



Mark Scheme (Results)

October 2020

Pearson Edexcel International Advanced
Subsidiary
In Information Technology (WIT11/01)
Unit 1

Question number	Answer	Additional Guidance	Mark
1 (a)	<p>Award one mark per point to a maximum of two marks.</p> <ul style="list-style-type: none"> • pay-per-click advertising (1) • paid advertising / product placement in the blog (articles) (1) • selling of customer data (1) • a subscription for access to the blog (e.g. extra articles, higher resolution images, access) (1) • asking for donations (1) • sponsored content (1) • selling / licensing content (images, text, or products) (1) 	Answers must be suitable for a blog	2

Question number	Answer	Additional Guidance	Mark
1 (b) i	C		1
1 (b) ii	A		1

Question number	Answer	Additional Guidance	Mark
1 (c)	<p>Award up to two marks each for one benefit and one drawback such as:</p> <p>Benefits:</p> <ul style="list-style-type: none"> • can be accessed from anywhere with internet (1) which means Gathii can blog while away from home / from a photo location (1) • Gathii does not need to purchase extra storage (at home / on his system) (1) saving money (1) (needs to have a description of the saving to be awarded this mark) • data security, assuming Gathii keeps copies at home as well as in the cloud / keeps photos on both sites (1) this means that Gathii does not need to worry about making backups / recovering from disasters e.g. his home storage device failing (1) <p>Drawbacks:</p> <ul style="list-style-type: none"> • requires internet access (1) which means Gathii may not always be able to get at his data (1) • there may be limitations on e.g. bandwidth, storage time, time before non-accessed accounts are deleted (1) which means Gathii may not always be able to access his files. (1) • cloud storage is 'someone else's' computer' (1) which means that Gathii has limited control over e.g. security, who can see the data (1) 	Allow 1 drawback mark for a general answer about security risk	4

	<ul style="list-style-type: none"> uploading and downloading files uses data allowance (1) which means that Gathii may incur extra costs / be penalised for exceeding his allowance / need to purchase extra data allowance (1) 		
Question number	Answer	Additional Guidance	Mark
1 (d)	<p>Award up to two marks for each of two descriptions such as:</p> <ul style="list-style-type: none"> can get feedback / criticism / comments on photos (1) which will help him improve technique / style / quality (1) can pick up ideas / suggestions for content/images (1) that can be exploited / written about in his blog (1) can build (professional) relationships with other photographers / possible clients (1) allowing him to sell/shoot images for money/other benefits can build a name/reputation for himself / his images (1) outside of his blog (1) can get support / answers to photography problems (1) from the combined experience of other forum members (1) can get support / answers to blog problems (1) from the combined experience of other forum members (1) can get information about events (1) in a photography related context e.g. exhibition, workshop (1) 	Do not accept answers about publicising the blog	4

Question number	Answer	Additional Guidance	Mark
1(e)	<p>Award one mark for each point up to a maximum of three marks for a linked explanation.</p> <ul style="list-style-type: none"> non-linear text contains links (from text / graphics, video) to other text / graphics, video / sound link can go to whole file/document or specific location within the file/document links can be anywhere on internet / world wide web providing the 'web strands' that create the world wide web <p>Example</p> <ul style="list-style-type: none"> Hypertext provides a link from one web page/document/text to another (1) the second text can be anywhere on the internet (1) this type of link forms the 'web' of the world wide web (1) 	Although this is not what the question asked, allow 1 mark for a good description of hypertext markup language	3

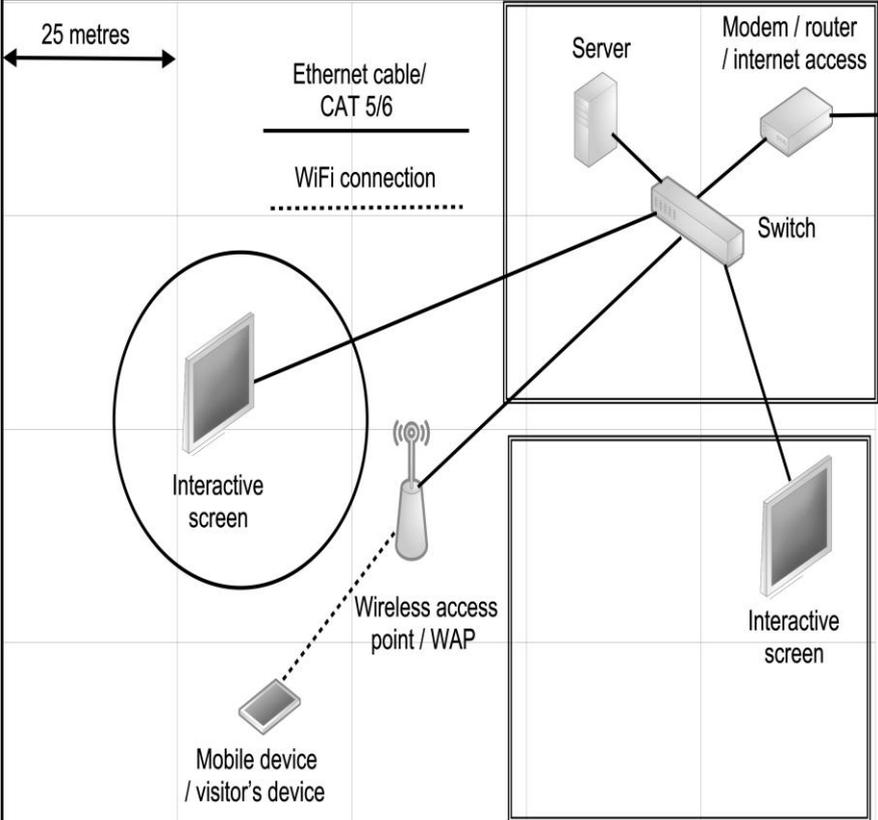
	<ul style="list-style-type: none"> • Hyperlinks are examples of non-linear text (1) which means that they hold links to pieces of text that do not immediately follow the hyperlink text (1) these links are what join up the world wide web/internet (1) • Hypertext links a piece of text to another piece of text (1) the second piece of text can be anywhere on the internet (1) and the link can be to any place within the second piece (1) 		
Total for Question 1			15

Question number	Answer	Additional Guidance	Mark
2(a)	Award one mark for each point up to a maximum of three marks. <ul style="list-style-type: none"> • position information (1) • alignment markings (1) • error correction information (1) • timing information (1) • QR code version (1) • QR code format (1) 	Although this is not what the question asked, allow 1 mark for 'contains a URL/link to web page'	3

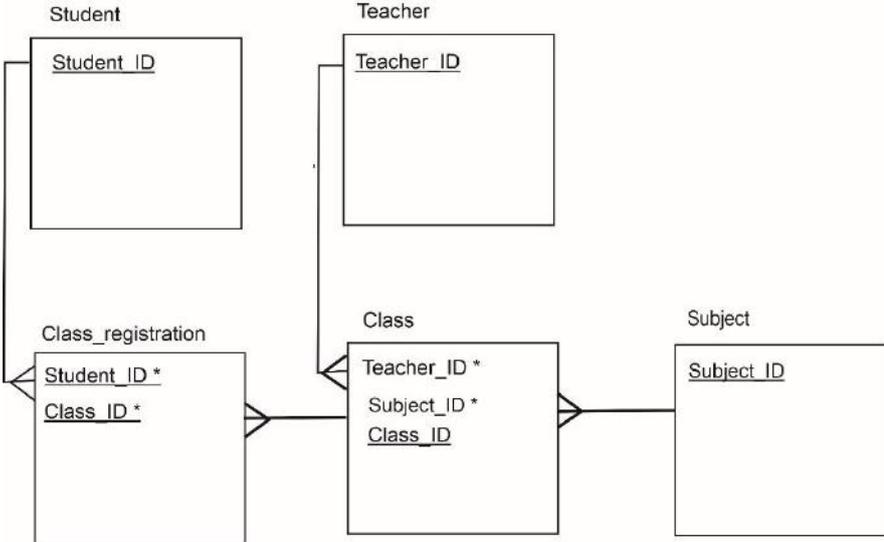
Question number	Answer	Additional Guidance	Mark
2(b) i	Award one mark for each point up to a maximum of four marks for a linked description. <ul style="list-style-type: none"> • RIFD tag contains (digitally) stored information (1) • RIFD tag has an antenna (1) • RIFD reader sends (interrogation) signal (1) • any tag within range responds to the signal (1) • RIFD tag responds to signal by returning stored information (1) • RIFD tag gets power from broadcast radio waves (1) • RFID detector performs action as a result of exchange (1) Example <ul style="list-style-type: none"> • RIFD tags hold identification information (1) which is sent in response (1) to a reader sending a signal (1) the tag is powered by the reader's signal (1) • passive tags are powered by radio waves (1) which are sent by the RIFD reader (1) the tag sends identifying information (1) in response to signals from the reader 		4

	<ul style="list-style-type: none"> the tag works with a reader. The reader broadcasts a radio signal (1) and any tag within range responds (1) sending the code that is stored in the tag (1) the tag does not have a battery and gets its power from the radio signal (1). 		
2(b) ii	<p>Award one mark for any of:</p> <ul style="list-style-type: none"> selling a plant / checkout free payment stocktaking / stock checking / stock control / inventory control / order picking logging plant care e.g. watering schedule 	Do not allow theft related answers as this was given in the question	1

Question number	Answer	Additional Guidance	Mark
2(c) i	Award up to two marks for each of two descriptions such as: <ul style="list-style-type: none"> • eavesdropping/listening in to (NFC transmission) (1) allows access to private/personal/financial data while card is making the connection to the reader (1) • data corruption/manipulation (1) where the connecting signal is jammed/interfered with affecting/altering/preventing the transaction (1) • man in the middle/signal interception (1) where an attacker intercepts the signal and alters it before sending it on (1) 		4
2(c) ii	Award one mark for each point up to a maximum of two marks for: <ul style="list-style-type: none"> • (vendor/garden can) set up secure channels (this ensures communications are encrypted) (1) which prevents eavesdropping/data corruption/data theft (1) 	Do not accept passive measures such as card shields Allow encryption for 1 mark	2
Total for Question 2			14

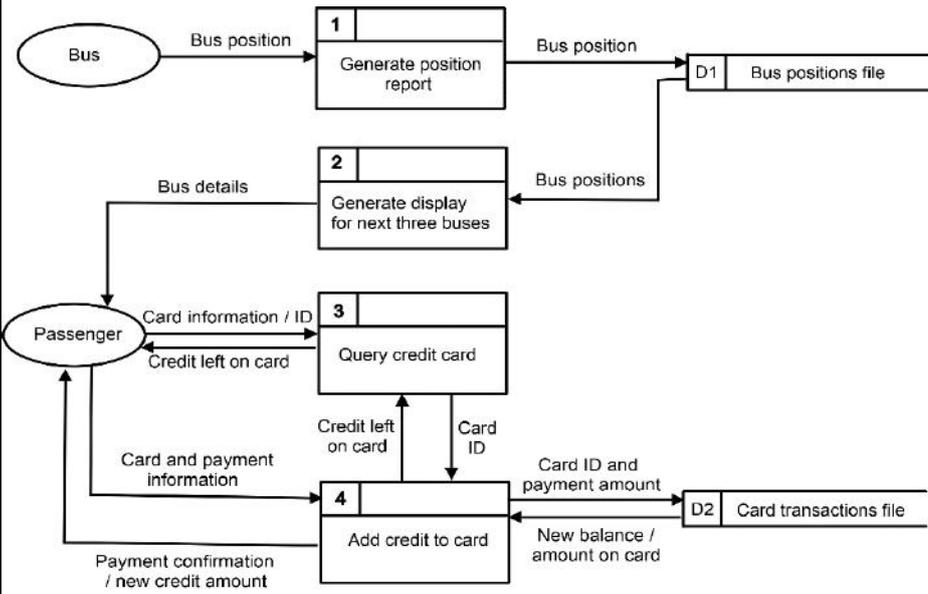
Question number	Answer	Additional Guidance	Mark
3 (a)	<p>Award one mark for each of:</p> <ul style="list-style-type: none"> (a) Server/computer in offices (b) Server/computer connects to internet via max 1 switch and modem / router (c) Server/computer connects to all devices shown via one or more switches, by cable. (d) Interactive screens in exhibition area and engine shed, connected by cable. (e) Mobile device / user connected to WAP by WiFi (f) cable type identified, Ethernet / Cat5/6 / optical fibre  <p>The diagram illustrates a network setup. A central switch is connected to a server and a modem/router. The modem/router is connected to the Internet. The switch is also connected to two interactive screens. A wireless access point (WAP) is connected to the switch and provides WiFi access to a mobile device. A distance of 25 metres is indicated between the server area and the interactive screen area. Cable types are specified as Ethernet cable/CAT 5/6 and WiFi connection.</p>	<p>Accept reasonable alternative names for items. Accept WiFi links instead of cable for anything except server to switch. Accept a firewall in the modem /router /internet access for one mark</p>	6

Question number	Answer	Additional Guidance	Mark
3(b)	<p>Firewall, on router or a separate hardware.</p> <ul style="list-style-type: none"> • Check for open ports, with port scanner • Close all ports except those needed for e.g. email, browser • Keep firewall patched / up to date <p>Server / data stores.</p> <ul style="list-style-type: none"> • Encrypt data • Set access levels, user rights, passwords on files • Enforce strong passwords / two factor authentication • Set up anti-malware, keep it updated • Ensure OS, and other software is patched up to date <p>Other.</p> <ul style="list-style-type: none"> • Switch off internet access out of hours • Train staff on security, e.g. avoiding phishing, mailworms, etc. • Hire white hat/ethical hackers to probe the system for weak points • Ensure router/modem password is changed from default to something more robust 		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 3			12

Question number	Answer	Additional Guidance	Mark
4(a)	<p>Award one mark for each of:</p> <ul style="list-style-type: none"> • at least three correct relationships (the lines) • at least three correct relationship types • at least three correct primary keys in Student, Teacher, Subject, Class • correct composite primary key in Registration • correctly identified foreign keys in Class • correctly identified foreign keys in Registration 		6

Question number	Indicative content	Additional Guidance	Mark
4(b)	<p>Responses should be in relationship to the context of the question. (Discuss why a relational database is suitable for handling structured data.)</p> <p>Structured data</p> <ul style="list-style-type: none"> • is readable by machine • using simple algorithms <p>Databases in general</p> <ul style="list-style-type: none"> • long established (over 40 years) method of holding data • so well understood / tested / unlikely to produce unexpected errors <p>Type of database / using RDBMS</p> <ul style="list-style-type: none"> • reduces data duplication / enforces integrity • stores data in tables / records / fields • allows linking of tables through keys • tables / records / fields are machine readable with simple algorithms <p>Database queries</p> <ul style="list-style-type: none"> • database designed for efficient queries / machine readable with simple algorithms • many programming languages have built-in functions/libraries to deal with database structures • SQL is simple, widespread, and popular / easy for non-technical users to learn/use 		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 4			12

Question number	Answer	Additional Guidance	Mark
5(a)	<p>Award one mark for each item to a maximum of twelve marks:</p> <ul style="list-style-type: none"> (a) Bus entity (b) Passenger entity (c) Position report process (d) Display process (e) Card query process (f) Card payment process (g) Bus positions store/file (h) Ticket card / transactions store/file (i) Data links have arrows showing correct direction of flow data (j) Bus position data has links in a chain from bus to passenger (k) Card credit process has links sending ID and returning credit amount (l) Card add credit process has card and payment data (m) Card add credit process has a return of confirmation / new credit amount 	<p>The names given for data sources, stores and movement may vary. Allow any reasonable alternatives as long as they are used consistently.</p> <p>Accept either of the pairs of dotted lines.</p>	12



Question number	Answer	Additional Guidance	Mark
5(b)	<p>Award one mark for each point up to a maximum of three marks for a linked explanation.</p> <p>Such as:</p> <ul style="list-style-type: none"> • creates an overview of the system (1) • helps visualise the process / data flow (1) • avoids going into great detail at an early stage (1) • can be drawn at different levels of complexity, L0, L1, etc. / allows top down expansion (1) • makes it easier to explain the system to (non-technical) audiences (1) • shows the system boundaries (1) • shows flow to external entities (1) <p>Examples:</p> <ul style="list-style-type: none"> • A DFD shows a top-level view of the planned system, (1) making it easier for people to understand (1) the way in which data will be processed (1) • A DFD can be drawn as a top-level diagram (1) which avoids unnecessary detail at the planning stage (1) and makes it simpler to explain to others. (1) 		3
Total for Question 5			15

Question number	Answer	Mark
6	<p>Responses should be in relationship to the context, advantages and disadvantages of a reuse and recycle approach. Accept reverse arguments for the shred and smelt approach.</p> <p>Environmental considerations</p> <p>Advantages:</p> <ul style="list-style-type: none"> • less pollution from: <ul style="list-style-type: none"> ○ burning off plastics, etc. ○ smelting waste ○ waste / toxic gases ○ heavy metals ○ mining of materials ○ manufacture processes <p>Disadvantages:</p> <ul style="list-style-type: none"> • remaining material may be most polluting / difficult to dispose of • reused items are often less (energy) efficient than newer ones • smelted metals are available for new manufacturing, less mining etc. needed for new items • increased logistics increase transport pollution <p>Economic considerations</p> <p>Advantages:</p> <ul style="list-style-type: none"> • new revenue sources such as: <ul style="list-style-type: none"> ○ resale of working / repaired items ○ sale of spares ○ sale of consumables such as toner, paper ○ use / reuse of items within the company <p>Disadvantages:</p> <ul style="list-style-type: none"> • increased start-up costs, company will need to invest in new facilities and logistics chains • costs of compliance reporting, asset tracking, other documentation <p>Security implications</p> <p>Advantages:</p> <ul style="list-style-type: none"> • few to none, shredding and smelting will destroy any data left on the IT equipment. <p>Disadvantages:</p> <ul style="list-style-type: none"> • legal obligations, e.g. data protection laws • customer relations, need to secure-delete data <p>Conclusion</p> <p>There is no preferred answer, candidates should support their conclusion with arguments made.</p>	12

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 orV 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 6		12