National Exams December 2017

98-IND-B4, Design of Information Systems

3 hours duration

Notes:

1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer a clear statement of any assumptions made.

2. No calculator permitted. This is a Closed-Book exam.

3. The exam is comprised of four parts. Answer any 20 from Part A (20 x 2 each = 40 marks), any 2 from each of Parts B and C (2 x 11 each = 22 marks per section), and any 1 from Part D (1 x 16 = 16 marks). Only the first answers, as they appear in your answer book, will be marked. Clearly show, at the start of each answer, the section/number of each question you are answering.

4. Parts B, C, and D can be answered in essay or essay plus point form format. Diagrams can be used, if appropriate. In all cases, clarity and organization of the answer are important.

5. Use the Examination Booklet(s) provided for your answers.

Marking Scheme:

Part A: 20 x 2 per question = 40
Part B: 2 x 11 per question = 22
Part C: 2 x 11 per question = 22
Part D: 1 x 16 per question = 16

PART A: Select twenty (20) terms from the following list and briefly explain them in a sentence or two. Limit your answer to no more than 50 words. Simply expanding an acronym correctly is insufficient for full marks.

Affiliate revenue model

Application server

Balanced scorecard method

Blockchain

Business processes

Crowdsourcing

Churn rate

Computer forensics

Data cleansing

Deep packet inspection (DPI)

Digital certificate

Entity-relationship diagram

Enterprise applications

Fair Information Practices

Green computing

Hadoop

Hybrid cloud

Identity management

Information systems audit

Javascript

Keylogger

Location analytics

Long tail marketing

Multitiered architecture

Neural network

Operational CRM

Post-implementation audit

Program-data dependence

Risk assessment

Social shopping

SQL injection attack

Switching costs

TCP/IP

Value web

Web beacons

Web mining

PART B: Select two (2) questions from the following list and answer them. You should provide a full page (or more) of explanation for each question.

B1. Discuss the main capabilities of database management systems (DBMS), describing the differences between Relational DBMS and non-Relational systems in relationship to data query/manipulation, data definition, and data dictionaries.

B2. Enumerate the major types of networks used in a large corporate network infrastructure, describing the network components (both hardware and software), the providers involved, and the technologies and standards used in the different networks.

B3. Explain how the World Wide Web works and the main technologies and standards supporting Web applications (include in your explanation a description of Internet Addressing and Architecture).

B4. Describe the control, risk, and policy components of a framework for securing information systems. Explain encryption and public key infrastructure technologies, and discuss three roles that these technologies can play in a security framework.

B5. Discuss the major components of current IT infrastructure (giving examples of major vendors). Describe cloud computing (characterizing infrastructure, platform, and software offerings) and elaborate on the impact of cloud vendors in three specific IT infrastructure components.

PART C: Select two (2) questions from the following list and answer them. You should provide a full page (or more) of explanation for each question.

C1. Characterize IT strategies for dealing with competitive forces, describing Porter's model, and discuss the impact of the Internet on competitive advantage.

C2. Provide a description of Business Processes (BP), giving concrete examples of BPs in four different functional areas. Elaborate on how IT can improve BPs and give three examples of IT improvements to concrete BPs - use a different strategic business objective (operational excellence; new products, services, and business models; customer and supplier intimacy; improved decision making; competitive advantage; survival) as the motivation for each of the three examples.

C3. Describe three legal frameworks for the protection of intellectual property rights, and discuss the challenges that IT brings to intellectual property protection.

C4. Select a concrete example of Big Data analytics and use it to explain the ethical dilemmas it raises, describing at least four steps involved in completing an ethical analysis of the selected Big Data example.

C5. Compare traditional market to Internet-enabled digital markets, explaining the impact on different costs, pricing, marketing, and distribution. Elaborate on the additional impact of the Internet on digital goods (describing the characteristics of digital goods and giving examples).

PART D: Answer one (1) question from the following. You should provide more than a full page of explanation..

D1. Describe each of the stages in the traditional software development life cycle. Digital firms have incorporated alternative approaches to the software development process; rapid application development, agile development, joint application design, DevOps, prototyping. Explain each of these alternative approaches, pointing to their differences with the traditional life cycle.

D2. Describe at least 15 of the most common costs and benefits (tangible and intangible) considered by organizations when assessing the business value of an information systems project, pointing to the items that are more likely to be overlooked in a traditional financial analysis.