DOCTORAL SCHOOL OF INFORMATICS
COMPLEX EXAM SUBJECT

Information Systems Applications (recommended subject)

1) Basic definitions: Information Systems and their applications

a. Information System

i. Analytical thinking in the socio-technological environment, communication, business, organization

ii. General systems theory, systems theory based approach, holistic, analytic

iii. Life cycle models of Information Systems,
properties, features, characteristics of development methods

b. Structured Analysis and design methods
The major techniques, methods (Data Flow Diagram, Logical Data Model, Entity Life Cycle, Effect Correspondence Diagram, Relational Data Analysis)

c. Object-oriented analysis and design methods, UML visual language. Use case, class diagram, activity diagram, sequential diagram. communication diagram, state transition diagram.

d. Rapid Application Development, Agile methods (SCRUM, Agile System development Method, Rapid Application Development, stb.)

2) ERP (MRP, Material REsource Planning, ERP, Enterprise Resource Planning)

a. Major modules, typical application domains.

i. Finance, accounting

ii. Production logistics

iii. Human resource management

iv. Customer Relationship Management

3) Enterprise architecture

a. Zachman
b. TOGAF
c. Information Security Architectures

4) Web Technologies in Information Systems

a. SOA, Rest, microservices

b. Cloud Computing

   i. SaaS

   ii. SaaP

   iii. SaaI

5) Quality management, control of Information System Development

a. ISO 9000: 2000

b. ISO/IEC 12207: 2000 (Software Life Cycle)

c. ISO 6592 (standard for documenting the development)

d. ISO 9126 (quality criteria, non-functional requirements

e. Function point analysis, efficiency of defect removal

6) Management and governance of Organization and Enterprise, BPR (Business Process Re-engineering), BPM /BPMN (Business Process Modelling / Notation)

a. Event-driven Process Chain (EPC)

b. BPM, BPMN, Petri nets for (business) process modelling

c. Workflow and its management

Bibliography, Literature

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