

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

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## Pearson Edexcel International Advanced Level

Time 2 hours

Paper  
reference

**WIT13/01**

### Information Technology

International Advanced Level

UNIT 3

**You do not need any other materials.**

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*

### Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*
- Calculators are **not** allowed.

### Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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Q:1/1/1/1/



Pearson

**Answer ALL questions.**

**Write your answers in the spaces provided.**

**1** A retailer has a chain of bookshops.

It also sells books online via its website.

(a) The retailer uses a transaction processing (TP) system for all sales.

(i) When a customer purchases a book in a shop, their credit card information is entered into the TP system via an electronic point of sale (EPOS).

State **one other** piece of information that **must** be entered via an EPOS to complete the transaction process.

(1)

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.....

(ii) When a customer buys a book online via the website, the TP system requires them to enter additional information that is **not** required when they buy the book in a shop.

State **one** piece of **additional** information that **must** be entered by the customer to complete the online transaction process.

(1)

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(b) The TP system is linked to the retailer's customer relationship management (CRM) system.

(i) Explain **one** benefit to the **retailer** of having purchase information in the CRM system.

(2)

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(ii) Give **two** drawbacks to the **customer** of their purchase information being stored in the retailer's CRM system.

(2)

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2 .....

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(c) The retailer employs a data governance manager.

One of the roles of the data governance manager is to maintain the data integrity of the retailer's IT systems.

(i) One way of maintaining data integrity is to validate data input.

Give **two other** ways of maintaining data integrity.

(2)

1 .....

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2 .....

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(ii) The retailer's data governance includes archiving data.

A data archive holds data that needs to be kept but is no longer in daily use.

Describe how a data archive is stored.

(2)

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(iii) The retailer's data governance includes a user policy for shop staff using the EPOS system.

One section of the policy deals with password structure and strength.

Give **one other** section that the policy should include.

(1)

(iv) The TP system will only accept passwords that conform to its requirements.

The retailer runs a script that checks if new passwords meet the requirements.

Here is part of the script.

```
INPUT Password
```

```
SET Length to length of Password
```

```
IF Password includes [0-9] AND Password includes [a-z] AND Password  
includes [A-Z] AND Length >= 8 THEN DISPLAY 'Password accepted' ELSE  
DISPLAY 'Password does not meet the requirements'
```

State the requirements for an acceptable password.

(2)

(d) Data backup is part of the retailer's disaster recovery plan.

Each bookshop backs up its data locally, within the building, and at an external data centre.

Explain why the dual backup process is needed.

(2)

(Total for Question 1 = 15 marks)



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**QUESTION 2 BEGINS ON THE NEXT PAGE.**



2 An engineering company is moving its computer centre to new premises and must ensure that all its data will be available at the new location.

(a) The project manager has drawn up this task list for the move.

<b>Data availability task list</b>			
<b>Task</b>	<b>Task description</b>	<b>Completed by</b>	<b>Notes</b>
1	Review and test existing data files and backups	9 July	Start 5 July
2	Reserve additional cloud storage space	10 July	Reserve enough space for all files for one week
3	Install hardware at new location	10 July	Start 5 July
4	Install software at new location	13 July	Start when hardware is in place
5	Move existing files to cloud storage	15 July	Move files after review and testing
6	Create and test backups at close of business at original location, send to cloud	15 July	Project manager to check this has been done
7	Physical movement date Move to local system at new location	16 July	Must be completed on 16 July
8	User testing and familiarisation with new system	18 July	2 days, with possible over run of 2 days



Create a Gantt chart in the grid for the tasks listed.

You should assume that the company works seven days a week.

Your chart should indicate any dependencies.

Your chart should indicate any constraints.

(6)

Task details		July																			
Task	Constraints	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1																					
2																					
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4																					
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6																					
7																					
8																					

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(b) The engineering company uses a range of tools.

Each tool has a warranty from the supplier.

The warranty data for the tools has been corrupted.

The IT staff have recovered some of the data.

Here are three of the 500 records that have been recovered and are no longer corrupted.

warranty number	gd2347166
toolID	1635
tool	drill
make	massif
model	xs2021
supplierID	gd116
supplier email	sales@gendrills.com
when purchased	23/10/1996
purchase price	£2310.96

warranty number	gd6452166
toolID	1774
tool	welder
make	arcright
model	yt3225
supplierID	gd116
supplier email	sales@gendrills.com
when purchased	16/07/1999
purchase price	£2607.99

warranty number	mp0244673
toolID	3006
tool	press
make	maxpasc
model	mp219s
supplierID	mp157
supplier email	admin@maxpasc.co.uk
when purchased	30/03/2005
purchase price	£216.89

The IT staff have decided to create a new, single table database to hold the data.

The warranty number, purchase date and supplier email fields must be validated to check that they are in the correct format.

Create a data dictionary for the database, using the table on the opposite page.

(6)





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Table name	Tbl_Warranty			
Attribute / field name	Data type	Primary key	Field size	Validation
warranty number				
toolID				
tool				
make				
model				
supplierID				
supplier email				
when purchased				
purchase price				

(Total for Question 2 = 12 marks)



**3** A company sells security systems that use Internet of Things (IoT) devices.

(a) The company is going to install an entrance security system for an office building.

The building already has a local area network (LAN).

The specification for the security system states that:

- the system will be controlled by:
  - an app on a PC, connected to the LAN
  - an app on a mobile device, connected to the IoT network
  - a voice control device, connected to the IoT network
- the entrance door will have:
  - a video camera that can send a display to the app
  - a lock that can be opened or closed by the app and which tells the app its current status
- there will be an exterior light over the door that:
  - can be switched on or off via the app
  - comes on if movement is detected and the light level is below a set value.

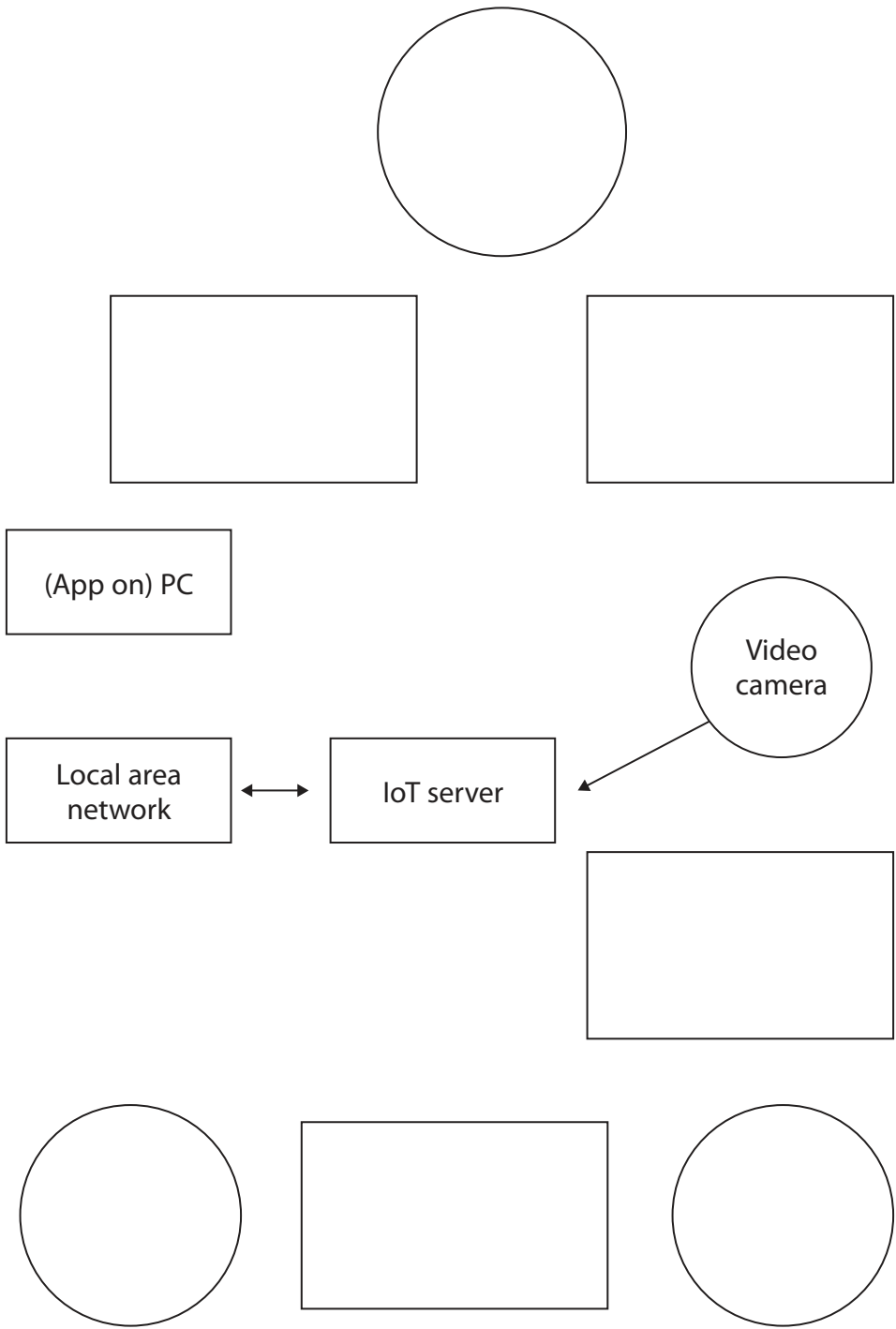
Complete the diagram on the next page to produce a high-level design for an IoT system that will meet the specification.

The LAN and one PC are indicated as boxes.

No further LAN devices are required.

(9)





**Key:**

Circle – sensor

Rectangle – device





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**QUESTION 4 BEGINS ON THE NEXT PAGE.**



- 4 Sarah is employed by a publishing company.  
She often works from home.  
Her workstation is shown in **Figure 1**.



**Figure 1**

- (a) The image shows that the workstation has several ergonomic issues.

Evaluate the ergonomics of Sarah's workstation.

Your answer should include:

- identification of the hazards
- the problems they could cause
- recommendations for resolving them.

(12)

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(b) Sarah lives in a small apartment.

She is moving to a larger apartment in the same town.

She has arranged to have a weekend off from work and for a moving company to transfer all her belongings on Saturday, 2 July.

Her objective is to complete the move and set up her home office during the weekend so that she is ready for work on Monday morning.

Complete the SMART targets table by stating how Sarah's objective meets each of the criteria.

(3)

Criteria	How the objective meets the criteria
<b>Specific</b>	Sarah has set the specific objective of completing the move and office set up to be ready for work on Monday morning, 4 July.
<b>Measurable</b>	
<b>Achievable</b>	
<b>Relevant/realistic</b>	
<b>Time bound</b>	The objective is time-bound because Sarah must complete the move over a specified weekend and be ready for the Monday morning.

(Total for Question 4 = 15 marks)



5 A transport company needs new software to improve its fleet management and routing systems.

It has started a new in-house project to develop the software.

The project will use an agile iterative approach.

(a) Describe what is meant by an **agile iterative** approach.

(2)

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(b) The project will be led by an agile scrum master.

(i) State what is meant by an **agile scrum**.

(1)

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(ii) A sprint is an event that happens within a scrum.

Give **two** characteristics of a sprint.

(2)

1 .....

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2 .....

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(c) The first two phases of an agile approach are requirements and planning.

These take place before any coding is started.

Discuss what needs to be done by the project team in the requirement and planning phases of this project.

(6)

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(Total for Question 5 = 11 marks)



- 6 Many countries use big data methods to implement electronic health records (EHRs) for their citizens.

Each citizen has their own EHR.

The EHR can include:

- medical history
- outcomes of tests
- diagnoses
- demographic information such as age, sex, etc.
- family medical history.

The data is stored in a data warehouse and is analysed to provide information for decision making.

Governments say there is a net benefit to citizens' welfare and to the country from using EHRs.

Healthcare providers say that patient care and medical outcomes are improved.

Evaluate the use of data analytics to plan and improve healthcare.

Your answer could include:

- a discussion of the types of data analytics, with relevant examples of how they can be used to plan and improve healthcare:
  - descriptive
  - prescriptive
  - predictive
- an outline of the common tool functions that might be used, such as natural language search or text analysis
- a conclusion about how well data analytics will deliver the desired improvements.

(12)



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(Total for Question 6 = 12 marks)

**TOTAL FOR PAPER = 80 MARKS**



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