

**Fundamental Information Technology  
Engineer Examination  
(Level 2)  
Syllabus**

**— Details of Knowledge and Skills Required for  
the Information Technology Engineers Examination —**

Version 4.0



INFORMATION-TECHNOLOGY PROMOTION AGENCY, JAPAN

## ◆STRATEGY◆

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**Major category 9: Corporate and Legal Affairs**  
**Middle category 22: Corporate Activities**

**1. Management and organization theory**

**[Goal]**

- Understand the overview of corporate activities, business management, and management organizations.
- Understand the changes in and issues to the business environment.
- Understand the need for and effectiveness of computer literacy at businesses.

**(1) Corporate activities**

**(a) Corporate activities and management resources**

Understand that a corporation is an organic organization with multifaceted attributes, such as economic functionality, commercial activities, separation between ownership and management, and independency in marketplaces. In addition, understand the importance of management of people, materials, money, and information.

**Sample terms** corporate philosophy, CSR (Corporate Social Responsibility), green IT

**(b) Corporation forms**

Understand the forms of corporations and their typical characteristics. Understand the characteristics of general incorporation, limited liability, and the spinning off.

**Sample terms** membership company ((limited) partnership), stock company, IPO (Initial Public Offering)

**(c) Characteristics of corporations**

Understand the characteristics of corporations, including separation between ownership and management, going concern (continuous entity), and diversified corporate objectives.

**Sample terms** corporate governance, IR (Investor Relations), BCP (Business Continuity Plan), corporate identity, corporate brand

**(2) Business management**

**(a) What is business management?**

Understand the overview of business management, which is intended for smoothly conducting corporate activities for the purpose of attaining corporate objectives and creating and operating a framework for optimal allocation and effective use of corporate resources.

**Sample terms** business objectives, PDCA, financial affairs management, property management, human resource management, information management, TQM (Total Quality Management)

(b) Human resources management

Understand that human resources management plays an important part in business management. In addition, understand the overview of human resources management, including OJT, objective management, human resources development, and discretionary labor system.

**Sample terms** competency, coaching, mentoring, case study, e-Learning, job rotation, talent management, work-life balance, work-sharing, diversity

(c) Behavioral science

Understand how people should behave in a corporate organization, including leadership, communication, and negotiation. In addition, understand the importance of motivation management, intended for communicating technical writing, presentations, and the like, and conflict management.

**Sample terms** logical thinking, brainstorming, hygiene theory, XY theory

(d) Risk management

Understand how important it is to make up a plan for selecting critical business operations and continuing them by estimating risks and analyzing the effects of them as efforts to maintain and increase the corporate value and to develop a plan that acts as the guidelines for maintaining and improving feasible frameworks.

**Sample terms** BCP (Business Continuity Plan), BCM (Business Continuity Management), JIS Q 22301 (ISO 22301), Business Impact Analysis (BIA)

**(3) Management organization**

Understand the types and characteristics of typical organizational structures, the functions of business managers, the roles of the CEO (Chief Executive Officer), CIO (Chief Information Officer), and other positions.

**Sample terms** hierarchical organization (pyramid organization), functional organization, line and staff organization, divisional system organization, matrix organization, company system organization, project organization, CEO (Chief Executive Officer), CIO (Chief Information Officer), CISO (Chief Information Security Officer), CPO (Chief Privacy Officer), CFO (Chief Financial Officer), COO (Chief Operating Officer)

**(4) Changes in the business environment**

Understand the recent changes in the business environment and the relationships between businesses, including globalization, business diversification, working styles in consideration of work-life balance, and CSR (Corporate Social Responsibility).

**Sample terms** SRI (Socially Responsible Investment), satellite office, telecommuting, SOHO (Small Office Home Office)

## **(5) Computer literacy**

Understand that it is essential for businesses to use computers to conduct corporate activities. In addition, understand why enhancing computer literacy is required, which means being able to make effective use of computers.

## **2. OR and IE**

### **[Goal]**

- Understand basic techniques for typical OR and IE so that you can apply them to your tasks.
- Understand the basic techniques for collecting, organizing, analyzing, and visually representing data so that you can apply them to your tasks.

## **(1) Linear programming**

Understand the basic techniques for LP (linear programming), formalization of problems, and the cases for which linear programming is effective.

**Sample terms** simplex method, allocation problem, transportation problem

## **(2) Inventory problem**

Understand the basic concept of inventory control and the basic mechanisms of fixed quantity ordering system and periodic ordering systems.

**Sample terms** safety stock, EOQ (Economic Ordering Quantity), order point

## **(3) Scheduling**

Understand the basic techniques of PERT and CPM (Critical Path Method).

**Sample terms** scheduling, arrow diagram, critical path

## **(4) Game theory**

Understand the basic concept of game theory.

**Sample terms** zero-sum two-person game, maximin principle, decision tree

## **(5) IE (Industrial Engineering) analysis techniques**

Understand the overview of typical job measurement methods, including the working hour analysis, PTS (Predetermined Time Standard) method, and work sampling method.

**Sample terms** therblig, work analysis, operation analysis

## **(6) Inspection techniques**

Understand the overview of typical inspection techniques including the sampling inspection, OC (Operating Characteristic) curve, sampling, and simulation.

**Sample terms** fraction defective, failure rate curve (bathtub curve)

### **(7) Quality control techniques**

Understand the overview of the techniques of the seven tools mainly used for quantitative analyses and the new seven tools mainly used for qualitative analyses along with how to use them.

**Sample terms** quality characteristics, quality function deployment, fraction defective estimation, time series analysis

### **(8) Demand forecasting**

Understand the overview of typical demand forecasting techniques, including regression analysis and time series analysis.

**Sample terms** least squares method, correlation coefficient, moving-average method

### **(9) Job analysis and operational planning**

Understand the basic techniques for analyzing and planning business operations and for achieving efficient decision-making (decision theory), including data collection techniques, various diagrams and graphs, and techniques for organizing and analyzing data.

**Sample terms** Pareto analysis, focus group, data mining, brainstorming, radar chart, cluster analysis method, Delphi method, Monte Carlo method, decision tree

## **3. Accounting and financial affairs**

### **[Goal]**

- Understand the relationship between sales and profit, the procedure for corporate accounting, and the basic way to read the financial statements so that you can apply them to your tasks.
- Understand “financial accounting” and “management accounting” along with the purpose and concept of “cash flow accounting” so that you can apply them to your tasks.
- Understand the purposes and concepts of asset management, along with cash planning and cash management and so that you can apply them to your tasks.

### **(1) Corporate activities and accounting**

#### **(a) Sales-profit relationship**

Understand the relationships between amounts of sales, profits, and costs along with such basic terms as fixed, variable, and initial costs as well as the concepts of them. In addition, understand associated calculation methods including that for the break-even point.

**Sample terms** opportunity loss, break-even point

#### **(b) Procedure for corporate accounting**

Understand that in accordance with corporate activities, the flow of transaction information is recorded (journal entry). In addition, understand that the accounts are settled and the actual performance is evaluated every accounting term.

**Sample terms** journal book, general ledger

(c) Mechanism of closing account

Understand the purpose and mechanism of closing accounts along with the types and characteristics of the statements as well as how to read them. In addition, understand the purpose of consolidation accounting, which regards a group of companies including subsidiaries as a single organization.

**Sample terms** trial balance sheet, work sheet, financial statements, balance sheet, income statement, earnings summary, goodwill, IFRS

(d) Financial statements

Understand the purposes of the balance sheet, income statement, and cash flow statement; recorded items; basic terms such as asset, liability, and capital along with their concepts; and basics of how to read the financial statements. In addition, understand how to calculate gross profit, operating profit, and ordinary profit.

**Sample terms** current assets, fixed assets, deferred assets, current liability, fixed liability, net assets, capital stock, cost, income, “selling, general and administration expense”, no operating profit and loss, extraordinary items

**(2) Financial accounting and management accounting**

Understand that corporate accounting involves two forms: financial accounting, which is a legally prescribed mechanism for disclosing information, and management accounting, which is a mechanism for managing information directly connected with reviews of corporate activities and management planning.

**Sample terms** accounting standards, financial indicator, profit indicator, ROA (Return On Assets), ROE (Return On Equity), safety index, current ratio, equity to total asset, economy computation

**(3) Cash flow accounting**

Understand the purpose and concept of cash flow accounting.

**Sample terms** cash flow management

**(4) Cash planning and cash management**

Understand the purpose and concept of cash planning and cash management, which are arranged for raising the funds required for operational activities, continuing effective investments, and maintaining a proper cash flow.

**Sample term** cash management

**(5) Asset management**

Understand the following: the purpose of asset management; how to evaluate inventories; the concepts of the depreciation and amortization cost. In addition, understand the characteristics of leasing and rental.

**Sample terms** inventory valuation, first-in first-out method, periodic average method, moving average method, off-balance



## **1. Intellectual property rights**

### **[Goal]**

- Understand the basic concept of intellectual property rights so that you can apply them to your tasks.
- Understand the basic concepts of copyright protection and rights infringement so that you can apply them to your tasks.
- Understand the basic concepts of rights protection and infringement defined by the four laws which play a central part of the Industrial Property Law so that you can apply them to your tasks.
- Understand the basic concept of the Unfair Competition Prevention Act so that you can apply it to your tasks.

### **(1) Intellectual property rights**

Understand that under the current situation where software and other intellectual property rights are increasing in importance along with growing development and distribution activities, laws are being developed and improved for protecting the interests of developers so that they can make fair profits.

**Sample terms** Intellectual Property Strategy Headquarters, Intellectual Property Basic Act, industrial property right, patent right, utility model right, design right, trademark right, copyright, circuit layout right, trade secrets

### **(2) Copyright Act**

Understand that a copyright is a set of multiple rights. Understand that in Japan, the principle that copyright protection is granted automatically has been adopted, which means that at the point when a work is created, the copyright for it is granted and retained for a certain period. Understand what types of works are protected by the Copyright Act (understand that programs and databases are also protected). Understand what are considered as infringements of rights. Understand that a work can be used without permission of the copyright owner if certain requirements are satisfied.

**Sample terms** moral right (right of publication, right of name announcement, and right of avoidance of modification), copyright and property rights (right of reproduction, right of public transmission, right of distribution, right of transfer of ownership, right of public rental), employee work, derivative work, transmittable, quote, private use, library, educational institution, examination question

### (3) Industrial Property Law

Understand that the Industrial Property Law was instituted for the purpose of contributing to industrial development. Understand what are protected by the Patent Act, Utility Model Act, Design Act, and Trademark Act. In addition, understand what are considered as infringements of rights.

**Sample terms** invention, device (as used with regard to a utility model), design, trademark, software patent, patent for a business method

### (4) Other associated laws, etc.

Understand the basic concept of the Unfair Competition Prevention Act concerning unauthorized uses of business names and trademarks, illicit obtainment and unauthorized uses of trade secrets, protection of interests, and actions against infringements of interests. In addition, understand that the software copyrights are protected by means of, for example, the Copyright Act, and Patent Act as appropriate.

**Sample terms** trade secrets, illicit obtainment of a domain name, cancel of copy guard

## 2. Laws on security

### **[Goal]**

- Understand the overview of the Basic Act on Cybersecurity, which establishes basic measures and other matters relating to Japan's cyber security.
- Understand the overview of the Act on the Prohibition of Unauthorized Computer Access.
- Understand the overview of the criminal law on illegal activities using computers.
- Understand the overview of the concepts, methods, and techniques for personal information protection and privacy protection.
- Understand the overview of the laws concerning electronic signatures, certification services, and so on.
- Understand the overview of the 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.

### (1) Basic Act on Cybersecurity

Understand the purpose of the Basic Act on Cybersecurity and the concepts underlying its measures.

**Sample terms** cybersecurity, electromagnetic method, electromagnetic recording medium, cybersecurity strategy, basic principle

### (2) Act on the Prohibition of Unauthorized Computer Access

Understand the overview of the Act on the Prohibition of Unauthorized Computer Access, which evenly regards network invasions, provision of code for access control, and others as crimes while the criminal law prohibits data falsification and erasure as acts for which penalties are imposed.

**Sample terms** access control function, unauthorized access, act that facilitates unauthorized accesses

### **(3) Criminal law**

Understand the types of illegal acts concerning the use of computers for which criminal penalties are imposed.

**Sample terms** penalty on electromagnetic records by illegal command (penalty on computer virus creation); computer fraud; penalty on obstructing business through destruction of a computer, etc.; penalty on unauthorized creation and use of electromagnetic records; penalty on unauthorized creation of electromagnetic records for cards for payment

### **(4) Act on the Protection of Personal Information, Act on the Use of Numbers to Identify a Specific Individual in Administrative Procedures**

#### **(a) Laws and guidelines related to personal information protection and privacy protection**

Understand the overview of the Act on the Protection of Personal Information, including what personal information is protected and what businesses are covered by the act and how a business is affected if it violates the act.

**Sample terms** Guidelines on Personal Information Protection, business operator handling personal information, My Number Act (Act on the Use of Numbers to Identify a Specific Individual in Administrative Procedures), Guidelines for proper handling of Specific Personal Information, Personal Information Protection Commission, JIS Q 15001, privacy mark, OECD Privacy Guidelines (Recommendation of the Council concerning Guidelines governing the Protection of Privacy and Transborder Flows of Personal Data)

#### **(b) Methods and techniques for personal information protection and privacy protection**

Understand the overview of the methods and techniques for information management related to the acquisition, processing, utilization, storage, and disposal of personal information.

**Sample terms** opt-in, opt-out, provision to third parties

### **(5) Laws concerning electronic signatures and certification services**

Understand that the requirements for electronic signatures and certification services have been defined for smooth socioeconomic activities through networks, including electronic commerce based on the Internet.

**Sample terms** accredited certification business operator, electronic certificate

**(6) 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**

Understand that as the use of websites and electronic commerce become widespread and expand, individual rights are violated through mental abuse and the disclosure of someone's personal information without consent posted to a bulletin board or the like on the web. In addition, understand the overview of the 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, which defines who should be liable for such individual rights violations and how.

**(7) Act on regulation of transmission of specified electronic mail**

Understand that the specified electronic mail is referred to as the one dedicated for the purpose of sales activities, and this act defines the banned items in transmitting such electronic mail.

**(8) Standards concerning information security**

Understand the overview of the standards and guidelines concerning information security.

**Sample terms** Computer Crime Prevention Law, Standards for Measures against Computer Viruses, Standards for Measures against Unauthorized Access to Computers, Standards for Handling Fragility-related Information in Software or the like, Management Standards for Information Security Measures for the Central Government Computer Systems, Cybersecurity Management Guidelines, Reinforcement Strategy on Smartphone Safety and Security, social media guidelines (SNS usage policy)

### **3. Laws on labor and transaction**

**[Goal]**

- Understand the overview of typical laws on labor and transaction.
- Understand the overview of typical contracts concerning transactions between businesses.

**(1) Laws on labor**

**(a) Labor Standards Act**

Understand the overview of the Labor Standards Act, which defines the minimum standards associated with labor conditions such as wages, working hours, on-the-job accidents and injuries, and dismissal/resignation/age retirement systems.

**Sample terms** Article 36 agreement, discretionary labor system, flexible working hours system, maternity protection

**(b) Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers**

Understand the overview of the Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers, including what agreements are concluded between the worker, company to be supplied with labor, and employment agency and how they are related to one another in a case where a worker is dispatched. In addition, understand the difference between the dispatch contract and service contract.

**Sample terms** temporary worker dispatch contract, employment agreement, authority to provide instructions, disguised contract work, prohibition of secondary dispatch of temporary worker

(c) Other laws

Understand the overview of the other laws on labor.

**Sample terms** Labor Contracts Act, Industrial Safety and Health Law; Act on Securing, Etc. of Equal Opportunity and Treatment between Men and Women in Employment; Act on the Welfare of Workers Who Take Care of Children or Other Family Members Including Child Care and Family Care Leave; Act on Improvement, etc. of Employment Management for Part-Time Workers, Whistleblower Protection Act

**(2) Laws on transaction**

(a) Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors

Understand the overview of the Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors, including the purpose and coverage.

**Sample terms** manufacturing contract, service contract, information-based product, main subcontracting entrepreneur, subcontractor, capital

(b) Civil law

Understand the overview of the trading regulations defined by the civil law, including the basics of contracts and the settlement, force and effect, and fulfillment/non-fulfillment of sales contracts, and the overview of the mechanisms of the systems important in conducting business transactions.

**Sample terms** (quasi-)mandate contract, service contract, responsibility for completing deliverables

(c) Commercial law

Understand the overview of the commercial law including what interests it is intended to protect.

(d) Others

Understand the overview of what laws must be taken into account in cases where business transactions are conducted over the Internet, for example.

**Sample terms** Act on Special Provisions to the Civil Code Concerning Electronic Consumer Contracts and Electronic Acceptance Notice, Act on Specified Commercial Transactions, Act against Unjustifiable Premiums and Misleading Representations, public domain

### **(3) Contracts associated with transactions between businesses**

#### **(a) Outsourcing contract**

Understand that an outsourcing contract is concluded when a business outsources part of its business operations to an external organization and that it must be concluded in consideration of the pertinent laws.

#### **(b) Non-disclosure agreement**

Understand that in a case where a business discloses its confidential information to an external organization to which it outsources part of its business operations, an NDA (non-disclosure agreement) is concluded.

#### **(c) Software license agreement (license agreement)**

Understand that if the owner of software intellectual property licenses the appropriate software to a third party, a software license agreement is concluded to define the requirements for the software license. In addition, understand that there are various forms of agreements depending on licensing conditions.

**Sample terms** volume license agreement, site license agreement, shrink-wrap license agreement, OSS (Open Source Software) license, CAL (Client Access License), free software, shareware, GPL (General Public License), LGPL (Lesser General Public License), copyleft

#### **(d) Software development agreement**

Understand that a software development agreement is concluded to define the requirements for performing software development on a consignment basis.

**Sample terms** software development consignment model contract, information system/model transaction contract

## **4. Other laws, guidelines, and engineer ethics**

### **[Goal]**

- Understand the overview of the Basic Act on the Formation of an Advanced Information and Telecommunications Network Society.
- Understand the overview of compliance, engineer ethics, and the laws and standards to be followed.

## **(1) Basic Act on the Formation of an Advanced Information and Telecommunications Network Society**

Understand that the Basic Act on the Formation of an Advanced Information and Telecommunications Network Society has been instituted as the basic law with the aim of using IT to appropriately accommodate abrupt, substantial changes to the social socioeconomic structure and to swiftly and specifically promote measures for forming a network society.

**Sample terms** IT Strategic Headquarters (the Strategic Headquarters for the Promotion of an Advanced Information and Telecommunications Network Society), formation of an advanced information and telecommunications network society, promotion of electronic commerce, computerization of the administration, use of the information and communication technology in the public sector

## **(2) Compliance**

Understand that businesses assume an obligation and responsibility to comply with the laws and regulations. Understand the legal sanctions and risks against compliance violations.

**Sample terms** corporate philosophy, corporate ethics, human rights, corporate governance, CSR (Corporate Social Responsibility), internal control, export-related laws and regulations, System Management Standards

## **(3) Information ethics and engineer ethics**

Understand the importance of the laws and regulations for protecting users from inappropriate use of information, information ethics concerning courtesy, and engineer ethics that advanced expert engineers are required to assume. In addition, understand why engineers actually need to act ethically.

**Sample terms** code of ethics for engineers, social responsibility of engineers, moral (awareness about law abiding), professionalism

## **(4) Other laws and standards**

### **(a) Network-related laws and regulations**

Understand the overview of typical laws and regulations that define the requirements for communication common carriers that remotely exchange data and construct information networks.

**Sample terms** Telecommunications Business Law, Radio Law, ISP Liability Law, 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, Law on Communications Interception During Criminal Investigations

(b) Financial Instruments and Exchange Act

Understand that the Financial Instruments and Exchange Act aims to develop the nation's economy healthily and protect investors through systems for disclosing the details of businesses and ensuring trading fairness.

**Sample terms** annual securities report, internal control report

(c) Companies Act

Understand that the Companies Act systematically defines the requirements for the systems for corporate design and organizational restructuring including mergers.

**Sample terms** stockholders meeting, director, executive officer, auditor, company with committees, business report, internal control

(d) Tax laws

Understand why accounting operations must be fairly conducted in compliance with the tax laws.

**Sample terms** Corporation Tax Law, Consumption Tax Law

(e) e-Document Law

Understand that documents that must be retained as required by law and regulations can be stored in electronic document files.

**Sample term** electromagnetic records

(f) Law Concerning Preservation of National Tax Records in Electronic Form

Understand that the "Law Concerning Preservation of National Tax Records in Electronic Form" defines the requirements for the storage of national tax records using magnetic media.

(g) Product Liability Act

Understand the overview of the PL (Product Liability) Law intended for addressing losses caused by the use of hardware containing a defective program.

(h) Act on Access to Information Held by Administrative Organs

Understand that anyone can request that national administrative bodies and independent administrative agencies disclose administrative documents and corporate documents.

(i) Environment-related law

Understand the regulations on acquisition and disposal of systems and IT devices with respect to various laws for environment preservation.

**Sample terms** Waste Disposal and Public Cleansing Act, Act for Promotion of Use of Recycled Resources

(j) International standards, export-related regulations

Understand the regulations on IT device/software exports and the use of the IT device/software usage in foreign countries.



**Sample terms** Foreign Exchange and Foreign Trade Act, US export-related regulations

## **5. Standardization**

### **[Goal]**

- Understand the overview of typical standards and specifications, standardization organizations, and the framework of international certification.

### **(1) Standards/specifications and standardization organizations**

#### **(a) Japanese Industrial Standards**

Understand that the JIS (Japanese Industrial Standards) are established by the competent minister based on the Industrial Standardization Act and reports from JISC (Japanese Industrial Standards Committee).

**Sample terms** JIS (Japanese Industrial Standards), JIS X segment (information processing), JIS Q segment (management system), JISC (Japanese Industrial Standards Committee), JSA (Japanese Standards Association)

#### **(b) International standards**

Understand that the IS (International Standards) are established by the ISO (International Organization for Standardization) and that the ISO consists of the representative standardization organizations in the respective countries and aims to develop international standards for industrial products in areas other than electric and electronics segments.

**Sample terms** IS (International Standards), ISO (International Organization for Standardization), international certification

#### **(b) Other standards**

Understand the overview of the other related standards/specifications and standardization organizations.

**Sample terms** ITU (International Telecommunication Union), IEC (International Electrotechnical Commission), IETF (Internet Engineering Task Force), ANSI (American National Standards Institute), IEEE (Institute of Electrical and Electronics Engineers)

### **(2) De facto standards**

Understand that de fact standards are specifications, standards, and products widely used as virtual standards.

**Sample terms** OMG, W3C (World Wide Web Consortium), de jure standard

### **(3) Standards for development and transactions**

#### **(a) Standardization of development and transaction processes**

Understand the overview of the standards for the tasks and role sharing at each process of

software development and transactions.

**Sample terms** SLCP-JCF (Japan Common Frame), JIS X 0160, JIS X 0170

(b) Standards for environment and IT security evaluation

Understand the overview of the standards for environment and IT security evaluation.

**Sample terms** ISO/IEC 14000, JIS Q 14001, ISO/IEC 15408

**(4) Standards for software**

Understand the overview of the standards that provide a platform for object-oriented programming.

**Sample terms** CORBA, OMG, EJB (Enterprise Java Beans)

**(5) Standards for data**

Understand the overview of typical standards for the character and bar codes used in electronic data exchange.

**Sample terms** character and other codes, JIS code, Unicode, JAN code, QR code, ITF code, ISBN code

**(6) International certification framework**

Understand the overview of the framework for international certification.

**Sample terms** conformity assessment, conformity assessment body, accreditation body, certification body, inspection body

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