Edexcel GCE

Applied Information and Communication Technology
Unit 3: The Knowledge Worker

| 10–14 May 2010 | Paper Reference |
| **Time: 2 hours 30 minutes** | **6953/01** |

You must have:
Short treasury tag, AA_exam.txt, Multimaps_exam.txt, Model_exam.xls, Cover sheet

Instructions
- Complete your candidate details on the cover sheet provided.
- All tasks must contain your name, candidate number, centre number and activity number.
- At the end of the examination:
  All printouts should be placed in the correct order.
  Use a treasury tag to attach your printouts **(as shown)** to Page 2 of the cover sheet.

Information
- There are **five** activities in this examination totalling 88 marks. **2** further marks are allocated to Standard Ways of Working.
- The marks for **each** question are shown in brackets
  – use this as a guide as to how much time to spend on each question.
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice
- Read through the Scenario carefully.
- Work through the activities in order.
- Attempt ALL activities.
- Label your printouts clearly as instructed.
- Printing must be undertaken within the examination time.

Turn over ▶

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British Basketball League Divisional All-Star Play-Offs

The British Basketball League is split into five divisions: Northern, Southern, Midlands, Wales and Western England, and Scotland. Each division runs separate leagues. In addition to the adult teams, there are separate boys and girls teams playing in four different age groups: under 12s, under 14s, under 16s and under 18s.

During the season every team in each league plays each other twice, home and away. At the end of the season the winning teams from each league play in a tournament to decide the National Champions.

Once all of the National Champions have been crowned, preparations begin for the Divisional All-Star Play-Offs. Originally the play-offs were a post-season bit of fun but, over the years, they have increased in importance. The Great Britain Team management now use the play-offs to select the national teams. Consequently, the five divisional administrations take the play-offs very seriously and bring the best players from the teams in their division together to train as squads.

This year the Southern Division has been lucky enough to enlist the services of David Coates as coach. David "flying fifteen" Coates is the only English player in the American NBL (National Basketball League). He is a former player for the Southend Sabres and now plays "center" for the Arizona Cobras. The divisional administration is keen to make the most of David's skills. They have arranged training sessions at their Crawley centre. For each age group there will be a different training day and both boys and girls squads will take part. The training sessions will start at 12:30 and all participants will need to sign in by midday.

There are 14 clubs in the Southern Division. Table 1 shows the club names and locations.

Table 1

Club	Location
Brentwood Bees	Brentwood
Brighton Celts	Brighton
Aylesbury Lightning	Aylesbury
Guildford Dragons	Guildford
Ipswich Tigers	Ipswich
Kent Stallions	Canterbury
Kingston Lions	Kingston
London Giants	Lewisham
London Jets	Paddington
Newham Fire	Newham
Reading Pirates	Reading
Solent Stars	Southampton
Southend Sabres	Southend
Worthing Phoenix	Worthing

Figure 1 shows the clubs locations of the Southern Division

The 15 best players in each league are chosen to attend the training session. The administration has four 16-seat (1 driver +15 passengers) mini-buses, which it sends out from Crawley to collect the players. Consequently for each training session the mini-buses have to collect 30 players (15 boys and 15 girls) from their clubs. The players selected can be from any club in the league and each club can supply any number of players.

You are an IT specialist working for the Southern Division and your manager has asked you to decide how and when the players will be picked up. The drivers of the mini-buses will need to know what time to set off and which clubs to go to. They will also need to know in which order and at what time they should be at each club. It would also be helpful to know how many people they will have to pick up. The players will need to be told what time they need to be at their club and that the mini-bus will only wait for five minutes after the agreed pick-up time.

To help you make these decisions you have been given a partially completed model which will work out times for you.

Description of the model

Worksheet	Description
Teams	This worksheet is where you can set the number of players selected from each team. You can also set which mini-bus is going to call at which pick-up point and in what order. The number of passengers on each mini-bus will be calculated.
Timetable	In the Timetable worksheet you can set the starting time for each of the mini-buses. The arrival and departure times at the clubs will be calculated.
Timings	The Timings worksheet will contain the travelling time in minutes between the clubs.
Calculated Time	The Calculated Time worksheet takes the values in the Timings worksheet and converts them to hh:mm:ss format.
Memo	The Memo worksheet will provide information for the mini-bus drivers.

Some cells in the model are password protected. Should you wish to experiment with the model, the password is *edexcel*. Be aware that if you change the contents of any protected cell the model may not work.

Your Task

You have been asked by the Southern Division administration to arrange schedules for the four mini-buses picking up the players attending training sessions at its Crawley centre. To help, you have been given a partially completed model.

The Data

To complete the model you have two sets of data, **AA_exam.txt** and **Multimaps_exam.txt**.

Both sets of data contain travel times between all of the locations. These have been collated using two route-finders available on the Internet. The first route-finder is on the website maintained by the Automobile Association and the second is on a well-known private website. One of the employees of the Southern Division spent two consecutive days entering the addresses in the route-finders and noting down the travel time displayed for the journey.

It is extremely important that the schedule you create gets the players to the Crawley centre by midday. You will have to decide the best way of using the information from these two reliable sites. You will need to ensure that the route and timings you choose have the best chance of achieving this whilst not making the players (or the drivers of the mini-buses) get up too early.

Instructions to Candidates

All printouts **must** have a header and a footer. The header must contain the activity number. The footer must contain your name, candidate number and centre number.

Minimum font size of 10 should be used throughout.
Spreadsheet printouts for **Activity 3** should show gridlines and row and column headers.
For some of your spreadsheet printouts you may need to adjust column widths. To do this you will need to unprotect the worksheets. The password is *edexcel*.

Activity 1 – Understanding the situation (suggested time 20 minutes)

You should look at all the information available and make sure that you understand the situation.

On **one** sheet of A4 summarise the current situation.

(a) List key facts relevant to the problem you have to solve.

(10)

(b) Outline the decisions you have to make.

(3)

Note: Bullet pointed answers are acceptable.

Save and print your work.

(Total for Activity 1 = 13 marks)

Activity 2 – Sources of information (suggested time 20 minutes)

AA_exam.txt and Multimaps_exam.txt both contain times for travelling between the locations. Both sets of data are derived from sources that have a good reputation for the reliability of their directions. However, there are considerable differences between some of the timings. This is because the two systems will have used different factors to calculate the time. For example, one system might assume that the vehicle is a car, the other might allow a choice of vehicle.

On **one** sheet of A4:

(a) List other factors that could make the timings different.

(5)

(b) Your priority is to get the players to Crawley by midday. Explain how you propose to use the two datasets.

(4)

(c) On the day any of the journeys might take more or less time than predicted. List factors which could affect the actual times of the journey.

(6)

Save and print your work.

(Total for Activity 2 = 15 marks)

Activity 3 – Computer modelling (suggested time 40 minutes)

Open the spreadsheet model and familiarise yourself with it.
The spreadsheet model is stored as **Model_exam.xls**.

(a) **Importing Data**

❑ Create worksheets to hold imported data from the text files and give the
worksheets suitable names

❑ Import data from the text files (AA_exam.txt, Multimaps_exam.txt) into your newly
created worksheets

❑ On **one** sheet of A4 each, print off these worksheets showing the data. Remember
to show gridlines and row and column headers.

(6)

(b) **Timings**

❑ Enter a formula into cell C4 of the 'Timings' worksheet to calculate a time (in
minutes) to be used in your model for travelling from Aylesbury to Brentwood.
The formula will need to use the data from your newly created worksheets

❑ Replicate this formula into Cell B4

❑ Replicate the formula in Cell B4 into the range of cells B4:P18

❑ On **one** sheet of A4, print off columns A–D and rows 3–18 of the 'Timings'
worksheet showing **formulae**.

(4)

(c) **Timetable**

The mini-buses are to wait 5 minutes at each stop, so the departure time must be 5 minutes after the arrival time. However, if "No Stop" is set in the 'Teams' worksheet, the 'Timetable' worksheet will display the same pick-up point as the previous pick-up point. In these circumstances no wait time is to be added.

❑ In cell E4 of the 'Timetable' worksheet, enter a formula to calculate the departure time based on the arrival time at that stop.

Hint: to convert the minutes into time format you will need to divide by 24*60

❑ Replicate this formula down to cell E7

❑ In cell H4 of the 'Timetable' worksheet, enter a formula to calculate the departure time based on the arrival time at that stop

❑ Replicate this formula down to cell H7

❑ In cell K4 of the 'Timetable' worksheet, enter a formula to calculate the departure time based on the arrival time at that stop

❑ Replicate this formula down to cell K7

❑ In cell N4 of the 'Timetable' worksheet, enter a formula to calculate the departure time based on the arrival time at that stop

❑ Replicate this formula down to cell N7

❑ In cell Q4 of the 'Timetable' worksheet, enter a formula to calculate the departure time based on the arrival time at that stop

❑ Replicate this formula down to cell Q7

❑ On **one** sheet of A4, print off columns E–F and rows 3–7 of the 'Timetable' worksheet showing **formulae**

❑ On **one** sheet of A4, print off columns H and K only and rows 3–7 of the 'Timetable' worksheet showing **formulae**.

Note: to show all of your formulae you will have to adjust column width.
To do this you will need to unprotect the sheet.

(9)

(d) **Teams**

❑ Enter a suitable formula into cell E3 of the 'Teams' worksheet to calculate the total number of players to be picked up from Brentwood

❑ Replicate this formula to cell E16

❑ On **one** sheet of A4, print off columns B–E and rows 2–16 of the 'Teams' worksheet showing **formulae**.

(2)

(e) **Printouts**

❑ Collect all of your printouts together, ensure that you have printed them correctly and that they are in the order you have been asked to print them.

(8)

(Total for Activity 3 = 29 marks)

Activity 4 – Timetables and Letters (suggested time 45 minutes)

The under 12 and under 14 teams are scheduled for the same weekend, the under 12s on Saturday Sept 25th and the under 14s on Sunday Sept 26th. The number of players to be collected from each club is shown in the table.

Under 12s			Under 14s		
Location	**Boys**	**Girls**	**Location**	**Boys**	**Girls**
Brentwood	2	0	Brentwood	0	0
Brighton	0	1	Brighton	0	0
Aylesbury	1	1	Aylesbury	0	1
Guildford	2	0	Guildford	4	0
Ipswich	0	1	Ipswich	4	1
Canterbury	0	2	Canterbury	2	3
Kingston	1	2	Kingston	0	0
Lewisham	3	1	Lewisham	0	0
Paddington	1	1	Paddington	0	0
Newham	2	2	Newham	3	1
Reading	1	0	Reading	1	0
Southampton	1	0	Southampton	0	5
Southend	0	2	Southend	1	0
Worthing	1	2	Worthing	0	4

(a) Use the model to work out timetables for the mini-buses.

❑ Enter the data for the under 12s and then use the model to produce a timetable for Saturday Sept 25th

❑ Open the 'Memo' worksheet, enter your name in Cell B4 and the date in Cell B6

❑ Print off the 'Memo' worksheet. Do **not** show gridlines or column headers

❑ Enter the data for the under 14s and then use the model to produce a timetable for Sunday Sept 26th

❑ Open the 'Memo' worksheet, enter your name in Cell B4 and the date in Cell B6

❑ Print off the 'Memo' worksheet. Do **not** show gridlines or column headers.

(9)

*(b) Using information from the model.

❑ Create and print a standard letter for the parents of the under 14s inviting their child to the training session. The letter should include the pick-up times and other relevant information.

Marks will be awarded for the Quality of your Written Communication (QWC).

(12)

(c) Using information from the model.

❑ The administration wants to know the percentage of the squad provided by each club for both boys and girls under 14s training sessions.
Create and print appropriate charts.

(4)

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(Total for Activity 4 = 25 marks)

Activity 5 – Evaluation (suggested time 10 minutes)

Write an evaluation of the model considering:

❑ how well you thought it performed

❑ what else you would like it to do and how would you achieve this.

Save and print your work.

(Total for Activity 5 = 6 marks)

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Standard ways of working.

All printouts must contain the activity number, your name, candidate number and centre number.
Pages must be securely fastened to the cover sheet and in the correct order.
Minimum font size of 10 should be used for all word processed documents.

(Standard ways of working = 2 marks)

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TOTAL FOR PAPER = 90 MARKS