Question 1 (Compulsory)

(a)   A systems analyst has stated that she believes that a computer-based information system that takes into account an organization's hierarchical structure may be more successful than one that does not. Do you agree with this statement? Justify your answer.   [3]

(b)   Define the terms *physical security* and *logical security*. Give an example of each.   [4]

(c)   Define the terms horizontal application and vertical application.   [2]

(d)   A manufacturing company is deciding whether to move its information systems from a file processing system to a database system. List *five* benefits that they might expect to gain from such move.   [5]

(e)   Power Chat Resort would like to computerize their whole registration process to speed up bookings. You have been appointed as a systems analyst and asked to develop a plan for fact-finding.

   (i)   Identify any *three* possible techniques that you might use for fact-finding.   [3]

   (ii)   For each of the techniques identified in part (i), describe a key benefit of that technique.   [3]

(f)   The advice given by the doctor is summarized in the following decision table:

	R1	R2	R3	R4	R5	R6	R7	R8
age > 35	Y	Y	Y	Y	N	N	N	N
Diabetic	Y	Y	N	N	Y	Y	N	N
Stroke	Y	N	Y	N	Y	N	Y	N
Exercise	X	-	-	-	-	-	-	-
Check up	X	-	X	-	X	-	X	-
Take medicine	X	X	-	-	X	X	-	-
Proper Diet	-	X	X	X	-	X	-	X

(i)   Identify which columns of this decision table can be combined to form a simplified decision table.   [2]

(ii)   Construct a *simplified* limited entries decision table, based on the table above.   [5]

(g)   Define the following terms.

(i)   Gantt chart.   [1]

(ii)   Structured walkthrough.   [1]

(iii)   Earliest Completion Time.   [1]

Please turn over

Question 2

(a)   Define briefly the following DFD concepts.

      (i)   Processes.

      (ii)   Data flow.

      (iii)   Data store.

      (iv)   External entity.   [4]

(b)   Define, in the context of DFDs, the terms *balancing* and *levelling*.   [2]

(c)   Consider the following scenario.

Angeline slim company sells beauty products. Rick is in charge of the stock inventory system.

Rick needs to check each orders are received from client and validated against the inventory file to see if the entire product exist. If a product does not exist, then it is added to the inventory file.

Each order is then checked for availability. Orders that can be supplied immediately have the order details sent to the store, and the inventory file is decremented accordingly. If the orders cannot be satisfied immediately then a requisition note is sent to the purchasing department. If the products are no longer supplied, the products are deleted from the inventory file.

When the products are received from suppliers, a clerk will update the inventory file. There is a stock audit which results in an audit report to the manager.

      (i)   Identify the *five* entities associated with this scenario.   [3]

      (ii)   Identify the *five* processes associated with this scenario.   [3]

      (iii)   Identify the one data store associated with this scenario.   [1]

(d)   Describe *one* benefit and *one* drawback of taking the four-model approach to design.   [2]

Please turn over

Question 3

(a)   There are a number of key advantages offered by the database approach when compared to the file processing approach. Explain each of the following advantages.

      (i)   Controlled redundancy.

      (ii)   Data independence.

      (iii)   Increased programmer productivity.   [3]

(b)   The database approach is not perfect, however. Identify *three* disadvantages of the database approach when compared to the file processing approach.   [3]

(c)   Define, in the context of database systems, the following terms.

      (i)   Primary key.

      (ii)   Candidate key.

      (iii)   Foreign key.   [3]

(d)   Describe the *four* steps involved in logical database design.   [3]

(e)   Suppose that you were in charge of the physical design stage of a database development project. Identify the *three* major areas that you would need to consider.   [3]

Please turn over

Question 4

(a)   An analyst learns about an information system by asking questions about the system and how it supports business operations. List *three* questions that you would ask as a systems analyst as you complete your work.   [3]

(b)   Define each of the following terms, and give an example of each.

      (i)   Enterprise computing systems.

      (ii)   Transaction processing systems.   [4]

(c)   What do the following types of system provide?

      (i)   Business Support Systems.

      (ii)   User Productivity Systems.   [2]

(d)   Knowledge management systems are often referred to as *expert systems*.

      (i)   Explain why expert system solutions may not be appropriate for every business situation.   [2]

      (ii)   In addition, describe *four* situations in which expert systems may be applied.   [4]

Please turn over

Question 5

(a)   Define the following terms.

        (i)   Server.

        (ii)   Mainframe architecture.

        (iii)   Centralized system.   [3]

(b)   What is the main advantage and the main disadvantage of *server-based processing*?   [2]

(c)   Briefly describe the client/server model.   [2]

(d)   Describe how client/server computing differs from the mainframe approach with respect to the following characteristics.

        (i)   Basic architecture.

        (ii)   Processing options.

        (iii)   Data storage options.   [3]

(e)   (i)   How does a fat client design differ from a thin client design?   [1]

        (ii)   What is the main advantage of a thin client design? Why?   [2]

        (iii)   What is the main advantage of a fat client design? Why?   [2]

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