

Pearson International Advanced Level

Monday 20 – Friday 24 May 2019

Window (Time: 2 hours 30 minutes)

Paper Reference **WIT03**

Applied ICT

Unit 3: The Knowledge Worker

You must have:

HKA_exam.xlsx, AirShippingRates.pdf

Instructions

- Complete your candidate details on the cover sheet provided.
- All printouts 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

- The total mark for this paper is **90**. There are **four** activities in this examination totalling 88 marks. 2 further marks are allocated to Standard Ways of Working.
- The marks for **each** activity are shown in brackets.
 - use this as a guide as to how much time to spend on each activity.
- Activities labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
 - you should take particular care with your spelling, punctuation and grammar, as well as the clarity of expression, on these activities.

Turn over ►

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Scenario

William Wright is an Englishman who was based in Hong Kong at the start of 1962. While he was there he met his wife, Jasmin, who worked as an interpreter. They had two children, Edward and Lucy.

Edward and Lucy went to school in Hong Kong, where they were exposed to a wide range of cultures, which would help them later in life. From school they both went to UK universities. Edward studied mathematics and Lucy studied business.

Edward was unsure what to do for a career. At the time, the main openings for mathematics graduates were teaching or research. He had no interest in either. Lucy was keen to set up her own business, although she had insufficient start-up funds.

Edward and Lucy decided to return to Hong Kong. At that time, the employment situation on the island was difficult, so Edward did part-time jobs in catering and Lucy worked with her mother. They both felt they were not using the skills they had developed and were frustrated with the lack of opportunities available to them. Their chance to change their prospects came from a friend, Douglas Hunt, who they had met while studying in the UK.

Douglas had inherited a kitchen appliance manufacturing company from his father. He was keen to develop the company, wanting to set up an Asian branch to expand into the Far Eastern market. Douglas approached Edward and Lucy to see if they were willing to help. They were both very pleased to assist.

So, the Asian branch of Hunt Kitchen Appliances (HKA) was established in Hong Kong. The business in Hong Kong is a distribution centre for customers in Central Asia and Australasia. Edward became operations manager and Lucy the business manager.

Customers in Europe, the Middle East and North and South America receive their appliances directly from the UK.

All appliances are shipped in boxes which are categorised as Small (S), Medium (M), and Large (L). Categories are shown in Table 1: this information is supplied by the Hong Kong Customs and Excise Department.

Table 1

Appliances					
Small (S)		Medium (M)		Large (L)	
Maximum Weight in kg	Maximum Volume in m³	Maximum Weight in kg	Maximum Volume in m³	Weight in kg	Volume in m³
10	0.04	20	0.4	Above 20	Above 0.4

Small and medium appliances can be sent by air or sea; the preferred method is air. Small and medium appliances can only be shipped in multiples of five. Cargo aircraft are classified as medium and large transporters. Medium transporters can carry up to 55000 kg, large transporters can carry up to 110000 kg. Medium transporters are cheaper for loads up to 20000 kg. HKA uses a maximum of one aircraft per shipment.

Large appliances can only be sent by sea in standard or economy containers. A standard container has a usable volume of 33 m³; for an economy container, the usable volume is 67 m³. A container can be used solely by one customer, or the space can be shared between customers.

Appliances sent by air are guaranteed to reach the HKA distribution centre in 24 hours, according to Air Hong Kong Direct, the air freight company used. Those sent by sea take 28 days for a container used exclusively by HKA, or 42 days for a shared container. Aircraft loads, container data and shipping times are supplied by the Asian Trans Global Shipping Company.

HKA offers three ranges of kitchen appliances: bronze, silver and gold. For every type of bronze appliance sent there are twice as many gold appliances and three times as many silver appliances sent.

Up to 1997, HKA paid no import tax on its appliances. From 1997 it paid import taxes. The import tax rates are supplied by the Hong Kong Region Special Administration in Table 2.

Table 2
Import Tax

Before 1997			From 1997		
Appliances			Appliances		
Small	Medium	Large	Small	Medium	Large
0%	0%	0%	4.70%	6.30%	8.40%

Due to Edward and Lucy researching the development of a manufacturing base in Hong Kong for HKA, you have been employed to develop the model to aid decision making on the future of HKA.

The model consists of these worksheets:

Worksheet	Description
AppliancesRange	Lists the ranges of kitchen appliances available
AirShippingRates	Contains the data on air shipment rates for medium and large transporters
Import	Contains the data for import tax on appliances and their classifications
SeaShippingRates	Contains the data on sea shipment rates for standard and economy containers
AppliancesShipped2018	Shows the shipment of the appliances over 2018
ShipmentMethod	Used to show the preferred method of transport for appliances
Jan2018	Used to show the shipment totals in January 2018, of weight and volume, for appliances sent by air and sea
ShipmentTotals2018	Used to show the value and the import duty of the appliances shipped in 2018

Some worksheets in the model are password protected. Be aware if you change the contents of any protected worksheet the model may not work. Should you wish to experiment with the model, the password is *Edexcel*.

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.

All spreadsheet printouts should show gridlines, row and column headers.

Some worksheets in the model are password protected. Be aware if you change the contents of any protected worksheet the model may not work. Should you wish to experiment with the model, the password is *Edexcel*.

Your task

You have been employed to develop the model to aid decision making on the future of HKA.

Activity 1 – Understanding the situation (suggested time 25 minutes)

Read the scenario carefully.

On **one** sheet of A4:

- (a) Using a numbered list, state **13** pieces of information from the scenario that you consider relevant to the **model**. (13)
- (b) List **four** data sources and the data each provides. (4)

Save and **print** your answer.

(Total for Activity 1 = 17 marks)

Activity 2 – Completing the model (suggested time 40 minutes)

You should ensure that each printout is on **one** sheet of A4 only.

The model is stored as HKA_exam.xlsx

Open the spreadsheet model and familiarise yourself with it.

(a) AirShippingRates

Lucy has provided you with the file AirShippingRates.pdf containing information on the range of charges per kilogram for appliances shipped by air.

- In cells C10 to C20 enter the Charge/kg shown in the AirShippingRates.pdf file for the medium transporter.
- Print off columns A to C and rows 8 to 20 of the 'AirShippingRates' worksheet showing **data**.

(1)

(b) AppliancesShipped2018

For every type of bronze appliance sent there are **twice** as many gold appliances and **three** times as many silver appliances sent.

- Enter a formula in cell F10 that shows the number of silver range microwaves included in the January 2018 shipment.
- Replicate this formula to cell F20
- Enter a formula in cell J10 that shows the number of gold range microwaves included in the January 2018 shipment.
- Replicate this formula to cell J20
- In cell K10 enter a formula that looks up the weight for a gold microwave in the 'AppliancesRange' worksheet and calculates the total weight for the quantity of gold range microwaves sent out in the January 2018 shipment.
- Replicate this formula to cell K20 to calculate the total weight for each type of gold range appliance sent out in the January 2018 shipment.
- In cell L10 enter a formula that calculates the total volume for the quantity of gold range microwaves sent out in the January 2018 shipment.
- Replicate this formula to cell L20 to calculate the total volume for each type of gold range appliance sent out in the January 2018 shipment.
- In cell M10 enter a formula that calculates the total value for the quantity of gold range microwaves sent out in the January 2018 shipment.
- Replicate this formula to cell M20 to calculate the total value for each type of gold range appliance sent out in the January 2018 shipment.
- Print off columns F, J, K, L, and M and rows 8 to 20 of the 'AppliancesShipped2018' worksheet showing **formulae**.

(8)

(c) **ShipmentMethod**

Small and medium appliances can be sent by air or sea; the preferred method is air. Large appliances can only be sent by sea.

- Enter a formula in cell J11 that shows the preferred shipment method for the **silver range microwave** based on the values shown in the import tax category in the 'AppliancesRange' worksheet.
- Replicate this formula to cell J21 to show the preferred method of shipment for all the silver range appliances.
- Print off columns F and J and rows 9 to 21 of the 'ShipmentMethod' worksheet showing **formulae**.

(4)

(d) **Jan2018**

- In cell C25 enter a formula that will calculate the total weight of appliances to be shipped by air.
- In cell D25 enter a formula that will calculate the total volume of appliances to be shipped by sea.
- In cell E22 enter a formula that calculates the total value of all the bronze range appliances sent out in the shipment.
- Print off columns C, D, and E and rows 22 to 25 of the 'Jan2018' worksheet showing **formulae**.

(7)

(e) **ShipmentTotals2018**

(i) Shipment Method

- In cell H9 create a drop-down list so that either **Medium Transporter** or **Large Transporter** can be selected.
- Create further drop-down lists in cells H17, H25 and H33 from which **Medium Transporter** or **Large Transporter** can be selected.
- In cell H10 create a drop-down list so that either **Standard Container** or **Economy Container** can be selected.
- Create further dropdown lists in cells H18, H26 and H34 from which **Standard Container** or **Economy Container** can be selected.
- In cells H9, H17, H25 and H33 display the transporter used to give the cheapest air shipment cost, for each of the four 2018 shipments.
- In cells H10, H18, H26 and H34 display the container used to give the cheapest sea shipment cost, for each of the four 2018 shipments.
- Screenprint **one** of your drop-down lists to show it is set up correctly. Paste this into a word-processed document.

- Screenprint column H rows 9 to 34. Paste the screenshot into your word-processed document.
 - Print out your word-processed document showing your screenshots.
- (ii) Cells M18 to O20 show the shipment values for the small (S), medium (M) and large (L) appliances for each range sent out in the April 2018 shipment.
- In cell P18 enter a formula that calculates the total shipment value of all the small (S) appliances.
 - Replicate this formula to cell P20
- (iii) The rate of import tax, for small (S), medium (M), and large (L) appliances is shown, for April 2018, in cells Q18 to Q20.
- In cell R18 enter a formula that calculates the value of the import tax for all the small appliances in the April 2018 shipment.
 - Replicate this formula down to cell R20.
 - Print off columns P, Q, and R and rows 17 to 20 of the 'ShipmentTotals2018' worksheet showing **formulae**.

(9)

(f) **Printouts**

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

(3)

(Total for Activity 2 = 32 marks)

Activity 3 (suggested time 40 minutes)

AppliancesCosts

(a) The 'AppliancesCosts' worksheet shows the unit selling prices of all the appliances.

Production costs can vary between 1% and 21% of the selling price.

- In cell E10 enter a formula that calculates the minimum production cost for a bronze range microwave.
- Replicate this formula to cell E20 to calculate the minimum production costs for the remaining bronze range appliances.
- In cell I10 enter a formula that calculates the maximum production cost for a silver range microwave.
- Replicate this formula to cell I20 to calculate the maximum production costs for the remaining silver range appliances.
- Print off columns C, E, and I and rows 8 to 20 of the 'AppliancesCost' worksheet showing **formulae**.

(4)

Production2018

(b) The 'Production2018' worksheet shows the quantities of each kitchen appliance produced in 2018. It is used to calculate the production costs for **all** kitchen appliances.

- (i) • Enter a formula in cell C9 that calculates the minimum production cost for all the bronze range microwaves, using the value calculated in the 'AppliancesCosts' worksheet.
- Replicate this formula to cell C19.
- Enter a formula in cell G9 that calculates the maximum production cost for all the silver range microwaves, using the value calculated in the 'AppliancesCosts' worksheet.
- Replicate this formula to cell G19.
- (ii) • Enter a formula in cell C25 that calculates the minimum production cost for all kitchen appliances.
- Enter a formula in cell D25 that calculates the maximum production cost for all kitchen appliances.
- Print off columns C, D, and G, rows 8 to 19 and rows 23 to 25 of the 'Production2018' worksheet showing **formulae**.

(4)

StaffCosts2018

(c) The 'StaffCosts2018' worksheet is used to work out the staffing costs for 2018.

- (i) • In cells B10 to B17 use the drop-down list to select the minimum value for each cell.
- Enter a formula in cell C10, which looks up the minimum salary from the 'StaffSalaries2018' worksheet, to calculate the minimum total salaries for General Managers.
- Replicate this formula to cell C17.
- Enter a formula in cell E10, which looks up the maximum salary from the 'StaffSalaries2018' worksheet, to calculate the maximum total salaries for General Managers.
- Replicate this formula to cell E17

(ii) Cell E18 displays the maximum total salaries possible for the staff selected.

Cell C18 displays the minimum total salaries possible for the staff selected.

- In cell H15 enter a formula that calculates the difference **in dollars** between the maximum and minimum total salaries displayed in E18 and C18.
 - In cell H16 enter a formula that calculates the **percentage** difference between the maximum and minimum total salaries displayed in E18 and C18.
 - Print off columns A, C, E, G and H and rows 9 to 17 of the 'StaffCosts2018' worksheet showing **formulae**.
- (iii) Edward has stated that the most effective staffing cost is when the percentage difference shown in cell H16 is 60%.
- Adjust the staff numbers **only** in cells D10 to D17 so that the value shown in cell H16 is as close as possible to 60.
 - Print off columns A to H and rows 9 to 18 of the 'StaffCosts2018' worksheet showing **data**.

(13)

ProjectedProfit2019

(d) The 'ProjectedProfit2019' worksheet shows the minimum and maximum projected profits based on the 2018 figures.

The company hires more staff when the production costs are low and less staff when the production costs are high.

- Enter a formula in cell E13 to display the appropriate staffing costs from the 'StaffCosts2018' worksheet.
- Enter a formula in cell F13 to display the appropriate staffing costs from the 'StaffCosts2018' worksheet.
- Print off columns A to F and rows 9 to 19 of the 'ProjectedProfit2019' worksheet showing **data**.

(2)

(e) Printouts

- Save your work. You may find it useful to use the model for Activity 4.
- Collect your printouts together, ensure you have printed them correctly and that they are in the order you have been asked to print them.

(1)

(Total for Activity 3 = 24 marks)

***Activity 4 – Report** (suggested time 35 minutes)

The Chinese Government has offered HKA an interest free loan of \$4000000 over four years, to move production of kitchen appliances to Hong Kong, with a guarantee that HKA would not have to pay any import tax.

Write a report to explain how Edward and Lucy could use and develop the model in order for HKA to decide whether to accept the loan offer.

The report should include:

- Suitable titles and section headings.
- An introduction explaining what the report is about.
- Costs and benefits of moving production to Hong Kong.
- A justified decision on accepting or declining the loan offer.
- An evaluation of the model and suggestions on how to adapt and improve it.

Proofread your report.

Marks will be awarded for the quality of your written communication.

Save and print your work.

(Total for Activity 4 = 15 marks)

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.

A minimum font size of 10 should be used for all word processed documents.

(Standard Ways of Working = 2 marks)

TOTAL FOR PAPER = 90 MARKS