TECHNOLOGICAL UNIVERSITY DUBLIN
CITY CAMPUS

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TU856 - BSc. (Honours) Degree in Computer Science

TU858 - BSc. (Honours) Degree in Computer Science (International)

Year 4

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SEMESTER 2 EXAMINATIONS 2021/22

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Enterprise Systems Infrastructure & Architecture

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Duration 2hrs

ANSWER **THREE** QUESTIONS OUT OF **FOUR**.

ALL QUESTIONS CARRY 33 MARKS EACH.

ONE COMPLIMENTARY MARK SHALL BE AWARDED.

Q.1 (a) The two main categories of information systems within an Enterprise are *Operation Support Systems* and *Management Support Systems*. For each category, identify two types of systems and their specific purposes.

[4 marks]

(b) **(i)** *Information Technology* success within an Enterprise is largely measured in terms of *Efficiency* and *Effectiveness*. Briefly explain the meaning of *Efficiency* and *Effectiveness* in this context.

[5 marks]

(ii) The components of an *Information System* fall into two categories, *resources* and *activities*. Identify two resources, and for each resource, provide a related activity. Discuss the role of each resource within an information system.

[12 marks]

(c) Using an example of your own choosing, identify two business strategies that an enterprise could use to address challenges in its competitive environment. For each strategy, discuss how an information system could be used to facilitate it.

[12 marks]

Q.2 (a) **(i)** Outline what is meant by the term *Enterprise Resource Planning (ERP)*.

[4 marks]

(ii) Using an example business process of your choice, discuss how an ERP system could be used to facilitate it and outline *two* advantages that it would provide over other system approaches.

[10 marks]

(b) **(i)** Outline what is meant by the term *Customer Relations Management (CRM)*.

[3 marks]

(ii) Using a diagram, briefly explain what is meant by the *CRM Cycle*. In your answer, identify *four* activities that take place as part of this cycle.

[8 marks]

(iii) Discuss how a CRM information system could be used to realise and facilitate *two* of the activities identified in *part b(ii)* of this question.

[8 marks]

Q.3 (a) Briefly explain what is meant by the term *Supply Chain Management (SCM)*. In your answer state its objectives and provide an outline of the *Supply Chain* structure and components.

[12 marks]

(b) **(i)** Many manufacturer Enterprises operate using a *push-based model*. Outline two challenges that you consider to have a high impact on supply chain management in such Enterprises.

[4 marks]

(ii) Outline two typical failures of a supply chain.

[4 marks]

(c) Discuss the use of *Blockchain* architecture and technology within the context of *Supply Chain Management*. Use the following headings to structure your discussion:

(i) What is Blockchain?

[3 marks]

(ii) Centralised versus De-centralised architecture

[4 marks]

(iii) An example of Blockchain usage

[6 marks]

Q.4 (a) While ERP, SCM and CRM systems are often utilised by large enterprises, many of them still have substantial integration requirements. Synchronous web services provide one mechanism through which this integration can occur, however, asynchronous integration has a number of advantages for organisations. Use the following headings to discuss asynchronous integration solutions within the Enterprise environment.

(a) Loose Coupling and its benefits

[8 marks]

(b) Message Oriented Middleware and its messaging domains

[9 marks]

(c) Enterprise Service Bus architecture

[8 marks]

(d) An example of an asynchronous integration solution

[8 marks]