



Pearson
Edexcel

Mark Scheme (Results)

Summer 2019

Pearson Edexcel International Advanced Level

In Information Technology (IT)
(WIT11) Paper 01

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Publications Code WIT11_01_1906_MS

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question number	Answer	Additional Guidance	Mark
1 (a) i	<p>The only correct answer is A</p> <p>B is not correct because TVs are often not patched/updated after they are sold</p> <p>C is not correct because the TV's code is usually written specifically for that device</p> <p>D is not correct because not all TVs have email apps or suitable storage</p>		1
1 (a) ii	<p>The only correct answer is C</p> <p>A is not correct because an embedded system may use a range of different memory types</p> <p>B is not correct because an embedded system may be autonomous</p> <p>D is not correct because some embedded systems can be turned off and on</p>		1

Question number	Answer	Additional Guidance	Mark
1 (b) i	Award one mark for any of: <ul style="list-style-type: none"> • ROM (1) • Read Only Memory (1) • EPROM (1) • EEPROM (1) • flash memory (1) • Non-volatile memory (1) • Solid state (1) 	Ignore any spelling errors With multiple answers mark the first one Do not allow RAM	1
1 (b) ii	Award one mark for each function up to a maximum of two marks: <ul style="list-style-type: none"> • Controls how the device / TV behaves/functions on start-up (1) • Controls how the device / TV behaves/functions during user interaction (e.g. onscreen menus) (1) • Allows software to interact with the TV's hardware (1) • Allows the TV to be modified (at a later date) to remove bugs / add features / change functions (1) • Stores date / time / region information (1) • Stores updates to the software (1) • Stores TV's apps (1) • Stores the BIOS (1) 		2

Question number	Answer	Additional Guidance	Mark
1 (c) i	<p>Award up to two marks for each of two descriptions such as:</p> <ul style="list-style-type: none"> • voice guide / on-screen reader (1) which will read on-screen text / give information about current channel / programme (1) • audio description (1) which provides a description of the scene/setting (1) • high contrast (1) which applies high contrast to all menus, control panels, etc. (1) • change brightness / screen temperature (1) to allow more comfortable viewing / relieve eye strain (1) • colour blindness mode / ability to change colours (1) to allow colour blind people to see what is on the TV (menus, etc.) (1) • screen zoom/enlarge (1) allowing people to zoom in to important parts of the screen / enlarge menus, etc. (1) • guide dots / markings on the (remote) controls (1) to enable people to operate it without seeing the buttons (1) • voice activated TV controls (1) to enable people to operate the TV without seeing the controls. (1) 	Do not accept helping visual impairment as an extension	4

Question number	Answer	Additional Guidance	Mark
1 (c) ii	<p>Award up to three marks for a linked explanation such as:</p> <p>Want to create an inclusive/non-discriminating society where anybody can access the digital devices (1) there are official standards/guidelines that manufacturers must follow (1) which have legal/reputation penalties if not followed (1)</p> <p>OR</p> <p>Making devices easier to use for people with disabilities will increase the size of the market (1)</p> <p>OR</p> <p>Customer pressure to include people with disabilities (1) company responds to keep customers satisfied (1)</p>	Do not allow making more profit arguments	3
Total for question 1			12

Question number	Answer	Additional Guidance	Mark
2 (a)	<p>Award one mark for each point up to a maximum of three marks for a linked description.</p> <ul style="list-style-type: none"> • Find IP address: <ul style="list-style-type: none"> ○ Browser checks cache for previously used connection information (1) ○ Browser connects to Domain Name Service (server) / DNS (server) / Domain Name Server (1) ○ DNS server has database/tables of domain names and IP addresses (1) ○ DNS server looks up IP/converts name to IP (1) • IP address sent to browser (1) • IP address used to connect to website (host) (1) 		3

Question number	Answer	Additional Guidance	Mark
2 (b)	<p>Award one mark for each difference up to a maximum of three marks.</p> <ul style="list-style-type: none"> • static page content is fixed, dynamic alters with user actions (1) • dynamic pages use a fixed format/template while static pages can all be different (1) • static written in HTML, dynamic written in a server-side scripting language/PHP/ASP/JSP (1) • static code/HTML is read/displayed by the browser/client computer, dynamic is a server-side process (1) • static content (usually) held in one location, dynamic page content called (by script) from other files/data source(s) (1) • dynamic, easy to add new features, such as a data feed, to an existing web page (whereas the content for static pages is hard coded) (1) • database can be used by dynamic pages to supply content (whereas the content for static pages is hard coded) (1) 	Accept other server-side scripting languages	3

Question number	Indicative content	Mark
2(c)	<p>Responses should be in relationship to the context of the question (advantages of dynamic web pages) responses may look at one aspect in depth or cover elements of more than one.</p> <p>Ease of use by web author Hilmi:</p> <ul style="list-style-type: none"> • easy to create structured / organised pages • does not need to know HTML • no need to recode pages to change content • can connect to a database / data source allowing the use of a content management system • no or reduced costs / time when changing page content <p>Responsive to users:</p> <ul style="list-style-type: none"> • pages are filled / sorted according to user actions • interactive actions allow help user engagement • able to respond to / accommodate different screen sizes / resolutions <p>Other:</p> <ul style="list-style-type: none"> • content can respond to: <ul style="list-style-type: none"> ○ cookies ○ time of day ○ locational information • better for SEO 	6

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–2	<ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a superficial and unbalanced discussion.
Level 2	3–4	<ul style="list-style-type: none"> • Demonstrates knowledge and understanding which is mostly relevant but may include some inaccuracies. • Applies understanding to make some coherent connections, leading to a discussion that shows some development, but may be unbalanced.
Level 3	5–6	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a balanced and fully developed discussion.
		Total for question 2
		12

Question number	Answer	Additional Guidance	Mark														
3 (a)	<table border="1"> <thead> <tr> <th data-bbox="358 304 506 344">Label</th> <th data-bbox="506 304 1279 344">Name</th> </tr> </thead> <tbody> <tr> <td data-bbox="358 344 506 384">A</td> <td data-bbox="506 344 1279 384">Invoice / receipt</td> </tr> <tr> <td data-bbox="358 384 506 424">B</td> <td data-bbox="506 384 1279 424">Order part / process order</td> </tr> <tr> <td data-bbox="358 424 506 464">C</td> <td data-bbox="506 424 1279 464">Order(s)</td> </tr> <tr> <td data-bbox="358 464 506 504">D</td> <td data-bbox="506 464 1279 504">(Stockroom) staff</td> </tr> <tr> <td data-bbox="358 504 506 544">E</td> <td data-bbox="506 504 1279 544">Create/raise/write reports</td> </tr> <tr> <td data-bbox="358 544 506 584">F</td> <td data-bbox="506 544 1279 584">Supplier / wholesaler / manufacturer</td> </tr> </tbody> </table>	Label	Name	A	Invoice / receipt	B	Order part / process order	C	Order(s)	D	(Stockroom) staff	E	Create/raise/write reports	F	Supplier / wholesaler / manufacturer	Accept reasonable alternative names for items	6
Label	Name																
A	Invoice / receipt																
B	Order part / process order																
C	Order(s)																
D	(Stockroom) staff																
E	Create/raise/write reports																
F	Supplier / wholesaler / manufacturer																

Question number	Answer	Additional Guidance	Mark
3 (b) i	<p>Award one mark for each correct part of the query up to a maximum of six marks.</p> <ul style="list-style-type: none"> • select required fields from the correct tables (1) • only the required fields selected (1) • manufacturer = Lucas Electrical (1) • stock > 0 (1) • use of LIKE/= with correct pattern for part number (1) • use of AND for multiple conditions (1) • join correct (1) • ORDER BY name (1) <p>e.g. SELECT name, telephone FROM tbl_supplier, tbl_bulbs WHERE manufacturer='Lucas Electrical' AND partnumber LIKE 'LL_80 1157 BAY_ _D' / =LL%80 1157 BAY%D AND stocklevel > 0 / !=0 / <>0 AND tbl_supplier.supplierID=tbl_bulb.supplierID ORDER BY name</p>	Award marks with minor errors in syntax as long as the intent is clear.	6

Question number	Answer	Additional Guidance	Mark
3 (b) ii	<p>Award up to a maximum of three marks for a linked explanation. e.g.</p> <p>Car dealer has access to rare / obsolete stock (information) (1) does not have to build / maintain its own database / information is all in one place/does not have to call numerous suppliers (1) saving time / resources (1)</p> <p>Car dealer has access to rare / obsolete stock (information) (1) does not have hold wide variety of stock (1) saving space / resources / money (1)</p> <p>Car dealer can offer (better) service to customers (1) that it could not do without access (1) giving better customer experience / satisfaction (1)</p> <p>Car dealer can supply rare / obsolete items (1) that would take time / resources to find without the database (1) giving increased sales / profit / customer satisfaction (1)</p>		3
Total for question 3			15

Question number	Answer	Additional Guidance	Mark
4(a)	<p>Award one mark for each point up to a maximum of three marks for a linked description:</p> <ul style="list-style-type: none"> • data moving into the stack/layers is given a header (1) • in each/all layers going down, data is encapsulated further / new header is added (1) • the header plus data from previous layer becomes the data/package (1) • header contains addressing information / header makes data compatible with the next process (1) • the header information is used to extract the data from the encapsulated package (1) 	<p>Accept reverse arguments for data passing up the stack</p> <p>Allow information instead of header</p>	3

Question number	Answer	Additional Guidance	Mark
4(b)	<p>Award one mark for each point up to a maximum of six marks</p> <ul style="list-style-type: none"> • diagram shows a layered process (1) • 6 layers in order / reverse order, (any 6 of Application, Presentation, Session, Transport, Network, Data link, Physical) (1) • 7th layer in correct position (1) • diagram indicates data flow between the layers (1) • diagram includes some protocols/information about the data (1) • diagram indicates media (bottom 3 / layers1-3) / host (top 4 / layers 4 - 7) (1) • diagram is a labelled diagram, not a table, list, set of paragraphs, etc. (1) 		6

Question number	Answer	Additional Guidance	Mark
4 (c) i	<p>Award one mark for each point up to a maximum of four marks for a linked explanation.</p> <ul style="list-style-type: none"> • OSI is about communications between a network and a user (1) • TCP/IP is about connecting hosts over the internet/a network (1) • OSI is generic/protocol independent / can use any appropriate protocol (1) • TCP/IP is based on (standard) internet protocols (1) • OSI is a reference model/guide (1) • TCP/IP is an implementation of that (OSI) model (1) <p>Examples</p> <ul style="list-style-type: none"> • OSI is a generic model (1) used as a guide to building a network/communications system (1) while TCP/IP is an implementation (1) that uses standard protocols for running a (network/communications) system/the internet (1) • TCP/IP is used to connect hosts over the internet. (1) It uses TCP and IP/standard protocols (1) while OSI is about communications between a user and a network. (1) OSI does not have standard protocols (1) • TCP/IP uses TCP and IP/standard protocols (1) for communicating over a network (1) while OSI can use these protocols but does not have to. (1) It is protocol independent (1) 		4
4 (c) ii	<p>Award one mark for each point to a maximum of two marks.</p> <ul style="list-style-type: none"> • IPv4 is running/has run out of available addresses / IPv6 has many times more addresses available (1) • IPv6 removes need for address sharing / removes need to use NAT to share a (network) address (1) • IPv6 is more secure (than IPv4) (1) (allow Encrypted) • IPv6 is more efficient (than IPv4) (1) 		2
Total for question 4			15

Question number	Indicative Content	Mark
5	<p>Responses should be in relationship to the context, advantages and disadvantages to Sanjeev of the digital footprints that he has generated.</p> <p>Active footprint (generated when Sanjeev deliberately releases / shares personal data, e.g. on social media).</p> <p>Advantages:</p> <ul style="list-style-type: none"> • editors can more easily find Sanjeev to <ul style="list-style-type: none"> ○ offer work ○ see examples of his writing ○ see what styles, genres etc. he can write in • helps protect Sanjeev from: <ul style="list-style-type: none"> ○ fraudulent activity ○ plagiarism / claims of plagiarism ○ other legal issues such as copyright • allows companies to personalise Sanjeev's visits to their sites, for e.g. special offers, suggested products. <p>Disadvantages:</p> <ul style="list-style-type: none"> • adverts / offers may be based on Sanjeev's research and not be wanted for his everyday life • personal data can be monetised without Sanjeev's knowledge / permission • companies may 'personalise' by increasing prices based on a perception of Sanjeev's wealth / status • analysis of an active footprint can reveal more information than Sanjeev had intended to share • privacy problems 	12

Passive footprint (generated when Sanjeev visits sites, performs transactions. e.g. cookies, logfiles).

Advantages:

- enhanced experience, e.g. search fill, location awareness
- helps protect Sanjeev from:
 - credit card fraud
 - attempts to log in to his accounts, e.g. email, shopping

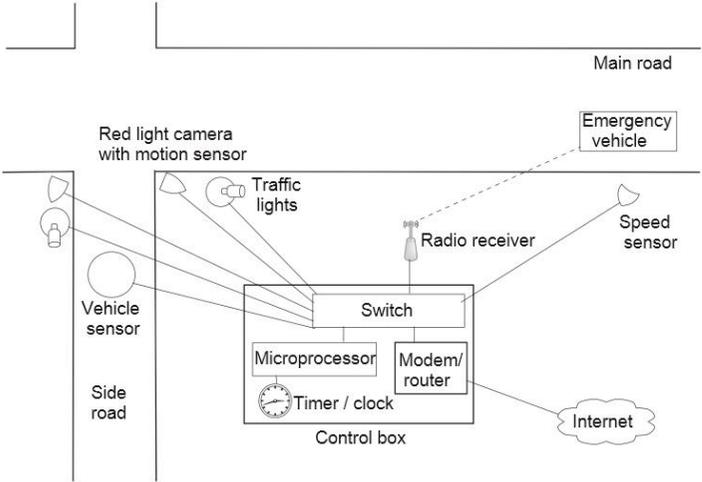
Disadvantages:

- privacy problems
- no control over what is collected
- information may end up in wrong hands, e.g. credit card numbers, account numbers
- embarrassing / inconvenient material may be collected
- may impact on non-internet activities. Footprint may be used by companies dealing with e.g. credit references, rental agreements.

Managing the footprints going forward:

- keep personal / work accounts separate / separate accounts for different functions
- don't use same user names for multiple accounts / set up multiple profiles
- security measures / clearing cookies / browser add ons to prevent tracking
- deliberate management of active footprint(s) to suit Sanjeev's purposes
- use of anonymous / private browsing / secure browser (add ons)

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-4	<ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a response that lacks development. • Demonstrates limited awareness of competing arguments. • Conclusion, if present, is generic or unsupported.
Level 2	5-8	<ul style="list-style-type: none"> • Demonstrates knowledge and understanding, which is mostly relevant and may include some inaccuracies. • Applies understanding to make some coherent connections and a partially developed response. • Demonstrates some awareness of competing arguments, but this may be unbalanced, and partially supports conclusion with evidence.
Level 3	9-12	<ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. • Demonstrates an awareness of competing arguments and supports conclusion with evidence.
		Total for question 5
		12

Question number	Answer	Additional Guidance	Mark
6 (a)	<p>The diagram shows the functionality – the location of particular devices may vary. Allow radio signals for connecting devices as long as a receiver is included.</p> <p>Award one mark for each item to a maximum of ten marks:</p> <ul style="list-style-type: none"> a) microprocessor / processor / embedded computer in control box / server / computer b) modem / router in control box / attached or wired to the box c) timer / clock in box or from internet d) microprocessor (or device credited in (a)) connects to Internet via router/modem e) red light / traffic camera on main/side road f) red light sensor identified, motion (radar, camera) g) speed sensor on main/side road (radar, camera) (must be at entrance to the village) h) appropriate vehicle sensor on side road, proximity (pressure, radar, induction loop, camera) i) radio receiver j) wireless signal to radio receiver (vehicle is not needed for the mark) k) all sensors, lights, cameras and radio receiver connect to switch 	Allow software based clock / timer for (c)	10

	<p>Note:</p> <p>Where sensors are not labelled the mark can be awarded if:</p> <ul style="list-style-type: none">• a sensor is placed near the traffic lights (f)• one or more sensors are placed at the entrance to the village (g). <p>(h) can only be awarded if it is clearly positioned on a side road</p>		
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Question number	Answer	Additional Guidance	Mark
6 (b) i	Award two marks for a linked explanation such as: <ul style="list-style-type: none"> • road safety (1) seeing defective/overloaded vehicles / seeing dangerous manoeuvres such as cutting corner when turning • crime reduction (1) tracking stolen/unlicensed vehicles (1) • traffic management/planning/statistics (1) recording types and volumes of traffic / need to know peak periods/volumes (1) • environmental concerns (1) need to need to know peak periods/volumes/vehicle types (1) • law enforcement (1) surveillance/intelligence gathering / deterrence (1) 	Accept reasonable alternatives Not catching speeding, given in 6a	2
6 (b) ii	Award one mark for each point up to a maximum of two marks for a linked description. <ul style="list-style-type: none"> • privacy concerns / civil liberties violations / state surveillance (1) • tracking movements of vehicles / people/owners/drivers (1) • allowing (government) intrusion into private life (1) • risk of data theft from government database (1) • government might sell/pass on data without authorisation (1) Examples: <ul style="list-style-type: none"> • government could use the system to track the movement of innocent people (1) and therefore intrude on their right to privacy (1) • government could create a profile of its citizens movements (1) for political purposes (1) 		2
Total for question 6			14

