinees	Individuals who have basic fundamental knowledge and skills required to be an advanced IT human resource, and who possess practical utilization abilities.
Tasks and Roles	Individuals engaged in the planning of basic strategy or in the implementation of IT solutions, products or services, and who perform either of the following activities under the guidance of superiors. 1. Participate in strategic planning that utilizes information technology in response to issues that a consumer (company management, social system) faces. 2. Build a highly reliable and productive system through design and development of systems, or through optimally combining (integrating) generic products. Also, contribute to the realization of stable operational services of systems.
Expected Technology Level	1. With regard to strategic planning utilizing information technology, the following knowledge and skills are required, depending on the tasks in charge. a) Understanding of the basics of target business fields and tasks and capability to utilize this understanding in his/her tasks in charge.

	b) Capability to perform projection, analysis and evaluation of information strategies under the guidance of superiors. c) Capability to participate in making proposals under the guidance of superiors. 2. With regard to design, development and operation of systems, the following knowledge and skills are required depending on the tasks in charge. a) Understanding of the basics of information technology in general and capability to utilize this understanding in his/her tasks in charge. b) Capability to design, develop and operate systems under the guidance of superiors. c) Capability to design software under the guidance of superiors. d) Understanding of policies of superiors and ability to develop software on his/her own.
Corresponding Level	Corresponds with Level 2 of the Common Career/Skill Framework for the 5 Human Resource Models (Strategist, Systems Architect, Service Manager, Project Manager, and Technical Specialist)

(3) Applied Information Technology Engineer Examination [AP]

Typical Examinees	Individuals who have applied knowledge and skills required to be an advanced IT human resource, and who have established their own direction as an advanced IT human resource.
Tasks and Roles	Individuals engaged in the planning of basic strategy or the implementation of IT solutions, products or services, and who perform either of the following activities independently. 1. Devise strategy that utilizes information technology in response to issues that a consumer (company management, social system) faces. 2. Construct a highly reliable, productive system through the design and development of systems, or through optimally combining (integrating) generic products. Also realize stable operational services of systems.
Expected Technology Level	1. With regard to strategic planning that utilizes information technology, the following knowledge and skills are required, depending on the tasks in charge. a) Capability to understand the managements' policies, accurately grasp the external environment surrounding the management, and collect trend information and case studies when formulating business and IT strategies. b) Capability to conduct gap analysis, etc. based on predetermined monitoring indicators when evaluating management and IT strategies. c) Capability to participate in discussing proposals and making parts of proposal documents. 2. With regard to system design, development and operation, the following knowledge and skills are required depending on the tasks in charge. a) Capability to organize system requirements and conduct surveys of applicable technologies when designing architectures. b) Capability to ensure stable operation and provision of services in the field concerned as a member of teams such as administration, operation, and service desk teams. c) Capability to manage scope, budget, process, quality, etc. as a project member under a project manager (leader). d) Capability to understand the policies of superiors and solve technical problems spontaneously with regard to the design, development, operation, and maintenance of information systems, networks, databases, embedded systems, etc.
Corresponding Level	Corresponds with Level 3 of the Common Career/Skill Framework for the 5 Human Resource Models (Strategist, Systems Architect, Service Manager, Project Manager, and

	Technical Specialist)

(4) Information Technology Strategist Examination [ST]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and who plan, propose, and promote basic strategies to innovate, sophisticate, and optimize certain processes with regard to business models and activities utilizing information technology, based on the company's management strategies. Or, individuals who supervise the planning and development of embedded systems, and plan, propose, and promote basic strategies to realize new values.
Tasks and Roles	Individuals engaged in the planning, promotion, or support of business innovation, operational process innovation, development of innovative products and services utilizing information technology, and who take a leading role in the following while guiding subordinates. a) In accordance with the characteristics of businesses in different industry fields, formulate business strategies utilizing information technology in order to realize management strategies, and evaluate implementation results. b) In accordance with the characteristics of the businesses in different industry fields, formulate information system strategies and overall systemization plans for realizing business strategies, and evaluate implementation results. c) Formulate concepts and plans for individual systemization to realize information system strategies, and evaluate implementation results. d) Considering the prerequisites and constraints of each business, manage the execution of reform programs comprising multiple individual projects in order to realize information system strategies. e) As well as formulating development strategies for embedded systems, supervise the lifecycle covering development, construction, maintenance, etc.
Expected Technology Level	The following knowledge and practical ability are required to execute the formulation, proposal, and promotion of basic strategies utilizing information technology in sections such as business planning, the promotion of operational process innovation, computerization planning, and product and service planning. a) Capability to advise on the analysis of the business environment, the analysis of information technology trends, and the formulation of business models as well as capability to formulate or support business strategies. Also, capability to evaluate the achievement level of the business strategies and provide feedback to management. b) Capability to conduct surveys and analysis of the target business and task environment, and formulate information system strategies and overall systemization plans. Also, capability to evaluate information system strategies and overall systemization plans. c) Capability to conduct survey and analysis of the target business and task environment, formulate concepts and plans for systemization of individual systems based on overall systemization plans, and procure appropriate individual systems. Also, capability to evaluate the implementation results of the systemization concepts and plans. d) Capability to understand the prerequisites for implementing information system strategies and reform programs, and monitor and control the realization of information system strategies. Also, capability to perform causal analysis, formulate and implement countermeasures, etc. with regard to the risks in the realization of information system strategies. e) With regard to the development of new embedded systems, capability to plan competitive systems based on analysis of related technology trends, social constraints

	and needs, intellectual property, etc. Also, capability to formulate and promote deployment strategies and development strategies in accordance with added values, extensibility, flexibility, etc.
Correspond-ing Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model of a Strategist

(5) Systems Architect Examination [SA]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and in response to suggestions from IT strategists, define the requirements that are necessary for the development of information systems or embedded systems, design the architecture to realize the systems, and for information systems, lead development.
Tasks and Roles	[Information Systems] Individuals engaged in the structure design of information systems for the realization of information system strategies, the requirements definition needed for development, the design of system methods and the development of information systems, and who take a leading role in the following while guiding subordinates. a) Design the structure of the target information system from the perspective of overall optimization in order to realize information system strategies. b) Analyze, organize and document the requirements needed for the development of target information systems, in order to realize overall systemization plans and the individual systemization concepts and plans. c) Design optimal system methods for realizing the requirements of target information systems. d) Based on the requirements and the designed system methods, conduct review of the design, development, testing, operation, and maintenance of software that satisfy the required quality, and develop the target information systems. However, for specific technologies such as databases, networks, etc, accept support from specialists when necessary. e) Evaluate target information systems and the effectiveness thereof. [Embedded Systems] Individuals engaged in the survey and analysis of embedded system requirements, deciding functional specifications, and documenting the required specifications for hardware and software, and who take a leading role in the following while guiding subordinates. a) Based on the conceptions and development plans for embedded systems, survey and analyze the functional requirements, technical requirements, environmental prerequisites, and quality requirements and determine the functional specifications of target embedded systems. b) Consider the assignment of functions to hardware and software to realize functional specifications, design optimal system architecture, and compile the required specifications for hardware and software. c) Formulate policies regarding the validity of introducing generic modules and the possibilities of reusing software assets that have already been developed.
Expected Technology Level	The following knowledge and practical skills are required to smoothly execute the tasks and roles of Systems Architect. [Information Systems] a) Capability to correctly understand information system strategies and consider the overall organization of task models and information systems.

	b) Capability to utilize both specialist knowledge of all types of task processes and knowledge of systems, and to propose appropriate systems. c) Capability to make abstractions (models) of a company's business activities and reconstruct them into a form in which information technology can be applied. d) Knowledge about best practices for each industry, the status of task processes in major companies, and the task processes in many user companies of the same industry, specialist knowledge of each different industry, knowledge of industry specific practices, etc. e) Knowledge related to generic systems such as information system implementation methods, development methods, and software packages, and capability to select and apply them appropriately. f) Knowledge about basic elemental technologies with regard to operating systems, databases, networks, etc. and capability to construct and maintain appropriate information systems, considering the technological risks and effects of those technologies. g) Capability to establish appropriate evaluation criteria for the system operation, task operation, investment effects and task effects of information systems, and analyze and evaluate the systems. h) Capability to consider generalization of software and system services, bearing in mind the possibility of deployment to many companies. [Embedded Systems] a) Capability to examine environmental conditions and quality requirements such as safety of where the target embedded systems are used, and determine the functional specifications that should be realized. b) Capability to design appropriate combinations of hardware and software based on the functional specifications of target embedded systems and compile the designs as separate requirement specifications. c) Thorough knowledge about real time operating systems and knowledge of generic modules, and capability to consider the possibility of reusing software assets and utilizing them appropriately.
Correspond-ing Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Models of Systems Architects and Technical Specialists

(6) Project Manager Examination [PM]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and who, as a person responsible for a system development project, prepare project plans, secure the required personnel and resources, and control and manage the project while taking responsibility for achievement of the planned budget, delivery date, and quality.
Tasks and Roles	Individuals engaged in the planning, execution and management of system development projects as the person in charge of the project, and who take a leading role in the following while guiding subordinates. a) Support the formulation of individual systemization concepts and plans as required, and prepare project plans for the execution of the relevant projects based on the individual systemization concepts and plans that were formulated. b) Secure necessary personnel and resources, and establish project organizations. c) Manage budget, process, quality, etc. and run the project smoothly. Keep track of the state of progress, pick up and recognize problems and anticipated future issues at an early stage, and implement appropriate measures and actions to achieve project goals.

	d) Report appropriately to senior members and stakeholders on the project execution plans, state of progress, issues, countermeasures, etc, and obtain support and cooperation to run the project smoothly. e) Analyze and evaluate the project plans and achievements at the end of each stage and at the end of projects, or as needed and reflect these in subsequent operations of the projects as well as provide them as reference models for other projects.
Expected Technology Level	The following knowledge and practical skills are required to smoothly execute the tasks and roles of Project Manager. a) Understanding of the basics regarding organization management and IT systems. b) Capability to correctly understand the expectations towards the individual systemization concepts and plans as well as the projects, and prepare feasible project plans. c) Capability to reliably accomplish project goals under the prerequisites and constraints. d) Capability to manage personnel, resources, budget, process, quality, etc, unify overall understanding of the project, and run the project. e) Capability to understand the state of progress of the project and anticipated risks at an early stage, and deal with them appropriately. f) Capability to appropriately analyze and evaluate project plans and achievements. Also, capability to utilize the results in the subsequent operation of the projects as well as provide them as reference for other projects.
Correspond-ing Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model of a Project Manager

(7) Network Specialist Examination [NW]

Typical Examinees	ndividuals who have an established field of expertise as an advanced IT human resource, and who utilize specific technologies related to networks and take a central role in the planning, requirements definition, development, operation, and maintenance of optimal information system infrastructures while providing technical support for the planning, requirements definition, development, operation, and maintenance of information systems as a specialist of specific technologies.
Tasks and Roles	Individuals engaged in planning, requirements definition, development, operation, and maintenance work for network systems, and who take a leading role in the following while guiding subordinates. a) As network administrator, manage network resources which comprise the foundation of information systems. b) Analyze requirements of the network systems and perform the planning, requirements definition, development, operation, and maintenance considering efficiency, reliability, and safety. c) Provide network related technical support for the planning, requirements definition, development, operation, and maintenance of information systems.
Expected Technology Level	The following knowledge and practical skills are required in order to construct and maintain network systems that conform to objectives. a) Capability to foresee the trend of network technologies and services, and select applicable technologies and services according to objectives. b) Capability to understand precisely the requirements of the company, organization or individual applications, and create requirement specifications of network systems. c) Capability to evaluate design techniques such as modeling, protocol technology, reliability design, security technology, network services, and costs etc. that relate to the

	requirements specifications, and create optimal logical designs and physical designs. d) Capability to utilize network related companies (telecommunications companies, vendors, construction firms, etc.), and construct and operate network systems.
Corresponding Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model of a Technical Specialist

(8) Database Specialist Examination [DB]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and who utilize specific technologies related to databases and take a central role in the planning, requirements definition, development, operation, and maintenance of optimal information system infrastructures while providing technical support for the planning, requirements definition, development, operation, and maintenance of information systems as a specialist of specific technologies.
Tasks and Roles	Individuals engaged in the planning, requirements definition, development, operation, and maintenance work for data resources and databases, and who take a leading role in the following while guiding subordinates. a) As data administrator, manage data resources for the entire information system. b) Analyze requirements of the database systems and perform planning, requirements definition, development, operation, and maintenance considering efficiency, reliability, and safety. c) Provide database related technical support for the planning, requirements definition, development, operation, and maintenance of individual system development.
Expected Technology Level	The following knowledge and practical skills are required for the planning, requirements definition, development, operation, and maintenance of high quality databases. a) Capability to foresee the trend of database technologies, and select applicable technologies according to objectives. b) Capability to understand the purposes and techniques of data resource management, and perform standardization of data parts as well as conduct the planning, requirements definition, development, operation, and maintenance of repository systems. c) Capability to understand data modeling techniques, conduct data analysis based on user requirements, and create accurate conceptual data models. d) Capability to understand the characteristics of database management systems, and conduct planning, requirements definition, development, operation, and maintenance of high quality databases.
Corresponding Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model of a Technical Specialist

(9) Embedded Systems Specialist Examination [ES]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and who utilize their broad knowledge and skills related to embedded system development and lead the establishment of optimal embedded system development infrastructure and the design, establishment, and production of embedded systems.
Tasks and Roles	Individuals engaged in the development, implementation, and testing in the development process of embedded systems based on hardware and software requirement specifications of the embedded systems, and who take a leading role in the following while guiding subordinates. a) Balance the division of functions based on trade-offs between hardware and software

	that realize optimal functional specifications and realtime processing in embedded systems, and create design and specification documents. b) Lead the execution of tasks of each stage in the embedded systems development process. c) Based on advanced specialist knowledge and development experiences in specific technology and product fields, obtain technical knowledge from experts in the relevant development fields, and incorporate the knowledge into each stage of the development processes. d) Prepare and improve the development environment for performing development.
Expected Technology Level	The following knowledge and practical skills are required to appropriately decompose the required functions, performance, quality, reliability, security, etc. into hardware and software requirements and realize an optimal embedded system. a) Capability to realize appropriate combinations of hardware and software based on functional specifications and lead the execution of each stage of embedded system development processes. c) Capability to obtain technical knowledge from experts in the relevant development fields and incorporate the knowledge into each stage of the embedded system development processes, based on advanced specialist knowledge and development experiences in specific technology and product fields. c) Capability to construct and improve effective development environments for performing embedded system development.
Correspond-ing Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model of a Technical Specialist

(10) Information Security Specialist Examination [SC]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and who, with regard to the planning, requirements definition, development, operation, and maintenance, support the realization of security features compliant with information security policies or prepare the information system infrastructure and support information security management as a specialist of information security technology.
Tasks and Roles	Individuals engaged in promotion or support tasks for the planning, requirements definition, development, operation, and maintenance of security functions, or the preparation of secure information system foundations, and who take a leading role in the following while guiding subordinates. a) Analyze and evaluate threats and vulnerabilities to information systems and promote or support the planning, requirements definition, and development of security functions that appropriately avoid or prevent these. b) Analyze the threats to information systems during development projects of information systems or security functions, and support project management appropriately. c) Support security administration from a technical side in dealing with security violations, application of security patches, and other information system operation processes. d) Support information security management sections such as in the creation of information security policies and the education of users.
Expected Technology Level	As an information security technology specialist, the following knowledge and practical skills are required to apply information security technology in cooperation with other specialists as well as for the planning, requirements definition, development, operation, and maintenance of secure information systems.

	a) Capability to conduct risk analysis of information systems or information system infrastructures, and extract concrete information security requirements compliant with information security policies. b) For information security measures, basic skills and application skills for multiple specific areas with regard to technological measures, and capability to apply these skills to target systems as well as evaluating their effects. c) For information security measures, basic knowledge and techniques for applicable cases with regard to physical and administrative measures, and capability to understand the basic approaches to information security management, detailed knowledge of cases where the approaches are applicable, and capability to evaluate them. d) For information technology knowledge, basic knowledge of networks, databases, and system development environments, and capability to select necessary elemental technology including encryption, authentication, filtering, and logging in order to ensure confidentiality, accountability, etc. of information systems. e) Basic knowledge as well as knowledge and experience of specific application examples of process management and quality control for information system development. f) Basic knowledge regarding information security policies, and capability to support information security management sections in policy formulation and user education, etc. g) Basic knowledge of information security related legal requirements, etc. and capability to apply them.
Correspond-ing Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model of a Technical Specialist

(11) Information Technology Service Manager Examination [SM]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and who with regard to the overall information system, ensure stable operations and act to minimizes damage from incidents as well as take efforts such as continuous improvement and quality management to provide highly safe and reliable services.
Tasks and Roles	Individuals engaged in the management of IT services with the objective of continually improving their quality and cost efficiency, and who take a leading role in the following while guiding subordinates. a) Prepare and execute the processes of service support and service delivery as a leader of teams such as operation management, operation, and service desk teams, and provides IT services to customers at optimal quality and cost. b) Conduct acceptance, operation, etc. of systems within the lifecycle management of applications. Also provide stable information system infrastructures including development environments, and conduct efficient operation management of systems. c) Conduct continual improvement of IT services and management processes. Report the state of implementation of IT services to customers, as well as make efforts to improve customer satisfaction. d) Conduct the operation and management of information security policies and the controlling of information security incidents, and effectively manage information security during IT service activities. e) Conduct installation of hardware that matches customer facility requirements, installation of software, customization, maintenance, and repair. Also, conduct facility

	management of data centers.
Expected Technology Level	The following knowledge and practical skills are required to smoothly execute the tasks and role of IT Service Manager. a) Capability to provide IT services by understanding and implementing the objectives and contents of each of the process in service support and service delivery. b) Capability to implement system operation control, operation methods in case of an incident, performance management, and configuration management. Management techniques required for system operation management such as incident management, configuration management, account management, and performance management, and capability to maintain the quality of information system infrastructures. c) Capability to prepare a plan, implement and evaluate improvement measures for IT services as well as provide high quality service reports to customers. d) Knowledge and techniques required to implement highly effective information security measures, and capability to operate and manage information security. e) Capability to install, set up, maintain, and extend functions, and recover from incidents with the aim of stable operation of hardware and software that has been or is to be installed. Also, knowledge relating to the safety management of data centers and capability to execute facility management.
Correspond-ing Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model for a Service Manager

(12) Systems Auditor Examination [AU]

Typical Examinees	Individuals who have an established field of expertise as an advanced IT human resource, and who from a standpoint independent from auditees, comprehensively inspect and evaluate the risks and controls of information systems and embedded systems, report audit results to top management and others, and recommend improvements.
Tasks and Roles	Individuals engaged in the audit of information systems and embedded systems from a position independent of auditees, and who take a leading role in the following while guiding subordinates. a) Analyze the risks involved in information systems and embedded systems based on broad and thorough knowledge of information systems, embedded systems and their planning, development, operation and maintenance, and understand the necessary controls. b) By verifying or evaluating the controls relating to information systems and embedded systems, either provide endorsements or advice, and contribute to the improvement of IT governance and securement of compliance. c) Prepare audit plans to implement b) and perform audits. Also, report audit results to top management and the relevant people, and perform follow-ups.
Expected Technology Level	The following knowledge and practical skills are required to promote enhancements so that information systems and embedded systems are utilized appropriately and safely, and to contribute to the improvement of IT governance and securing of compliance. a) Broad and thorough knowledge of information systems, embedded systems and their planning, development, operation and maintenance as well as specialist knowledge related to the risks and controls of realizing those objectives and functions. b) Capability to evaluate the task processes to which the information systems and embedded systems are applied and the risk to the company strategies, as well as capability to clarify issues of the controls in place and establish decision criteria to analyze and evaluate the issues.

	c) Capability to prepare audit plans in accordance with business requirements, management policies, regulations, guidelines, contracts, and internal rules for information security, and protection of privacy and internal controls, etc. in order to contribute to the improvement of IT governance and securing of compliance, etc, as well as appropriately managing audit tasks based on plans. d) Capability to apply auditing techniques in a timely and precise manner in order to implement effective and efficient auditing procedures at the planning, development, and operation stages of information systems and embedded systems. e) Capability to put together audit results as logical reports based on facts, provide valuable and convincing recommendations, and perform follow-ups.
Correspond-ing Level	Prerequisite for Level 4 of the Common Career/Skill Framework Human Resource Model for a Service Manager

3. Examination Time, Type, and Number of Questions and Answers

Table below shows the time, type, and number of questions and answers for each examination

[Time, Type, and Number of Questions and Answers for Each Examination]

Examination Category	9:30~12:15 (165 mins)	
	Exam Type	No. of Qs No. of As
IT Passport Examination	Multiple-Choice (1 from 4)	100 100

Examination Category	Morning		Afternoon	
	9:30~12:00 (150 mins)		13:00~15:30 (150 mins)	
	Exam Type	No. of Qs No. of As	Exam Type	No. of Qs No. of As
Fundamental Information Technology Engineer Examination	Multiple-Choice (1 from 4)	80 80	Multiple-Choice	13 (Note) 7
Applied Information Technology Engineer Examination	Multiple-Choice (1 from 4)	80 80	Short Answer	12 (Note) 6

(Note) For details of questions in each field of the Afternoon Examination in the Fundamental Information Technology Engineer Examination and Applied Information Technology Engineer Examination, see Annex.

Examination Category		Morning I		Morning II		Afternoon I		Afternoon II	
		9:30~10:20 (50 mins)		10:50~11:30 (40 mins)		12:30~14:00 (90 mins)		14:30~16:30 (120 mins)	
		Exam Type	No. of Qs No. of As	Exam Type	No. of Qs No. of As	Exam Type	No. of Qs No. of As	Exam Type	No. of Qs No. of As
Advanced Examinations	Information Technology Strategist Examination	Multiple-Choice (1 from 4) Common Questions	30 30	Multiple-Choice (1 from 4)	25 25	Short Answer	4 2	Essay	3 1
	Systems Architect Examination			Multiple-Choice (1 from 4)	25 25	Short Answer	4 2	Essay	3 1
	Project Manager Examination			Multiple-Choice (1 from 4)	25 25	Short Answer	4 2	Essay	3 1
	Network Specialist Examination			Multiple-Choice (1 from 4)	25 25	Short Answer	3 2	Short Answer	2 1
	Database Specialist Examination			Multiple-Choice (1 from 4)	25 25	Short Answer	3 2	Short Answer	2 1
	Embedded Systems Specialist Examination			Multiple-Choice (1 from 4)	25 25	Short Answer	3 2	Short Answer	2 1
	Information Security Specialist Examination			Multiple-Choice (1 from 4)	25 25	Short Answer	4 2	Short Answer	2 1
	Information Technology Service Manager Exam			Multiple-Choice (1 from 4)	25 25	Short Answer	4 2	Essay	3 1
	Systems Auditor Examination			Multiple-Choice (1 from 4)	25 25	Short Answer	4 2	Essay	3 1

4. Grading Method, Points Allocation and Pass Criteria

a) Raw points are used as the grading method for all examination categories and for all time slots[2].

b) The pass criteria for each examination are as follows:

- In the IT Passport Examination, if the total points (total from all fields) and the points in each field (points for the 3 fields of Strategy, Management, and Technology) are all above the required standard then a pass is awarded.
- In the Fundamental Information Technology Engineer Examination, Applied Information Technology Engineer Examination, and Advanced Examinations a pass is awarded if points in each of the time slots (Morning, Afternoon, Morning I, Morning II, Afternoon I, and Afternoon II Examinations in Table 6) are all over the required standard.
- A certificate is granted to successful candidates from the Minister of Economy, Trade and Industry. On the IT Passport Examination Certificate, points are indicated.

c) The points allocation (100%) and pass points are shown in the table below.

d) When differences of difficulties are found among the questions in the exam results, points may be adjusted in the IP Passport Examination, or pass points may be changed in the other Examinations.

[Points Allocation and Pass Points for Each Examination Category]

Examination	Time Slot	Point	Pass Points
IT Passport Examination	—	1,000 total points	Total points (of all fields): 60% Points in each field: 30% Strategy 105 points of 350 total points Management 75 points of 250 total points Technology 120 points of 400 total points

Examination Category		Time Slot	Total Point	Pass Points
Fundamental Information Technology Engineers Examination		Morning	100	60
Applied Information Technology Engineers Examination		Afternoon	100	60
Advanced Examinations	Information Technology Strategist Examination Systems Architect Examination Project Manager Examination Information Technology Service Manager Examination Systems Auditor Examination	Morning I	100	60
		Morning II	100	60
		Afternoon I	100	60
		Afternoon I	—	Rank A (Note)
	Network Specialist Examination Database Specialist Examination Embedded Systems Specialist Examination Information Security Specialist Examination	Morning I	100	60
		Morning II	100	60
		Afternoon I	100	60
		Afternoon I	100	60

(Note) Evaluation Method for the Afternoon II Examination (essay type)

- The content of the essay is evaluated from evaluation view points such as sufficiency of the points required by the question, specificity of the essay, validity of content, consistency of logic, assertions based on insights, perceptiveness/ability to take action, originality/far-sightedness, and presentation and composition ability. Also, if the essay content does not adhere to the "Instructions for Answering" in the questions booklet, evaluation may be lowered depending on the extent of deviation, despite the content of the essay.
- The relationship between the evaluation ranks and pass & fail are shown in the table below.

[2] In the IT Passport Examination, points are initially given as raw points, but data is collected and analyzed as the examination is conducted continuously and a statistical method will be introduced at a later stage when preparations are in place.

[Evaluation Ranks and Pass/Fail Relationship of Afternoon II Examination (Essay Type)]

Evaluation Rank	Content	Pass/Fail
A	Satisfies passing level	Pass
B	Falls just short of passing level	Fail
C	Content is insufficient	
D	Deviates significantly from the requirements of the question	

e) Distribution of points for each question of each examination category is shown in the table below.

[Distribution of points for each question by examination category]

Examination category	Question number	No. of As	Point distribution	Exam type
IT Passport Examination (IP)	1~100	100	10 points ×88 10points ×12	Short question Medium question

Examination category	Morning			Afternoon		
	Question number	No. of As	Point distribution	Question number	No. of As	Point distribution
Fundamental Information Technology Engineers Examination (FE)	1~80	80	1.25 points each	1~7	5	12 points each
				8	1	20 points
				9~13	1	20 points

Examination category	Morning			Afternoon		
	Question number	No. of As	Point distribution	Question number	No. of As	Point distribution
Applied Information Technology Engineers Examination (AP)	1~80	80	1.25 points each	1, 2	1	20 points
				3~12	5	16 points each

Examination category		Morning I			Morning II			Afternoon I			Afternoon II II		
		Question number	No. of As	Point distribution	Question number	No. of As	Point distribution	Question number	No. of As	Point distribution	Question number	No. of As	Point distribution
Advanced Examinations	Information Technology Strategist Examination (ST) Systems Architect Examination(SA) Project Manager Examination (PM) Information Technology Service Manager Examination (SM) Systems Auditor Examination (AU)	1~30	30	3.4 points each (Note 1)	1～25	25	4 points each	1～4	2	50 points each	1～3	1	<Based on the evaluation rank> (Note 2)
	Network Specialist Examination (NW) Database Specialist Examination (DB)							1～3	2	50 points each	1, 2	1	100points
	Information Security Specialist Examination (SC)							1～4	2	50 points each			
	Embedded Systems Specialist Examination (ES)							1	1	40 points each			
								2,3	1	60 points each			

(Note 1) The maximum points are 100.
(Note 2) The evaluation is made by the rank, so no points are allocated.

f) The Applied Information Technology Engineer Examination and Advanced Examination employ a "Multi-Stage Selection Method" as follows:

<Applied Information Technology Examination>

- If points in the Morning Examination do not reach the pass level, the Afternoon Examination is not graded and the candidate fails.

<Advanced Examinations Exam Categories>

- If points in the Morning I Examination do not reach the pass level, the Morning II, Afternoon I, and Afternoon II Examinations are not graded and the candidate fails.
- If points in the Morning II Examination do not reach the pass level, the Afternoon I and Afternoon II Examinations is not graded and the candidate fails.
- If points in the Afternoon I Examination do not reach the pass level, the Afternoon II Examination is not graded and the candidate fails.

5. Method and Season of Examinations

a) All examinations are conducted on paper[3].

b) The examinations are scheduled as shown in the table below. The IT Passport Examination, Fundamental Information Technology Examination, Applied Information Technology Examination, and Information Security Specialist Examination are conducted twice a year in spring and fall (3rd Sunday in April and October), and the other examinations are conducted once a year in either spring or fall.

〔Implementation Period of Each Examination Category〕

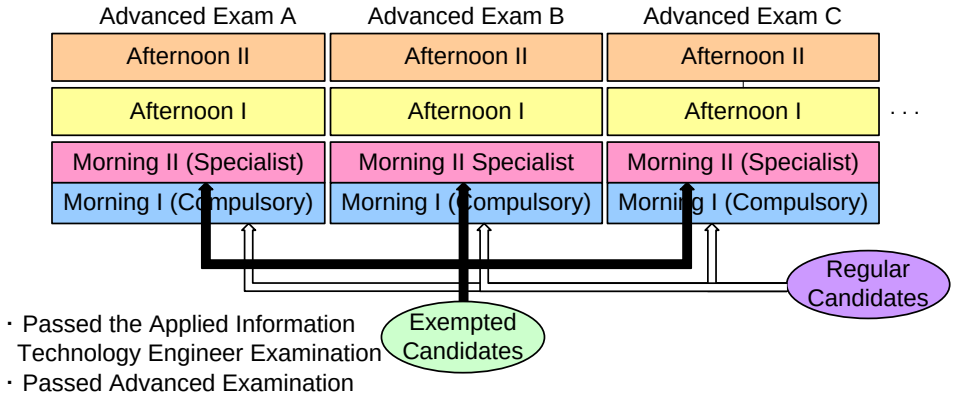
Examination Category		Season	
IT Passport Examination		Spring	Fall
Fundamental Information Technology Engineer Examination		Spring	Fall
Applied Information Technology Engineer Examination		Spring	Fall
Advanced Examinations	Information Technology Strategist Examination		Fall
	Systems Architect Examination		Fall
	Product Manager Examination	Spring	
	Network Specialist Examination		Fall
	Database Specialist Examination	Spring	
	Embedded Systems Specialist Examination	Spring	
	Information Security Specialist Examination	Spring	Fall
	Information Technology Service Manager Examination		Fall
	Systems Auditor Examination	Spring	

[3] For the IT Passport Examination, CBT method is planned to be introduced in 2011.

6. Exemption System

Candidates for Advanced Examinations are exempt from sitting the Morning I Examination for 2 years, when they satisfy one of the conditions 1 - 3 below.

1) Pass in the Applied Information Technology Engineer Examination.
2) Pass in one of the Advanced Examinations.
3) Has gained a grade surpassing the pass points in one of the Advanced Morning I Examinations.



・Passed the Applied Information Technology Engineer Examination
・Passed Advanced Examination
・Gained a grade over the pass points in the Advanced Morning I Examination

7. Scope of Questions

(1) IT Passport Examination

IT Passport Examination tests common basic knowledge that is required in order to utilize information technology. The questions are given from every field at the ratio shown below.

Strategy: 35%　Management:25%　Technology:40%

[Scope of Questions in the IT Passport Examination]

Common Career/Skill Framework					Scope of questions to be asked (Concept of exam questions)
Field	Major Category		Middle Category		
Strategy	1	Corporate and legal affairs	1	Corporate activities	- Ask about the fundamental concepts about corporate activities and business management. - Ask about the techniques for analyzing familiar business tasks and resolving issues, the concept of PDCA, and operational planning using techniques such as Pareto charts. - Ask about the visual expressions used for understanding business tasks, such as workflow. - Ask about the fundamental concepts of accounting and financial affairs, such as financial statements and break-even points.
			2	Legal affairs	- Ask about the familiar laws of workplaces, such as intellectual property rights (copyright, industrial property rights, etc.), Act on the Protection of Personal Information, Labor Standards Act, and Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers. - Ask about the concepts and characteristics of software license, such as license types and license management. - Ask about the concepts of corporate rules and regulations, such as compliance and corporate governance. - Ask about the significance of standardization.
	2	Business strategy	3	Business strategy management	- Ask about the fundamental concepts about typical management information analysis techniques and business management systems, such as SWOT analysis, PPM (Product Portfolio Management), customer satisfaction, CRM, and SCM. - Ask about the fundamental concepts relevant to marketing. - Ask about the typical information analysis techniques for planning business strategies. - Ask about the understanding of the use of office tools (software packages) such as spreadsheet software, database software, etc.
			4	Technological strategy management	- Ask about the understanding of the significance and purpose of technology development strategy.
			5	Business industry	- Ask about the characteristics of typical systems in various business fields such as e-commerce, POS systems, IC cards, and RFID application systems. - Ask about the characteristics of typical systems in the engineering filed and e-business. - Ask about the characteristics and trends of intelligent home appliances and embedded systems.

Common Career/Skill Framework					Scope of questions to be asked (Concept of exam questions)
Field	Major Category		Middle Category		
	3	System strategy	6	System strategy	- Ask about the significance and purpose of information system strategies and the concepts of strategic goals, business improvement, and problem solving. - Ask about the concepts of typical modeling in business models. - Ask about the effective use of groupware for communication and of office tools. - Ask about the purpose and concepts of increasing operational efficiency by using computers and networks. - Ask about the concepts of solutions through typical services. - Ask about the significance and purpose of the promotion and evaluation activities of system utilization.
			7	System planning	- Ask about the purpose of computerization planning. - Ask about the purpose of the operational requirements definition based on the analysis of current state. - Ask about the fundamental flow of procurement, such as estimates, RFPs, and proposals.
Management	4	Development technology	8	System development technology	- Ask about the fundamental flow of the process of software development such as requirements definition, system design, programming , testing, and software maintenance. - Ask about the concepts of the estimate in software development.
			9	Software development management techniques	- Ask about the significance and purpose of typical development methods.
	5	Project management	10	Project management	- Ask about the significance, purpose, concepts, processes, and methods of project management.
	6	Service management	11	Service management	- Ask about the significance, purpose, and concepts of IT service management. - Ask about the understanding of related matters such as help desks. - Ask about the concepts about system environment maintenance, such as computers and networks.
			12	System audit	- Ask about the significance, purpose, concepts, and target of system audit. - Ask about the flow of system audit, such as planning, investigating, and reporting. - Ask about the significance, purpose, and concepts of internal control and IT governance.
Technology	7	Basic theory	13	Basic theory	- Ask about the fundamental concepts about radix including the characteristics and operations of binary numbers. - Ask about the fundamental concepts about sets, such as Venn diagrams, probability, and statistics. - Ask about the fundamental concepts of how to express information content, such as bits and bytes, and of digitization.
			14	Algorithm and programming	- Ask about the fundamental concepts of algorithms and data structures, and how to draw flow charts. - Ask about the roles of programming. - Ask about the types and fundamental usage of markup languages, such as HTML and XML.
	8	Computer system	15	Computer component	- Ask about the fundamental configuration and roles of computers. - Ask about the performance and fundamental mechanism of processors, and the types and characteristics of memory. - Ask about the types and characteristics of storage media. - Ask about the types and characteristics of input/output interfaces, device drivers, etc.

Common Career/Skill Framework					Scope of questions to be asked (Concept of exam questions)
Field	Major Category		Middle Category		
			16	System component	- Ask about the characteristics of system configurations, of the types of processing, and of the types of usage. - Ask about the characteristics of client/server systems. - Ask about the characteristics of Web systems. - Ask about the concepts of system performance, reliability, and economic efficiency.
			17	Software	- Ask about the necessity, functions, types, and characteristics of OSs. - Ask about the concepts and use of basic functions of file management, such as access methods and search methods, and the fundamental concepts of backups. - Ask about the characteristics and fundamental operations of software packages, such as office tools. - Ask about the characteristics of OSS (Open Source Software).
			18	Hardware	- Ask about the types and characteristics of computers. - Ask about the types and characteristics of input/output devices.
	9	Technical element	19	Human interface	- Ask about the concept and characteristics of interface design, such as GUI and menus. - Ask about the concepts of Web design. - Ask about the concepts of universal design.
			20	Multimedia	- Ask about the types and characteristics of encodings such as JPEG, MPEG, and MP3. - Ask about the purpose and characteristics of application of multimedia technology, such as VR (Virtual Reality) and CG (Computer Graphics). - Ask about the characteristics of media, and compression and decompression of information data.
			21	Database	- Ask about the significance, purpose, and concepts of database management systems (DBMS). - Ask about the concepts of data analysis and design, and the characteristics of database models. - Ask about the manipulation methods such as data extraction. - Ask about database processing methods such as exclusive control and recovery processing.

			22	Network	- Ask about the types and configurations of LAN and WAN regarding networks, and the roles of Internet and LAN connection devices. - Ask about the necessity of communication protocols, and the roles of typical protocols. - Ask about the characteristics and fundamental mechanism of the Internet. - Ask about the characteristics of e-mail and Internet services. - Ask about the understanding of the types and characteristics, accounting, and transmission rates of communication services, such as mobile communication and IP phones.
			23	Security	- Ask about the fundamentals of information security from the viewpoint of safe and secure activities in a network society. - Ask about the information assets, the purpose of risk management, and the concepts of information security policy. - Ask about the concepts, types, and characteristics of technological security measures, such as measures against computer viruses. - Ask about the concepts, types, and characteristics of physical and human security measures, such as entrance/exit control and access control. - Ask about the types and characteristics of authentication technologies such as ID, password, callback, digital signature, and biometric authentication. - Ask about the mechanisms and characteristics of encryption technology such as public keys and private keys.

(Note 1) In view of the questions in the exams, the order of fields is: Strategy, Management, Technology.

(Note 2) The major category "Development Techniques" is included in the "Technical Knowledge" field in the Common Career/Skill Framework, but in the Information Technology Passport Examination it is included in the "Management Knowledge" field because questions are centered on the management of software development processes rather than the technical side of software development.

(2) Fundamental Information Technology Engineers Examination, Applied Information Technology Engineers Examination, and Advanced Examinations

In the Morning examinination, examinees are evaluated through knowledge questions if they reach the extepected technology level in the relevant examination category.
In the Afternoon examination, examinees are evaluated through skill questions if they reach the expected technology level in the relevant examination category.

(Morning Examination)

The question fields and the scope of Morning exam questions of each examination category are shown in the tables below.

[Table of Question Fields by Examination Category]

Examination Category / Field of Questions					Information Technology Passport Examination	Fundamental Information Technology Engineers Examination	Applied Information Technology Engineers Examination	Advanced Examinations									
									Morning II (Specialist Knowledge)								
Common Career Skill Framework								Morning I (Common Knowledge)	IT Strategist Examination	Systems Architect Examination	Project Manager Examination	Network Specialis Examination	Database Specialist Examination	Embedded Systems Specialist Examination	Information Security Specialist Examination	IT Service Manager Examination	Systems Auditor Examination
Field	Major Category		Middle Category														
Technology	1	Basic Theory	1	Basic Theory													
			2	Algorithms and Programming													
	2	Computer Systems	3	Computer Components						○3		○3	○3	●4		○3	
			4	System Components						○3		○3	○3	○3		○3	
			5	Software										●4			
			6	Hardware										●4			
	3	Technical Elements	7	Human Interfaces													
			8	Multimedia													
			9	Databases						○3			●4		○3	○3	○3
			10	Networks						○3		●4		○3	●4	○3	○3
			11	Security						○3		●4	○3	○3	●4	○3	○3
	4	Development Techniques	12	System Development Techniques	○1	○2	○3	○3		●4	○3	○3	○3	●4	○3		○3
			13	Software Development Management Techniques						○3	○3	○3	○3	○3	○3		
Management	5	Project Management	14	Project Management							●4					●4	
	6	Service Management	15	Service Management							○3				○3	●4	○3
			16	System Auditing											○3	○3	●4
Strategy	7	Systems Strategy	17	System Strategy					●4	○3							
			18	System Planning					●4	●4	○3						
	8	Management Strategy	19	Management Strategy					●4								○3
			20	Technology Strategy Management					○3								
			21	Business Industry					●4								
	9	Corporate & Legal Affairs	22	Corporate Activities					●4								○3
			23	Legal Affairs					○3		○3					○3	●4

(Note 1) ○ means that it is within the scope of questions, and ● means that it is a priority field within the scope of questions.

(Note 2) 1, 2, 3, and 4 indicate the Technology Level. 4 is the highest and the upper levels include the lower levels.

[Scope of Morning Exam by Question Fields]

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
Technology	1	Basic theory	1	Basic theory	1	Discrete mathematics	binary number, radix, numeric representation, arithmetic precision, set, Venn diagram, logical operation, proposition, etc.
					2	Applied mathematics	probability, statistics, numerical analysis, formula manipulation, graph theory, queueing theory, etc.
					3	Theory about information	coding theory, predicate logic, automaton, formal language, computational complexity, artificial intelligence, knowledge engineering, learning theory, compiler theory, programming language theory and semantics, etc.
					4	Theory of communications	transmission theory (transmission channel, modulation and demodulation technique, multiplexing, error detection and correction, signal synchronization technique) etc.
					5	Theories of measurement and control	signal processing, feedback control, feed-forward control, response characteristics, control stability, various controls, types of sensors and actuators and their operating characteristics, etc.
			2	Algorithm and programming	1	Data structure	stack and queue, list, array, tree structure, binary tree, etc.
					2	Algorithm	Understanding of sorting, merging, search, recursion, character string processing, flowchart, etc.
					3	Programming	programming by using existing programming languages (coding convention, program structure, data type, grammar notation, etc.)
					4	Programming languages	types and characteristics of programming languages (assembler language, C, C++, COBOL, Java, Perl, PHP, Python, Ruby, etc.)
					5	Other languages	types and characteristics of markup languages (HTML, XML, etc), SDL (Specification and Description Language), ADL (Architecture Description Language), etc.
	2	Computer system	3	Computer components	1	Processor	types of computers and processors, and their configurations and operating principles, interrupts, performance and characteristics, structure and architecture, RISC and CISC, instructions and addressing, etc.
					2	Memory	types and characteristics of memory, memory system structure and storage hierarchy (cache, main memory, auxiliary storage), access method, RAM file, memory capacity and performance, types and characteristics of storage media, etc.
					3	Bus	Types and characteristics of bus, bus system structure, bus control method, bus access mode, bus capacity and performance, etc.
					4	Input /output interface	types and characteristics of input/output devices, input/output interface, device driver, synchronization with device, analog-digital conversion, etc.
					5	Input /output device	input device, output device, display device, auxiliary storage device and storage media, communication control unit, drive unit, imaging device, etc.

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
			4	System components	1	System configuration	system processing mode, types of systems, system application area, client/server system, Web systems thin client system, fault tolerant system, NAS, SAN, P2P, High Performance Computing (HPC), clusters, etc.
					2	System evaluation indexes	system performance index, system performance characteristics and evaluation, significance and purpose of system reliability and economy, reliability calculation, reliability index, reliability characteristics and evaluation, cost efficiency evaluation, capacity planning, etc.
			5	Software	1	Operating system	types and characteristics of OSs, functions of OS, multiprogramming, virtual storage, job management, process/task management, data management, input /output management, storage management, interrupt, etc.
					2	Middleware	role and functions of various middleware (API for OS, various libraries, componentware, and shells), selection and use of middleware, etc
					3	File system	types and characteristics of file systems, access method, search method, directory management, backup, file organization, etc.
					4	Development tools	design tool, building tools, test tool, language processing tools (compiler, interpreter, linker, loader), CASE, emulator, simulator, in-circuit emulator (ICE), tools chain, integrated development environment, etc.
					5	Open source software	types and characteristics of OSS, Unix-family OSs, open source community, LAMP/LAPP, considerations in the use and utilization of OSS (safety, defect, etc), trends, etc.
			6	Hardware	1	Hardware	electric and electronic circuit, machine and control, logical design, components/elements and implementation, semiconductor device, system LSI, SoC (System On a Chip), power consumption, etc.
	3	Technical element	7	Human interface	1	Human interface technology	information architecture, GUI, voice recognition, image recognition, moving image recognition, feature extraction, learning function, interactive system, usability, etc.
					2	Interface design	form design, screen design, code design, Web design, human centered design, universal design, etc.
			8	Multimedia	1	Multimedia technology	Authoring environment, sound processing, still image processing, moving image processing, media integration, compression, decompression, MPEG, etc.
					2	Application of multimedia	AR (Augmented Reality), VR (Virtual Reality), CG (Computer Graphics), media application, etc.
			9	Database	1	Database system	types and characteristics of databases, database model, DBMS, etc.
					2	Database design	data analysis, logical design of database, data normalization, performance design of database, physical design of database, etc.

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
					3	Data manipulation	database manipulation, languages used to manipulate databases (SQL, etc.), relational algebra, etc.
					4	Transaction processing	exclusive control, recovery processing, transaction management, database performance enhancement, data control, etc.
					5	Database application	data warehouse, data mining, distributed database, repository, metadata, etc.
			10	Networks	1	Network architecture	types and characteristics of networks, (WAN/LAN, wired/wireless, etc.) internet technology, calculation associated with line, packet exchange network, etc.
					2	Data transmission and control	transmission method and line, internetworking device, digital service unit, OSI model, media access control (MAC), data link control, routing control, flow control, etc.
					3	Communication protocols	protocols and interfaces, TCP/IP, HDLC, CORBA, HTTP, DNS, SOAP, IPv6, etc.
					4	Network management	network operations management (SNMP), fault control, performance management, traffic monitoring, etc.
					5	Network application	Internet, intranet, extranet, mobile communication, network OS, communication service, etc.
			11	Security	1	Information security	cryptography (public key, private key, DES, RSA, etc.), authentication technology (digital signature, message authentication, time authentication, etc.), user verification (callback, ID, password, etc.), biometric authentication technology, public key infrastructure (PKI), government public key infrastructure (GPKI, Bridge Certification Authority, and so on), etc.
					2	Information security management	overview of information assets and risks, types of risks, risk analysis and evaluation, risk countermeasures, information security policy, ISMS, development of security regulations for corporate activities, etc.
					3	Security technology evaluation	evaluation method, assurance level, ISO/IEC 15408, etc.
					4	Information security measures	human security measures, technical security measures (measures against cracking, measures against computer viruses, etc), physical security measures, etc.
					5	Security implementation technology	secure OS, application security, secure programming, etc.
	4	Development technology	12	System development technology	1	System requirements definition	system requirements definition (functions; performance; requirements from tasks, organizations, and users; design conditions; qualification requirements; etc), evaluation of system requirements, etc.

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
					2	Systems architecture design	establishing the architecture at the top level of the system (functional decomposition of hardware, software, and manual work; hardware architecture; software architecture; application architecture; database architecture; etc.), evaluation of systems architecture, etc.
					3	Software requirements definition	establishment of software requirements (function, performance, interface, etc), evaluation of software requirements, hearing, use case, prototype, DFD, E-R diagram, UML, etc.
					4	Software architecture design and software detailed design	software structure and component design, interface design, software unit test design, software integration test design, software quality, review, walk-through, software design evaluation, process-oriented design, data-oriented design, structured design, object-oriented design, module design, design pattern, etc.
					5	Software coding and testing	software coding, coding conventions, code review, debugging, test method, test preparation (test environment, test data, etc.), test execution, test result evaluation, etc.
					6	Software integration and software qualification tests	test planning, test preparation (test environment, test data, etc.), test execution, test result evaluation, etc.
					7	System integration and system qualification tests	test planning, test preparation (test environment, test data, etc.), test execution, test result evaluation, tuning, etc.
					8	Software installation	creation of software installation plan, execution of software installation, etc.
					9	Software acceptance	acceptance review and acceptance test, delivery and acceptance of software products, user manual, education and training, etc.
					10	Software maintenance	Styles of software maintenance, significance of software maintenance, etc.
			13	Software development management techniques	1	Development process and methods	software development method, process maturity level, software life cycle process (SLCP), reuse of software, structured method, formal method, reverse engineering, mashup, etc.
					2	Intellectual property application management	copyright management, patent management, inventory management, etc.
					3	Development environment management	development environment operation status management, development environment construction, design data management, tool management, license management, etc.
					4	Configuration management and change control	establishment of configuration identification system, change control, configuration status recording, assurance of the integrity of items, release management and shipment, etc.

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
Management	5	Project management	14	Project management	1	Project integration management	project charter preparation, preparation of a preliminary project scope description document, preparation of a project management plan, direct and management of project implementation, controlling of project activities, integrated change control, project termination
					2	Project scope management	scope planning, scope definition, WBS creation, scope verification, scope control
					3	Project time management	activity definition, activity sequencing, activity resource estimating, activity duration estimating, schedule development, schedule control
					4	Project cost management	cost estimation, cost budgeting, cost control
					5	Project quality management	quality planning, quality assurance, quality management
					6	Project human resources management	human resources planning, project team organization, project team development, project team management
					7	Project communications management	communications planning, information distribution, performance reporting, stakeholder management
					8	Project risk management	risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, risk monitoring and control
					9	Project procurement management	plan purchasing and acquisition, plan contract, request seller responses, select sellers, contract administration, contract closure
	6	Service management	15	Service management	1	Service management	significance and purpose of service management, ITIL, role of system operations manager, SLA (Service Level Agreement), evaluation and verification of operations assessment indicators, handing over of operations, etc.
					2	Operations design and tools	schedule design, system installation, system migration, operations support tools, monitoring tools, diagnostic tools, etc.
					3	Service support	service desk (helpdesk), incident management (fault control), problem management, configuration management, change management, release management, risk management, computer operations and management etc.
					4	Service delivery	system operation, SLM (Service Level Management), capacity management, availability management, IT service continuity management, user management, system resource management, IT service finance management, information asset management ,etc.
					5	Service management foundation	gap analysis, risk assessment, requirements establishment, etc.
					6	Facility management	facility management including equipment such as power supply and air conditioning, maintenance and protection of facilities, etc.

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
			16	System audit	1	System audit	significance and purpose of system audits, targeted business operations of system audits, system auditability, system audit planning, system audit implementation (preliminary audit, main audit, evaluation, conclusions), system audit reporting, system audit evaluation ,system audit standards, system audit techniques, audit evidence, audit work paper, etc.
					2	Internal control	Internal control, IT governance, evaluation and improvement of compliance, etc.
Strategy	7	System strategy	17	System strategy	1	Information system strategy	significance and purpose of information system strategy, total optimization policy, total optimization planning, computerization promotion system, computerization investment planning, business model, business operations model, information systems model, EA (Enterprise Architecture) (business architecture, data architecture, application architecture, technology architecture), program management, system owner , data owner, process framework, quality control (quality control framework), information systems strategy evaluation information systems strategy implementation management etc.
					2	Business process	BPR, analysis of business operations, business improvement, design of business operations, BPM (Business Process Management), BPO, SFA, etc.
					3	Solution business	business system proposal, business package, problem solving support, ASP, SOA, SaaS, etc.
					4	System utilization promotion and evaluation	information literacy, data utilization, popularization and awareness raising, evaluation and verification of information system utilization, information system disposal etc.
			18	System planning	1	Computerization planning	computerization initiative, basic computerization policy, total development schedule, development project framework, staff training planning, development return on development investment, system life cycle, information system installation risk analysis, etc.
					2	Requirements definition	requirements analysis, user needs study, current state analysis, operational requirements definition, functional requirements definition, non-functional requirements definition, verification of stakeholder requirements, verification of the consistency with the system strategy , etc.
					3	Procurement planning and implementation	procurement targets, procurement requirements, procurement conditions, RFP (Request For Proposal), proposal evaluation criteria, estimates, proposals, vendor selection, procurement risk analysis, internal & external manufacturing criteria, software asset management, software supply chain management, etc.

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
	8	Business strategy	19	Business strategy management	1	Business strategy techniques	competition strategy, differentiation strategy, core competence, M&A, alliance, group management, corporate philosophy, SWOT analysis, PPM (Product Portfolio Management), value chain analysis, growth matrix, outsourcing, etc.
					2	Marketing	marketing theory, marketing techniques, marketing analysis, LTV (Life Time Value), etc.
					3	Business strategy and goal/evaluation	business strategy planning, business environment analysis, needs/wants analysis, competitive analysis, strategic targets, CSF (Critical Success Factor), KPI (Key Performance Indicator), KGI (Key Goal Indicator), balance score card, etc.
					4	Business management system	CRM, SCM, ERP, decision support, knowledge management, etc.
			20	Technological strategy management	1	Planning of technology development strategy	product trend, technology trend, core technology, technology research, technology acquisition, technology licensing, technological tie-up, MOT (Management Of Technology), industry-academia-government collaboration, standardization strategy, etc.
					2	Technology development plan	technical development investment planning, technology development site planning, human resources planning, technology roadmap, product application roadmap, patent acquisition roadmap, etc.
			21	Business industry	1	Business system	distribution information system, logistics information system, public information system, medical information system, financial information system, e-Government, POS system, XBRL, etc.
					2	Engineering system	significance and purpose of engineering system, production management system, MRP, PDM, CAE, etc.
					3	e-business	EC (electronic commerce such as BtoB and BtoC), electronic payment system, EDI, IC card and RFID application system, etc.
					4	Consumer appliances	audio and video equipment, household electrical appliances, personal information appliances, educational and entertainment equipment, computer peripherals/OA equipment, industrial terminal equipment, consumer communications terminals, etc.
					5	Industrial devices	communication devices, transport/construction equipment, industrial equipment/ FA equipment/ industrial robots, facility equipment, medical devices, analytical/measurement instruments, etc.
	9	Corporate and legal affairs	22	Corporate activities	1	Management and organization theory	business management, PDCA, management organization (divisional system, company system, CIO, CEO, etc), corporate governance, CSR, IR, human resources (OJT, management by objectives, case studies, discretionary labor system, etc), behavioral science (leadership, communication, technical writing, presentation, negotiation, motivation), TQM, risk management, BCP, computer literacy, etc.

Field	Major Category		Middle Category		Minor Category		Examples of Knowledge Items
					2	OR/IE	LP (Linear Programming), inventory problem, PERT/CPM, game theory, analysis techniques (work analysis, PTS, work sampling, etc), inspection techniques (OC curve, sampling, simulation, etc), quality control techniques (seven QC tools, new seven QC tools, and so on), etc.
					3	Accounting and financial affairs	financial accounting, management accounting, accounting standards, financial statements, consolidation accounting, depreciation, break-even point, financial indicators, initial cost, lease and rental, cash planning and cash management, asset management, etc.
			23	Legal affairs	1	Intellectual property rights	Copyright Act, Industrial Property Law, Unfair Competition Prevention Act, license agreements , OSS license (GPL and BSD licenses), etc.
					2	Laws on security	Act on the Prohibition of Unauthorized Computer Access, Act on the Limitation of Liability for Damages of Specified Telecommunications Service Providers and the Right to Demand Disclosure of Identification Information of the Senders, etc.
					3	Laws on labor and transaction	Labor Standards Act, laws on labor, outsourcing contract, software agreement, NDA (Non-Disclosure Agreement), Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors, Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers, civil law, commercial law, etc.
					4	Other laws, guidelines, and engineer ethics	compliance, information disclosure, Telecommunication Business Law, network related laws and regulations, Companies Act, Financial Instruments and Exchange Law, tax laws, export-related laws and regulations, Act on the Protection of Personal Information, System Management Standards, Standards for Measures against Unauthorized Access to Computers, Standards for Measures against Computer Viruses, Software Management Guidelines, information ethics, engineer ethics, professionalism, etc.
					5	Standardization	roles of JIS, ISO, IEEE, and other associated bodies, standardization organizations, international certification framework (accreditation/certification/inspection bodies), various codes, JIS Q 15001, ISO 9000, ISO 14000, etc.

Note: The minor categories and knowledge items in the “Project Management” middle category are quoted from “Project Management Body of Knowledge Guide (PMBOK Guide) Version 3” (Project Management Institute [PMI]).

(Afternoon Examinations)

The scope Afternoon exam questions of each examination category are shown below.

Fundamental Information Technology Engineer Examination

1 Computer Systems

a) Hardware

Expression in numbers, characters, graphics, and sound, processing apparatus, storage devices and media, input/output devices, instruction execution methods, addressing methods, system configuration, etc.

b) Software

OSs, middleware, application software, descriptive language, modeling, etc.

c) Databases

Database types and characteristics, data models, normalization, DBMS, database languages (SQL), etc.

d) Networks

Network configuration, internet and intranet, protocols, data transmission, transmission control, etc.

2 Information Security

Information security policy, database security, network security, application security, physical security, access control, encryption and authorization, anti-virus measures, etc.

3 Data Structure and Algorithms

Arrays, list structure, tree structure, graphs, sorting, search, numeric calculation, character string processing, graphics processing, file processing, computational complexity, error, etc.

4 Software Design

Software requirements analysis, software formula design, software detailed design, structured design, module design, object-oriented design, web application design, test planning, human interfaces, etc.

5 Software Development

Programming (C, COBOL, Java, assembly, spreadsheets), testing, debugging, etc.

6 Management

a) Project Management

Estimation methods, quality control, process control, cost control, risk control, etc.

b) IT Service Management

Service support (service desk, problem management, change control), service delivery (service level management, capacity management, system performance, system reliability), system operational management, etc.

7 Strategy

a) System Strategy

Information system strategy, marketing, business models, etc.

b) Management/Related Laws and Regulations

Business management, task processes, organizational operation, corporate accounting, related laws and regulations, standardization, etc.

Applied Information Technology Engineer Examination

1 Business Strategy

Marketing, business analysis, business and corporate strategy, corporate finance, business value evaluation, accounting, leadership theory, etc.

2 Information Strategy

Business models, product strategy, organizational operation, outsourcing policy, information industry trends, information technology trends, international standardization trends, etc.

3 Strategy Planning and Consulting Techniques

Logical thinking, presentation techniques, balance score card and SWOT analysis, etc.

4 System Architecture

Formula design and functional decomposition, request for proposals (RFP), requirements analysis, reliability and performance, web technology, (including web services and SOAs), knowledge of tasks in major industries, application of package software and open source programs, other trends in new technologies, etc.

5 IT Service Management

Service support (service desk, incident control, problem management, configuration management, change control, release management), service delivery (service level management, availability management, capacity management, IT service financial management, IT service continuity management), system operational management, etc.

6 Project Management

Project planning and management (scope, process, quality, budget, personnel, procurement, risks, communication), etc.

7 Networks

Network architecture, protocols, Internet, intranet and VPN, communication traffic, wired and wireless communication, etc.

8 Databases

Data models, normalization, DBMS, database languages (SQL), database system operation and maintenance, etc.

9 Embedded Systems Development

Realtime OS and MPU architecture, energy saving, high reliability design and memory management, sensors and actuators, embedded system design, individual applications (mobile phone, car, household appliances, etc.) etc.

10 Information Systems Development

External design, internal design, test planning and testing, standardization and componentialization, development environment, object-oriented analysis (UML), software lifecycle process (SLCP), individual applications (ERP, SCM, CRM, and so on), etc.

11 Programming

Algorithms, data structure, program creation technology (programming languages, markup languages), web programming, etc.

12 Information Security

Information security policy, risk analysis, database security, network security, application security, physical security, access control, encryption and authorization, anti-virus measures,

etc.

13 System Audit

IT governance, auditing of information system and embedded system planning, development, operation, and maintenance, information security auditing, privacy protection auditing, collaboration and adjustment with other audits (accounts audits, task audits), system audit planning, implementation, and reporting, system audit related laws and regulations, etc.

Information Technology Strategist Examination

1 Formulation or support of business strategy utilizing information technology, reflecting the business characteristics of each industry

Formulation of business strategy utilizing information technology based on a management strategy, business model development proposals using information technology, business reform planning, proposals to increase the added value of new products and services, selection of system solutions, formulation of outsourcing strategy, etc.

2 Formulation of information system strategy and overall systemization plans, reflecting the business characteristics of each industry

Definition of task models, definition of overall information systems, analysis and prioritization of information system development issues, formulation of information system infrastructure configuration policy and standard, formulation of system solution application policy (ERP packages, etc), formulation of mid to long-term information systemization plans, formulation of information system section operation policy, formulation of overall IT control preparation policy, formulation and implementation of business continuity plan, analysis of system risks, formulation of disaster response plan, formulation of information systemization annual plans, etc.

3 Formulation of individual systemization concepts and plans, reflecting the business characteristics of each industry

Formulation of systemization concepts, definition of system problems of tasks, task system analysis, task model creation, task process design, organization of systemized functions and formulation of system methods, formulation of system selection policy (application of system solutions, etc), creation of overall development schedule, formulation of project execution structure, preparation of request for proposals (RFP), proposal evaluation and selection of suppliers, estimation of costs and system return on investment, etc.

4 Execution control and evaluation of information system strategy considering the assumptions and restrictions of each business

Progress management of overall reform program for products, services, work, organization, and information systems; standardization promotion of information system infrastructure standard and system-related quality management standard; risk control and handling of reform execution; promoting the application of system solutions; promotion of system utilization; analysis, evaluation, and improvement of reform program effects, costs, and risks; performance evaluation of business strategy, information system strategy, overall systemization plan, and individual systemization plans; etc.

5 Planning, formulation and promotion of development plans for embedded systems

Technical trends analysis of communications, information, architecture, user interface, storage, semiconductors, measurement, control, and platforms; organization of considerations for intellectual property, regulations, and laws; risk analysis; formulation of procurement policy; evaluation of consistency with management strategy; verification and adjustment of requirements; etc.

Systems Architect Examination

[Information Systems]

1 Contracts and Agreements

Request for Proposals (RFP) and proposals preparations, project planning support, etc.

2 Planning

Verification of target task content, analysis of target task systems, investigation of applicable information technology, creation of task models, organization of systemized functions and formulation of system methods, clarification of basic policy for service levels and quality, consideration of feasibility, formulation of system selection policy, estimation of cost and system return on investment, etc.

3 Requirements Definition

Identification of needs and definition of constraints, definition of task requirements, materialization of requirements for the new organization and task environment, definition of functional requirements, definition of non-functional requirements, definition of schedule-related requirements, etc.

4 Development

System requirements definition, system formula design, software requirements definition, software formula design, software detailed design, system integration, system qualification verification testing, software installation, software acceptance support, etc.

5 Operation and Maintenance

Operational testing, task and systems migration, system operation evaluation, task operation evaluation, evaluation of return on investment and task effects, understanding and correction analysis of maintenance-related problems, etc.

6 Related Knowledge

Configuration management, quality assurance, auditing, related legislation, etc.

[Embedded Systems]

1 Functional Requirements Analysis, Determination of Functional Specifications, etc.

Functional requirements analysis for development systems, quality requirements analysis, development process design, cost design, performance design, compilation of functional specifications, related technology, etc.

2 Determination of Hardware and Software Requirements Specifications that Satisfy Functional Specifications

Hardware and software trade-off, functional decomposition analysis, functional decomposition into system components, determination of interface specifications between devices, creation of software and hardware requirements specification documents, system

architecture design, reliability design, realtime operating systems, etc.

3 Use of Generic Modules

Module design, reuse, configuration management, etc.

Project Manager Examination

1 Establishment of Project Plans

Project scope and prerequisites, and formulation of operation policy, planning of personnel, manpower, and resources, etc., budget formulation and execution planning, process planning, quality planning, procurement planning, risk analysis and risk response planning, request for proposals (RFP), project decision making procedures, related legislation and standards, etc.

2 Project Management and Operation

Project management technique and applicable technologies, requirements and estimates, management of organization and personnel, budget management, process management, quality management, procurement management, risk control, confidentiality and contract management, change control, communications management, leadership, staff training and other human aspects, project internal control, etc.

3 Project Evaluation

Project evaluation techniques and applicable technologies, analysis and evaluation of acquired data, compilation of project completion reports, evaluation and analysis of project results, evaluation of acceptance results, evaluation of contract compliance status, project completion records, etc.

Network Specialist Examination

1 Network System Planning, Requirements Definition and Development

Network system requirements analysis, logical design, physical design, reliability design, performance design, security design, address design, operation design, implementation, testing, transition, evaluation (performance, reliability, quality, economy, etc), improvement proposals, etc.

2 Network System Operation and Maintenance

Network system operation and maintenance, security management and structure, etc.

3 Network Technology and Related Legislation and Standards

Network system configuration technology, technology elements, queuing theory, traffic technology, security technology, network related laws and ethics, network related domestic and international standards, etc.

4 Networks Service Utilization

Use techniques and evaluation techniques of different kinds of network services that have been brought or are being brought to the market, etc.

Database Specialist Examination

1 Database System Planning, Requirements Definition, and Development

Database system planning, requirements definition, creation of concept data models, code design, physical database design and construction, data operation design, performance

estimation, etc.

2 Database System Operation and Maintenance

Database operation and maintenance, management structure (database administrator, data administrator), performance management, capacity management, reorganization, reconfiguration, backing up, recovery, data transition, security management, etc.

3 Database Technology

Repositories, relationship models, relational algebra, normalization, database management systems, SQL, etc.

Embedded Systems Specialist Examination

1 Embedded Systems Design and Construction

Functional requirements analysis of development systems, quality requirements analysis, hardware-software trade-off that satisfies functional requirements, creation of software and hardware specification documents, system architecture design, realtime design, functional safety design, high reliability design, security design, overall performance projection, electricity saving design, consideration of testing methods, development environment design, etc.

2 Embedded Systems Software Design

Application of realtime OS, realtime kernel design, device driver design, task design, shared resources design, investigation of software requirements specifications for software implementation and the process for carrying it out, software formula design, software detail design, software code creation and testing, software integration testing, system verification testing, configuration management, change control, etc.

3 Embedded Systems Hardware Design

Hardware requirements specifications, MPU selection, investigation of system LSI, use of high level hardware design language, hardware architecture design, memory level design, consideration of peripheral devices, hardware component performance evaluation, communication interface design, high reliability design, failure analysis, consideration of human interfaces, system verification testing, development and testing environment construction, consideration of problems relating to electricity and machinery, etc.

Information Security Specialist Examination

1 Information Security System Planning, Requirements Definition, Development, Operation, and Maintenance

Information system planning, requirements definition, and development; physical security measures; application security measures including Web applications; secure programming; database security measures; network security measures; system security measures; etc.

2 Information Security Operation

Information security policy, risk analysis, task continuity planning, information security operation and management, vulnerability analysis, misuse analysis, unauthorized access countermeasures, incident response, user security management, fault recovery planning, information security education, system auditing (security aspects), etc.

3 Information Security Technology

Access management techniques, anti-virus technology, encryption technology, authorization technology, security application systems (signatures, intrusion detection systems, firewalls, secure communication technology [VPN, etc], key management technology, PKI, etc. Peripheral devices are also included as target), methods of attack, log administration techniques for audit trails, etc.

4 Development Management

Development lifecycle management, system document configuration management, distribution and operation, human management methods (structure to prevent violations within the team), information security management for the development environment, etc.

5 Information Security Related Legal Requirements

Information security related legislation, domestic and international standards, guidelines, copyright law, privacy protection, information ethics, etc.

Information Technology Service Manager Examination

1 Service Support and Service Delivery

Service desk for regular system operation management, incident control, problem management, configuration management, change control, service level management concerning the planning and improvement of release management and systems operation management, availability management, capacity management, IT service financial management, IT service continuity management, etc.

2 System Operation Management

Application system acceptance concerning application deployment, operation and optimization; library management; operation management; failure operation methods; system monitoring; operation status management; fault management; system tuning and performance management; management and maintenance of batch processing schedules; backing up and restoring; alternate processing and recovery at the time of service failure or disaster; storage management; etc.

3 Continual Improvement of IT Services and IT Service Management Reporting

Establishment of IT service management deployment plans, IT service management implementation, formation and implementation of IT service continuity plan, identification and control of risks to IT services, measurement and analysis of IT service management such as customer satisfaction and resource availability, formulation and management of improvement plans, service reports, etc.

4 Information Security Operation and Management

Information security policy, risk evaluation, access control, physical security, privacy protection, firewalls, anti-virus measures, data security, high availability systems, information asset management, information security related standards and laws, etc.

5 Customer Service

Basic hardware and software technology related to customer services, system maintenance management, data center facility management, equipment management, etc.

Systems Auditor Examination

1 Information Systems, Embedded Systems and Communication Networks

Management in general, information strategy, information systems, embedded systems, communication networks, file systems and databases, software lifecycle models, project management, IT service management, risk management, quality management, information security technology, information security policy, business continuity management, etc.

2 General System Audit

IT governance, IT control, auditing of information system and embedded system planning, development, operation, and maintenance, business continuity management audit, system development project audit, information security audit, privacy protection audit, collaboration and adjustment with other audits (accounts audits, task audits), etc.

3 Planning, Implementation and Reporting of System Audits

Audit planning, risk approach, audit implementation, computer supported auditing techniques, digital forensics, audit reporting, follow up implementation, system audit tasks and management (including quality management of audit tasks), etc.

4 System Audit Related Legislation

Information security related laws and regulations, privacy protection laws, intellectual property laws, labor related legislation, statutory audit legislation, standards, guidelines and measures related to system auditing and information security auditing, standards, guidelines and measures for internal auditing and internal control, etc.

(3) Information Technology Terms and Specifications of Programming Languages used in Examination Questions

Information technology terms and the specifications of programming languages used in the examination questions are shown as in the URL below.

http://www.jitec.jp/1_00topic/topic_20081027_hani_yougo.pdf (Japanese only)

Reference About Syllabuses (Details of knowledge and skills required for the Information Technology Engineers Examination)

"Syllabuses" for the IT Passport Examination, Fundamental Information Technology Engineers Examination, the Applied Information Technology Engineers Examination and Advanced Examitions, are available to the public to be used as learning guidelines or educationsl guidelines. They are details of knowledge and skills required for the Information Technology Engineers Examination and composed of goal, contents and sample terms for each learning item, in which the scopes of exam questions are described in more detail and the breadth and the depth of knowledge and skills required for each examination are organized and clarified.

http://www.jitec.ipa.go.jp/1_04hanni_sukiru/_index_hani_sukil_new.html (Japanese only)

Annex Breakdown of Number of Questions per Field in the Fundamental Information Technology Engineer Examination and Applied Information Technology Engineer Afternoon Examination

Fundamental Information Technology Engineer Examination (13 questions of which 7 are to be answered)

Field	Questions 1~7	Question 8	Questions 9~13
Hardware	○ x 4		
Software			
Databases			
Networks			
Information Security			
Data Structure & Algorithms		●	
Software Design	○		
Software Development			● x 5 (Note)
Project Management	○		
IT Service Management			
System Strategy	○		
Management/Related Legislation			
Number of Questions	7	1	5
Required Number of Answers	5	1	1

● = compulsory questions ○= elective questions

(Note) In the Software Development field, there is 1 question on each of C, COBOL, Java, assembly language, and spreadsheets. 1 question out of these must be selected and answered.

Applied Information Technology Engineer Examination (12 questions of which 6 are to be answered)

Field	Questions 1~2	Questions 3~12
Management Strategy	○	○
Information Strategy		
Strategy Planning/Consulting Techniques		
System Architecture		○
Networks		○
Databases		○
Embedded System Development		○
Information System Development		○
Programming (Algorithms)	○	
Information Security		○
Project Management		○
IT Service Management		○
System Audit		○
Number of Questions	2	10
Required Number of Answers	1	5

○= elective questions

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■Outline of Information Technology Engineers Examination■

IPA Information-technology Promption Agency, Japan

Address
Green Court Center Office 15F
2-28-8 Hon-Komagome, Bunkyo, Tokyo 113-6591 Japan