

Question 1 (Compulsory)

- (a) List the *four* types of relationship that may exist between objects. [4]
- (b) What are management information systems, and what are they used for? [2]
- (c) There are a number of people in an organization who might use computer-based information systems. For each of the following, list the type of information system that supports the application:
- (i) The assistance for making organizational decisions. [1]
 - (ii) The codification and manipulation of knowledge. [1]
 - (iii) The automation of transaction data. [1]
- (d) Reduce the following decision table to a minimum number of rules.

	1	2	3	4	5	6	7	8
Diploma In IT	Y	Y	Y	Y	N	N	N	N
Hardware Experience	Y	Y	N	N	Y	Y	N	N
Software Experience	Y	N	Y	N	Y	N	Y	N
Job A	-	X	X	X	-	X	X	X
Job B	-	-	X	-	-	-	X	-
Job C	X	X	-	-	X	-	-	-
Job C	X	X	-	-	X	-	-	-

[5]

- (e) Describe, using examples, each of the following types of code.
- (i) Significant-digit subset codes. [2]
 - (ii) Cipher codes. [2]
 - (iii) Sequence codes. [2]

*Question 1 continues on the following page.
Please turn over*

- (f) The TELCOME Company is located in a three-storey building. The company requires that eight computers on the third floor and eight computers on the second floor, be connected to an Internet server on the first floor. Users on the second and third floors need to communicate with each other and also need access to the Internet. Two topologies have been proposed: bus and ring. For each topology, give *two* reasons why it should be employed. [4]
- (g) What is a data dictionary? [1]
- (h) List *two* decisions that management might reach at the end of the systems analysis phase. [2]
- (i) Describe the process of converting an un-normalised record design into third normal form. [3]

Please turn over

Question 2

- (a) Explain the following user-centered design principles.
- (i) Understand the underlying business functions.
 - (ii) Maximise graphical effectiveness.
 - (iii) Profile the system's users.
 - (iv) Think like a user.
 - (v) Design a comprehensive interface. [5]

- (b) A new on-line resort reservation system for maintaining customer check-in and check-out details will perform the following major functions:

- Add reservation.
- Cancel reservation.
- Enquire about room availability.
- Check-in customer.
- Check-out customer.

Among the features of the customer information portion of the system will be the capability to enter information for the new customers, edit details of existing customer records, and print customer information.

The system is menu-driven and will enable the user to return from any point in the system to the previous menu or exit the system.

Develop the following screens for the application described as they pertain to the customer portion of the system.

- (i) Resort Reservation Main Menu Screen
- (ii) Customer Screen

Design the screens to include all relevant information, as it should be shown to the user. [10]

Please turn over

Question 3

- (a) Describe the following types of cost, and give an example of each.
- (i) Direct costs.
 - (ii) Fixed costs.
 - (iii) Developmental costs. [6]
- (b) For each of the following type of cost, identify whether it is tangible or intangible.
- (i) Costs of leasing or renting equipment and/or special facilities. [1]
 - (ii) Increased employee fatigue due to use of a new system. [1]
- (c) In the context of network diagrams, what do the following terms mean?
- (i) Earliest start time. [1]
 - (ii) Latest completion time. [1]
 - (iii) Critical path. [1]
- (d) List *two* ways in which PERT/CPM charts differ from Gantt charts. [2]
- (e) Would you use PERT/CPM charts or Gantt charts to consider the allocation of resources? [2]

Please turn over

Question 4

- (a) What is a *system requirement*? What purpose do they serve? [2]
- (b) Outputs and inputs are the three general categories into which system requirements fall. What are the other *three*? [3]
- (c) For each of the following, identify which fact-finding techniques should be used:
 - (i) To examine recorded operating procedures. [1]
 - (ii) To collect quantitative information. [1]
 - (iii) To collect qualitative information. [1]
 - (iv) To solidify hazy understanding regarding the system. [1]
 - (v) To review journals and articles related to the system. [1]
- (d) Give *three* reasons why it is important to plan interviews. [3]
- (e) Give one example of an *open-ended question*, and one example of a *close-ended question*. [2]

Please turn over

Question 5

- (a) What is the main difference between *structured analysis* and *object-oriented analysis*? [2]
- (b) Define the terms *class* and *instance*. [2]
- (c) Define the term *polymorphism*. Give an example of polymorphism. [2]
- (d) Define the term *encapsulation*. Give an example of encapsulation. [2]
- (e) Describe, using appropriate symbols, the technique of *use case modelling*. In particular, you should state how use cases relate to use case diagrams. [4]
- (f) What is a *class diagram*? How do class diagrams relate to DFDs? [3]

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