



Rewarding Learning

ADVANCED
General Certificate of Education

Centre Number

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Candidate Number

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Digital Technology

Assessment Unit A2 1

assessing

Information Systems



ADT11

[ADT11]

Assessment

TIME

2 hours 30 minutes.

Assessment Level of Control:

Tick the relevant box (✓)

Controlled Conditions	
Other	

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

You are not permitted to use any calculating aid in this paper.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all five** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 150.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Questions **1(d)**, **2(c)** and **3(g)**.



1 (a) Explain how each of the following resources is used in a network.

Server

Switched hub

Media converter

[9]



(b) Distinguish between the purpose of an IP address and a MAC address.

An IP address

A MAC address

[2]



2 (a) The OSI network model includes the Application layer and the Physical layer.

(i) Define the term 'communications protocol'.

[1]

(ii) Name three other layers in the OSI model.

1. _____

2. _____

3. _____ [3]



(iii) Describe the main features of each of the following.

The Application layer

The Physical layer

[8]

[Turn over



3 A movie studio stores details about its films in a database.

An extract from the FILM table is shown below.

FilmID	Title	ActorID	ActorName	AgentID	AgentName
F123	Mission Possible	A222	Cruise	AG888	DePalma
F123	Mission Possible	A333	Voigt	AG888	DePalma
F456	Majority Report	A222	Cruise	AG888	DePalma
F456	Majority Report	A444	Farrell	AG999	Marshall
F456	Minority Report	A333	Voigt	AG888	DePalma

(a) By referring to the table, explain what is meant by each of the following.

Data duplication

Data inconsistency

[4]



An entity-relationship (ER) model is produced, and the data in the table is normalised.

You may assume that any errors in the table have been corrected.

(b) In the box below, draw a fully labelled ER model for this table which does not contain any many-to-many relationships.



[7]

[Turn over



(c) Normalise the data in this table to 3NF, showing all your working.

1NF

2NF

3NF

[9]

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[Turn over



28ADT1113



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[Turn over



28ADT1117

4 A hospital uses an expert system to assist in the diagnosis of illnesses.

The expert system includes a user interface.

(a) Name and describe two other components.

Name

Description

Name

Description

[6]



(c) Explain what is meant by each of the following.

Shell

Fuzzy logic

Heuristics

[9]



Robots are used to assist surgeons during some types of operation.

(d) Describe two advantages of using robots in this case.

1. _____

2. _____

_____ [4]

(e) Describe two disadvantages of using robots in this case.

1. _____

2. _____

_____ [4]

[Turn over



(d) Explain what is meant by cloud computing.

[4]

(e) Explain each of the following terms used in cloud computing.

Virtualisation

Clustering

[4]



(f) Describe two benefits for the mobile phone company of using cloud computing to back up its data.

1. _____

2. _____

_____ [4]

(g) Describe one drawback for the mobile phone company of using cloud computing to back up its data.

_____ [2]

[Turn over



The mobile phone company must comply with legislation including the Data Protection Act (DPA).

(h) The Data Protection Act states that personal data should be collected for a specified purpose. Identify four other principles of the Act.

1. _____

2. _____

3. _____

4. _____

[4]



(i) Explain the following terms relating to the Data Protection Act.

Data subject

Information Commissioner

[4]

THIS IS THE END OF THE QUESTION PAPER



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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	

Total Marks	
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Examiner Number

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