CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				
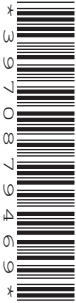
APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY 9713/31

Paper 3 **October/November 2016**

1 hour 15 minutes

Candidates answer on the Question Paper.

No additional materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams, graphs or rough working.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

The number of marks is given in brackets [ ] at the end of each question or part question.

The businesses described in this paper are entirely fictitious.

This document consists of **14** printed pages and **2** blank pages.

[Turn over

Scenario 1

Questions 1, 2, 3 and 4

Faster Cars is a racing car company that produces high-speed racing cars.

The company uses CAD/CAM.

The company employs engineers and mechanics to maintain the cars. It has an expert system that can be used by the mechanics when trying to diagnose faults in the car engines.

The company has its own racing drivers who use simulators to practise high-speed racing for when they are driving the real racing cars.

1 (a) Explain what is meant by CAD/CAM.

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(b) Describe **two** specialist input devices that could be used by a designer using CAD.

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(c) Describe **two** specialist output devices that could be used by a designer using CAD.

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(d) Discuss the benefits and drawbacks of using CAD.

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(e) Explain why the company would choose to use CAM to produce the cars.

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2 When a car engine develops a fault, a mechanic will use the expert system to help diagnose the fault.

The diagram shows an outline of the expert system that is used by the mechanic.

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┌──────────┐        ┌──────────┐
│Inference │        │Interface │ ◄──── data from car engine
│          │ ◄────► │to        │
│Engine    │        │outside   │
│          │        │world     │ ◄────► car computer system
└────▲─────┘        │          │
     │              │          │ ◄────► car mechanic
┌────▼─────┐        │          │
│Knowledge │ ◄────► │          │
│          │        │          │
│Base      │        │          │
└──────────┘        └──────────┘
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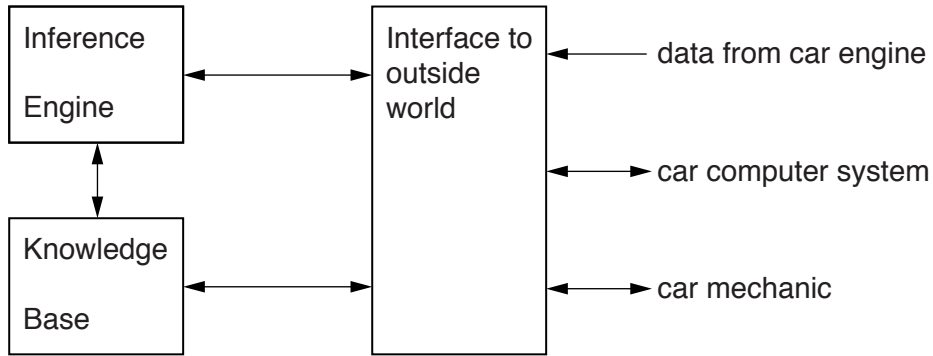
(a) Describe **two** inputs to the expert system from the car engine.

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2 ....

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(b) Explain the use of **two** output devices that could be used by the interface.

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2 ....

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(c) Describe the knowledge base of the expert system and how it may be expanded.

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(d) Explain how the inference engine of the expert system helps to diagnose the fault.

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3 Describe how each of the following output devices might be used in a racing car simulator.

motor

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buzzer

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large screen

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loudspeaker

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4   Discuss the benefits and drawbacks of using computer simulations to practise driving the racing cars.

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Scenario 2

Questions 5, 6 and 7

Floatem is a multi-national shipping company which owns a fleet of cruise ships. These ships sail to and from ports all over the world carrying passengers on holidays.

Passengers may book holiday cruises in person at any office or online using the company's website.

Every passenger cabin on the cruise ships is equipped with an entertainment system that can be used to:

- listen to music from CDs
- listen to radio programmes
- listen to audio books
- access MP3 files stored on a file server
- watch video on-demand or satellite TV.

5 (a) Describe, including their purpose, **six** items of information that a customer would have to enter when booking a holiday cruise online.

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(b) Explain why a customer would prefer to book a cruise online rather than at one of the company offices.

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(c) An e-ticket and an e-receipt are issued when a booking is made online.

    (i) Describe **one** item of information that might be shown on the e-ticket.

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    (ii) Describe **one** item of information that might be shown on the e-receipt. This item must be different from the one given in **(c)(i)**.

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6 (a) Describe how each of the following could be used in the entertainment system in the passenger cabins.

(i) USB port

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(ii) Flash memory card

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(b) Explain why MP3 files are used to distribute content to the entertainment system.

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7 Kumar, a passenger, decides to use the entertainment system to watch TV in his cabin.

(a) Kumar watches a live sports programme on a satellite TV channel.

Describe how the sports programme is sent to, and received by, the entertainment system for Kumar to watch.

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(b) Kumar watches a movie using the ship's video on-demand system.

Explain how the ship's video on-demand system enables Kumar to watch the movie of his choice.

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