This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners’ meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.
1  (a) Any three from:

- Driver enters destination address
- Satnav provides instructions/gives turn by turn for driver/calculates route to reach address
- Satnav refreshes screen frequently
- Informs when arriving at destination
- Offers additional information such as delays/eta/can take into account traffic conditions can show distance travelled
- Relies on signal from satellites which can be blocked

OR

- Uses Global Positioning System (GPS)
- Satnav reads data from satellites
- Use of data from (minimum) 3 satellites
- Uses time stamps/codes from satellites
- Maps stored on device
- Calculates position, speed and direction
- Generates display data to show on map
- Loads voice files to state message

(b) Two benefits and two drawbacks from:

**Benefits:**

- Traffic can be avoided with suggested alternative routing
- ETA can be given
- Multi destination routes can be optimised
- Can have pre-planned route for drivers
- Can be used to help track the progress/route of driver/car
- Distance travelled by cars recorded for download into computers (servicing)
- Gives more precise instructions for driving to destination
- Could be used to attract customers as can be used in advertising
- Can be used to help locate vehicle/customers if problem with car

**Drawbacks:**

- Can be expensive to install and maintain/keep up to date
- Must be able to detect enough satellites to operate
- Sky scrapers/trees/buildings/tunnels/large structures can block satellite transmissions/signals
- Units can fail leaving drivers without a plan
- Drivers can become too reliant on the system
- Customer may not know how to operate the device
2  (a) Any three ways identified and a description from:-

- Company data is located on a private network
- …restricted to members of the group
- Distribution of company notices/bulletins
- …so all employees can access them/doesn’t have to be sent out individually
- Private email services can be used
- …this does not go out of company network
- …so is more secure
- Employees can work on projects at same time
- …such as annual reports
- Data transfer is usually faster on private system
- …files are received faster
- Enables different type of system/smartphones to access information
- …as uses Internet protocols
- Uses a web browser to access pages so no special software expense
- …users require ID and password to gain access
- Is independent of the Internet
- …but holds less pages/information than the internet [6]

(b) Any two features from:

- Covers a large area/multinational networks
- Enables geographically distant offices to access the intranet
- …allows intranets to be spread over different LANS
- Consist of LANs connected
- …with routers and communications links
- Uses various protocols to communicate over long distances
- Different offices can co-operate on projects such as annual reports [2]

3  Any four points from:

- Can access digital media stored on e.g. CDs, DVDs, Blu-ray, flash memory
- Can access remotely stored digital media from e.g. the internet, media streamers, locally stored files
- Can access analogue media
- Has LEDs to display information
- Can accept/use/play a range of audio/video formats
- Provides a number of different sound and vision outputs for connection to other devices
- Can use DRM to ensure media is protected from unauthorised use or copying/gives authorisation for playback
- Can use several loudspeakers for surround/multi-channel sound
- It usually has a remote control to e.g. adjust sound output format
- Can have HD television for high-quality pictures
- Can have 3-D television for greater realism in images
- Can have a hard-disk recorder [4]
4 (a) (i) **Four** items identified and described from e.g.:

- Cinema branch to go to the correct branch/cinema location
- Date to state when you want to go/define when tickets required
- Time of performance to state which performance you want to see/establish exactly when seats required
- Film title to which film you want to see
- Number of seats so that system can find a block of seats for Peter and group to sit together
- Credit card number for payment to be made immediately to secure tickets
- Address for security in using card
- Email address to provide receipt/ticket reference number/confirmation of tickets
- Name to identify the purchaser/match billing address/authorise payment/to use as verification when collecting tickets
- Login details if Peter has an account with the cinema

(ii) **Three** items from:

- Transaction number/booking reference number
- Unique code for receiving/collecting tickets
- Receipt with price/cost details
- Contact details of cinema/ticket agent

(b) Any **three** points from:

- A clear message on the screen stating how transaction is safe
- Notice to state that digital certificates is not from the cinema site
- A padlock in the browser
- Use of HTTPS mode in URL
- The use of a password system to create account if required/to use the card

(c) Any **four** points from:

- On-line processing of tickets
- Step-by-step processing of tickets
- Credit card used for booking placed into kiosk
- System asks for surname
- …as confirmation of ID
- Kiosk lists bookings made
- Correct booking selected
- Tickets printed out
- Receipt issued
5 (a) Any two points from:

A key is used to generate
...scrambled data
...that is meaningless and can be safely transmitted/cannot be understood if intercepted
Requires the key to decode
Can be broken if sufficient time is allowed
Longer the key the harder it is to break [2]

(b) Any two points from:

Issued by a certificate authority
Trusted by both parties
As an attachment to an email
Verifies the identity of the sender
Recipient holds the public key to decode message [2]

(c) Any two points from:

Use of password and user ID
Use of digital certificate
...supplied to user
Can require the use of two techniques to gain access to system
Unique feature that only you have that identifies you e.g. a fingerprint/biometric feature/use of biometric data to identify unique individual
Unique knowledge that only you know that identifies you e.g. a security question
Unique object that only you own that identifies you e.g. a bank card [2]
6  (a) **Two** from:

Primary research is where the organisation itself obtains the data e.g. by carrying out surveys
Secondary research is where IMDC uses existing data such as from the internet or printed resources to find data  

(b) **Three** ways identified and described:

Focus groups
Selected people asked to provide information for the company such as their views on packaging

Personal interviews
Such as face to face in street
Where a series of questions are asked of the interviewee

CAPI (computer assisted personal interviewing) where a computer system is used
…sit in front of computer and answer on screen questions
…interviewer asks questions prompted by computer

Telephone survey
…using CATI (computer assisted telephone interviewing)
…basically call centres used in this technique
…computer dials phone numbers of target audience and then interview takes place using script

CAWI (computer aided web interviewing)/online surveys
…database of people willing to take part in research
…interviewee contacted by email
…customer logs on to web site and answers questions
…use pop ups/hot spot on selected web sites
…responds to popup/hot spot on a web page
…then answers questions

Research websites of other railway companies

Questionnaires given out
answers collected and analysed

Observation of drug actions/patients reactions to drugs
findings logged and analysed  

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(c) (i) Supercomputer/mainframe computer [1]

(ii) Three points, with 1 mark available for an example, from:

- Formulae would be created to represent the situation
- Variables would be adjusted to follow planned route
- Results would be output graphically
- Time scale could be altered
- One example from e.g. the reaction to a drug
- Use of what-if scenarios
- Use of goal seek [3]

7 (a) Any four descriptions from:

- Interviewing medical experts in the field of medicine under consideration/expert doctors to gather information
- Selecting relevant data to be included
- Data mining using previous research reports/the internet
- Sorting relevant diseases and symptoms from the data collected [4]

(b) Any two descriptions from:

- Patients symptoms relating to the disease/condition
- Patients previous illnesses/conditions/symptoms
- Any existing medications
- Gender of the patient
- Age of the patient
- Bodily factors e.g., weight/height/temperature/heart rate/blood pressure [2]

(c) Any two descriptions from:

- Output on screen display to show possible diagnosis and reasons
- Printout of conclusions to the doctor to refer to
- List of possible diagnosis for the doctor to consider
- Percentage probability for each diagnosis
- Reasons behind each diagnosis
- Suggested medication/treatments for the possible disease/condition [2]
8 Any six comparisons from:

Off-the-shelf packages:
- Can be available quicker than purpose-written packages as they are readily available in the market place
- Costs is less than purpose-written packages
- Has been fully tested before launch unlike purpose-written packages
- There are forums to offer help and advice unlike with purpose-written packages
- Company provides help desk but slower response than purpose-written packages
- Do not need to be customised unlike purpose-written packages
- Do not need to be adapted for use if circumstances change unlike purpose-written packages
- Can be quickly adapted to meet user's requirements

9 (a) Three descriptions matched to the terms:

CAI computer provides the teaching and assessment of the students work
CBL computer system supports the teaching by an educator
CAA computer system provides only testing of the students/provides feedback/assessments/uses ICT to record the results of assessments

(b) (i) Any three benefits from:
- Trainees can repeat the section as many times as required to pass the test
- Students can work at their own pace and in their own time
- Assessment results are provided in a shorter time
- There is no need to pay trainers

(ii) Three drawbacks from:
- No social interaction with a trainer
- System is unable to answer all questions from students
- Trainees could go off task
- Expensive to create and maintain
- Trainees might not be computer literate

10 (a) Any four points from:

The critical path can be generated from the data
Gantt chart to plan out the stages
The project can be broken down in to stages/tasks
Key milestones identified
Progress reports generated
Warnings issued when milestones not met
Report summarising cost totals generated
Ensure that parallel tasks finish together
Identify sequential tasks so that those required to finish before others start do so
(b) Any two descriptions from:

- Identifies those tasks that make up the critical path
- Eases management of task
- Better to work in modules
- As each element can be tested before release
- Allows allocation of resources (money/people)
- Can utilise calendars to show/arrange meetings

[2]