**WACE**

# APPLIED INFORMATION TECHNOLOGY

# Stage 3

# WACE Examination 2013

# Marking Key

Marking keys are an explicit statement about what the examiner expects of candidates when they respond to a question. They are essential to fair assessment because their proper construction underpins reliability and validity.

**Section One: Multiple-choice**                                    **10% (20 Marks)**

| Question | Answer |
|----------|--------|
| 1 | d |
| 2 | a |
| 3 | b |
| 4 | d |
| 5 | b |
| 6 | a |
| 7 | c |
| 8 | c |
| 9 | d |
| 10 | b |
| 11 | a |
| 12 | b |
| 13 | d |
| 14 | c |
| 15 | b |
| 16 | c |
| 17 | a |
| 18 | c |
| 19 | c |
| 20 | b |

Section Two: Short answer                                        15% (30 Marks)

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**Question 21**                                                 **(4 marks)**

List **four** Occupational Safety and Health (OSH) issues involved in using computers in the workplace.

| Description | Marks |
|---|---|
| Any four issues: | |
| • eyesight problems caused by focusing on the screen too long/ poor lighting or glare<br>• back, neck, or other muscular problems, caused by badly-aligned seating/equipment<br>• OOS/Deep Vein Thrombosis (RSI) problems, caused by overuse of keyboard/mouse/other input devices<br>• DVTs/other circulation problems, caused by lack of activity<br>• ventilation | 1–4 |
| Total | 4 |
| Accept other relevant answers. | |

**Question 22**                                                 **(4 marks)**

For any industrial or commercial context, explain **two** ways in which ICT can improve the productivity of an organisation.

| Description | Marks |
|---|---|
| For each way: | |
| Explains a way of improving productivity. | 2 |
| Identifies a way of improving productivity. | 1 |
| Total | 4 |
| Answers could include:<br><br>• reduced costs e.g. reducing labour or material costs<br>• increased capability e.g. new technology that can do things that couldn't be done previously<br>• increased flexibility in the supply chain or increasing the product range<br>• reduce error | |

**Question 23**                                                 **(4 marks)**

Explain **two** technical methods businesses use to provide internet censorship.

| Description | Marks |
|---|---|
| For each technical method: | |
| Explains a technical method. | 2 |
| Identifies a technical method. | 1 |
| Total | 4 |
| Answers could include:<br><br>• block mirror/archive<br>• block proxy websites with a filter<br>• web monitoring with technology such as key logging | |
| Accept other relevant answers. | |

## Question 24 (6 marks)

Name **two** ICT industry qualifications, the organisation that offers each qualification and the principal skill or knowledge gained by achieving each qualification.

| Description | Marks |
|---|---|
| *Organisation* <br> CISCO | 1 |
| *Qualification* CCNA | 1 |
| the skill and knowledge to install, configure, operate, and troubleshoot medium-sized networks | 1 |
| *Organisation* <br> Novell | 1 |
| *Qualification* CNE | 1 |
| the skill and knowledge to operate and troubleshoot the Novell Netware system | 1 |
| **Total** | **6** |
| Accept other relevant answers including TAFE and university. | |

## Question 25 (6 marks)

(a) Describe briefly **two** main hardware components of a system that enable it to offer faster graphic processing. (2 marks)

| Description | Marks |
|---|---|
| Any two hardware components: | |
| •     fast processor <br> •     dedicated memory for graphic applications | 1–2 |
| **Total** | **2** |

(b) Name **two** specific types of applications that require faster graphic processing. (2 marks)

| Description | Marks |
|---|---|
| Any two types of applications: | |
| •     graphics 2D and 3D <br> •     mathematical modelling <br> •     movement analysis <br> •     robotics/ engineering | 1–2 |
| **Total** | **2** |
| Accept other relevant answers. | |

(c)     Modern computers offer faster graphics. What problem does this cause? How is it
        commonly solved?                                                      (2 marks)

| Description | Marks |
|---|---|
| excessive heat generation /high electricity usage | 1 |
| built-in heat sink to dissipate the heat /renewable energy (solar panels) | 1 |
| Total | 2 |
| Accept other relevant answers. | |

## Question 26                                                              (6 marks)

(a)     Describe briefly how technology has allowed employees to work remotely.    (2 marks)

| Description | Marks |
|---|---|
| Describes briefly how technology has allowed employees to work remotely. | 2 |
| Identifies the concept of works remotely. | 1 |
| Total | 2 |
| One mark only if a technology device is named. | |

(b)     Describe briefly the term 'video conferencing'.                          (2 marks)

| Description | Marks |
|---|---|
| • two-way communication using ICT | 1 |
| • involve more than two locations | 1 |
| Total | 2 |

(c)     Name **two** benefits that companies gain from using video conferencing.   (2 marks)

| Description | Marks |
|---|---|
| Any two benefits: | |
| • reduced travel costs<br>• reduced travel time<br>• reduced environmental impact<br>• reduced office space required<br>• interpersonal contact i.e. face to face, body language | 1–2 |
| Total | 2 |
| Accept other relevant answers. | |

**Section Three: Extended answer**                   **25% (50 Marks)**

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## Question 27                                          (25 marks)

(a)    Explain **three** advantages and **three** disadvantages of BYOD for the employees and the company PerthNow.                  (12 marks)

| Description | Marks |
|---|---|
| For each employee advantage. | 1–3 |
| For each employee disadvantage. | 1–3 |
| For each PerthNow advantage. | 1–3 |
| For each PerthNow disadvantage. | 1–3 |
| **Total** | **12** |

Answers could include:

| Employee advantages: | PerthNow advantages: |
|---|---|
| • choice of device<br>• using only one device<br>• more efficient use of device | • productivity increase<br>• decreased cost of hardware<br>• happy employees |
| Employee disadvantages:<br>• cost<br>• compliance with company policy<br>• work encroaching on personal time<br>• potential effect of malware | PerthNow disadvantages:<br>• cost of security requirements<br>• broader technology support requirements<br>• potential for distracted employees |

Accept other relevant answers.

(b)    List **four** ways PerthNow could protect its data in a BYOD environment.    (4 marks)

| Description | Marks |
|---|---|
| Any four ways: | |
| • storage of all data on cloud/network rather than on the device<br>• auto cache delete function on the device<br>• encryption of data transfer via the internet<br>• back up of data on the device<br>• logging of employee data access<br>• malware protection software on the device<br>• firewall | 1–4 |
| **Total** | **4** |
| Accept other relevant answers. | |

(c) Outline **three** issues PerthNow would need to include in its existing appropriate use
policy to cover employees with BYO devices. (3 marks)

| Description | Marks |
|---|---|
| Any three issues: | |
| • physical security of the device<br>• password protection of the device<br>• auto destruct/hard drive reset feature<br>• inappropriate use of technology in the workplace (illegal downloading, pornography etc – to a maximum of 2 marks) | 1–3 |
| Total | 3 |
| Accept other relevant answers. | |

(d) Outline **three** hardware capabilities PerthNow would require if it allowed employees
access to BYO devices in the work environment. (3 marks)

| Description | Marks |
|---|---|
| Any three hardware capabilities: | |
| *Device perspective*:<br>• 3G wireless capability<br>• camera<br>• passcode security<br>• satellite tracking<br>*Workplace perspective*:<br>• wireless internet connection<br>• data transfer (server)<br>• charge stations or spare batteries<br>• physical security i.e. lockers | 1–3 |
| Total | 3 |
| Accept other relevant answers. | |

(e) Suggest **three** software applications that would be useful to an account sales executive
working in a mobile environment for PerthNow. (3 marks)

| Description | Marks |
|---|---|
| Any three suitable applications: | |
| • diary/calendar<br>• note taking<br>• email<br>• web browser<br>• media player<br>• office style applications<br><br>Note: proprietary names are acceptable. | 1–3 |
| Total | 3 |
| Accept other relevant answers. | |

**Question 28** **(25 marks)**

(a) State **three** workstation provisions the university would need to make available to its staff to ensure appropriate occupational safety and health in the workplace. (3 marks)

| Description | Marks |
|---|---|
| Any three workstation provisions: | |
| • ergonomically designed seating<br>• ergonomically designed mouse<br>• adjustable height VDU of high resolution that avoids glare<br>• separate keyboard and VDU options for laptop users<br>• document holder<br>• leg clearance at workstation<br>• OOS prevention poster/guidelines outlining posture, stretches, appropriate breaks<br>• ventilation<br>• noise cancelling headphones | 1–3 |
| **Total** | 3 |
| Accept other relevant answers. | |

(b) Describe **three** new innovations that could enhance the university's provision of online learning. (6 marks)

| Description | Marks |
|---|---|
| For each innovation: | |
| Describes an innovation and its benefits related to online learning. | 1 |
| Identifies an innovation **or** benefit. | 1 |
| **Total** | 6 |
| Answers could include:<br><br>• online testing: reduced marking costs for the university<br>• advances in streaming/file compression technology: faster data transfer for users<br>• educational use of social media: improved communication<br>• improved multimedia software: improved learning materials created by the academic staff<br>• apps to improve learning processes<br><br>Note: answers cannot repeat what is already in the stimulus part of the question. | |
| Accept other relevant answers. | |

(c)    Describe **three** issues that the university would need to address with its online system to ensure it met appropriate accessibility guidelines.    (3 marks)

| Description | Marks |
|---|---|
| Describes a potential issue and the group this caters to. | 2 |
| Identifies a potential issue. | 1 |
| Total | 6 |

Answers could include:

- cater for sight impaired with appropriate text/background colour scheme or font magnification option to ensure appropriate readability
- cater for the hearing impaired by providing transcripts/captions for audio material
- cater for ESL users with language translation options
- cater for users with limited bandwidth by providing options for download of media/streamed material
- appropriate browser capability
- multi-platform presentation
- tablet based
- voice recognition

Accept other relevant answers.

(d)    For each of the following areas, list **two** issues the university needs to include in a professional development program.    (6 marks)

| Description | Marks |
|---|---|
| For each consideration: | |
| Valid training point related to copyright. | 1–2 |
| Valid training point related to intellectual property. | 1–2 |
| Valid training point related to privacy. | 1–2 |
| Total | 6 |

Answers could include:

Copyright:
- fair dealing in an education environment
- referencing of sources

Intellectual Property:
- university policy on employee/university intellectual property policy
- publishing rights
- trade marks, patents etc.

Privacy:
- responsibilities when accessing student contact details
- appropriate communication protocols

Accept other relevant answers.

**Question 28** (continued)

(e)     Explain **two** ways the university could quality assure the subject material used by
        academic staff in virtual classrooms.                                    (4 marks)

| Description | Marks |
|---|---|
| Any two way: | |
| Explains how the university could quality assure the materials. | 2 |
| Identifies a way of quality assuring the materials. | 1 |
| Total | 4 |
| Answers could include: <br><br> • approval process for data publication to ensure a supervisor proof reads materials <br> • auto spell check with warning screen before data is published <br> • feedback option on site <br> • process of review <br> • peer evaluation <br> • style guide/ common template | |
| Accept other relevant answers. | |

**Section Four: Production**　　　　　　　　　　　　　　**50% (70 Marks)**

## Question 29

(a)　Identify **three** goals that your promotional medium will achieve for Talem.

(3 marks)

| Description | Marks |
|---|---|
| Any three goals: | |
| Answers could include:<br><br>• increase awareness of the organisation<br>• share information about the organisation<br>• increase exposure to an international audience<br>• easier to donate money to the organisation<br>• keep regular contact with previous sponsors<br>• update sponsors as to what their money has been used for | 1–3 |
| **Total** | 3 |

(b)　Describe briefly **five** characteristics of the target audience that will assist Talem to increase its resources.　　　　　　　　　　　　　　(5 marks)

| Description | Marks |
|---|---|
| Any five characteristics: | |
| Answers could include:<br><br>• age range: 20 and above<br>• gender: male and female<br>• interests: charity, social justice, business tax reductions<br>• location: international and local<br>• spending power: mid to high income with enough disposable income to donate | 1–5 |
| **Total** | 5 |

(c)      Explain how the characteristics of the target audience will affect your choice of layout and navigation and use of media.      (6 marks)

| Description | Marks |
|---|---|
| **Layout** | |
| Explains at least two ways that the target audience will affect the layout of the design. | 2 |
| Explains one way that the target audience will affect the layout of the design. | 1 |
| Answers could include: <br><br> • use responsive layout that supports bidirectional layouts (mobile compatibility) <br> • layout allows for text expansion in other languages <br> • balanced layout, assisting the target audience in usability and highlighting key elements <br> • simple, uncluttered layout to allow for the differing technical abilities of the target audience <br> • proximity of key components, to highlight areas of importance | |
| **Navigation** | |
| Explains at least two ways that the target audience will affect navigation of the website. | 2 |
| Explains one way that the target audience will affect navigation of the website. | 1 |
| Answers could include: <br><br> • inclusion of search bar to assist the audience who might have trouble navigating the site <br> • inclusion of site map to assist the audience who might have trouble navigating the site <br> • use of drop down menus to enable more efficient location of information | |
| **Use of media** | |
| Explains at least two ways that the target audience will affect the use of media on the website. | 2 |
| Explains one way that the target audience will affect the use of media on the website. | 1 |
| Answers could include: <br><br> • images can be used to add meaning and assist with the translation of content <br> • videos can be used so that they can be played to businesses to increase the support <br> • ensure that videos have subtitles for those with hearing impairments | |
| **Total** | 6 |

**Question 29** (continued)

(d)     Given the nature and goals of Talem, list and justify **five** essential design features that
        you will need to include in the promotional medium.                    (10 marks)

| Description | Marks |
|---|---|
| For each essential design feature: | |
| Lists an essential design feature. | 1 |
| Justifies each feature. | 1 |
| **Total** | **10** |
| Answers could include: | |

Answers could include:

- online donation method e.g. PayPal to allow for online donations
- language translator to allow for non-English speaking viewers
- currency convertor to enable those donating to work out the currency equivalent
- search bar to assist in easy navigation
- navigation map to assist in easy navigation
- photo gallery to support and explain text references
- video player (media player) to support any text and evoke emotions
- online form for enquiries to enable strong communication between Talem and the audience
- discussion board to enable strong communication between Talem and the audience

I        (i)        Create the main page layout for your ICT solution for Talem in your chosen
                    medium on pages 22 and 23. You need to ensure that the design will assist
                    Talem to meet its goals and will be appropriate for its target audience. Using the
                    framework provided, make detailed annotations on your design that refer to your
                    identified target audience.

| | |
|---|---|
| •        Usability | (2 marks) |
| •        How the elements create the principles of design | (6 marks) |
| •        One emerging design trend | (1 mark) |
| •        Design features as identified | (3 marks) |
| •        Inclusivity | (4 marks) |

| Description | Marks |
|---|---|
| **Usability** | |
| Produces an annotated, clear and easy to navigate design. | 2 |
| Produces a basic design. | 1 |
| **Design elements and principles** | |
| Identifies (through annotations) and effectively uses at least two design elements and two principles. | 4–6 |
| Identifies (through annotations) and effectively uses two design elements and one principle. | 3 |
| Identifies (through annotations) and uses one design element and one principle. | 2 |
| Uses design principles or design elements. No annotations present. | 1 |
| **One emerging design trend** | |
| Incorporates one emerging ICT trend effectively into their design. | 1 |
| Trends could include:<br><br>•        social networking<br>•        CSS3<br>•        HTML5<br>•        location services GPS<br>•        icon navigation<br>•        responsive layout (flexible layouts based on the devise being used)<br>•        fixed header bars<br>•        large photo backgrounds<br>•        sliding panels (each page loads by pushing the panel from left to right)<br>•        typography<br>•        any other appropriate design trend | |
| **Design features** | |
| Three out of the five features identified through annotations are incorporated in the design. | 3 |
| Two out of the five features identified through annotations are incorporated in the design. | 2 |
| One out of the five features identified is incorporated in the design. | 1 |

| Inclusivity | |
|---|---|
| Four suitable annotated inclusivity features are incorporated into the design. | 4 |
| Three suitable annotated inclusivity features are incorporated into the design. | 3 |
| Two suitable annotated inclusivity features are incorporated into the design. | 2 |
| One suitable inclusivity feature is incorporated into the design. | 1 |

Inclusivity features could include:

- language translator
- currency convertor
- font enlarger
- audio narration
- responsive layout (suitability to mobile devices)
- no red and green used (colour blind users)
- any other appropriate inclusivity feature

|  | **Total** | **16** |
|---|---|---|

(e)     (ii)     Explain **two** technical issues relating to data processing and transfer that you
would need to consider.                                                      (6 marks)

| Description | Marks |
|---|---|
| Provides two technical issues. | 1–2 |
| For each technical issue: | |
| Explains a reasonable solution to an issue. | 2 |
| Identifies one reasonable solution to an issue. | 1 |
| **Total** | **6** |

Answers could include:

| Issues | Solutions |
|---|---|
| Different internet speeds due to international audience | <ul><li>need to reduce photo file size (compression, image size etc.)</li><li>use cascading style sheets to reduce file size and speed up download speeds</li><li>use alternative text for images and multimedia</li><li>cache pages of the site that don't often change</li><li>donation by post or telephone</li></ul> |
| Security due to donations being sent online | <ul><li>encryption of all personal information</li><li>secure log in area for sponsors</li><li>purchase a certificate Secure Sockets Layer (SSL)</li></ul> |
| Any other relevant issue and corresponding solution. | |

**Question 29** (continued)

(f)    (i)    Explain **four** emerging ICT trends that Talem could use to increase audience
awareness of the website.    (8 marks)

| Description | Marks |
|---|---|
| For each emerging ICT trend: | |
| Explains an emerging trend to increase audience awareness. | 2 |
| Identifies an emerging trend. | 1 |
| **Total** | **8** |

Answers could include:

- cross website advertising: using another website with a similar target audience and having them advertise your site
- mobile site: having a website that is compatible with mobile devices
- Strong Search Engine Optimisation: improving the visibility of your web site in search engines
- sponsored ads: pay per click. Talem could place an ad on another company's site and every time it is clicked they pay the company a small fee; or Talem bids on keyword phrases relevant to their target market to be displayed as a sponsored link on search engines
- social media marketing: create content that attracts attention and then encourages readers to share it with their social networks
- QR codes on all advertising: placing QR codes on posters, brochures, newspapers and magazine advertisements for Talem will lead viewers straight to the website
- targeted email marketing through cookies: use email to send ads and request donations, builds loyalty, and awareness
- image marketing through Pintrest: use pictures to connect organisations with their supporters

Accept any other relevant answers.

(f)     (ii)     Annotate the image on page 27 to:
* identify the design principles applied and the underlying design elements
(3 marks)
* identify how the image has been created specifically to attract the target audience.
(2 marks)

| Description | Marks |
|---|---|
| **Design principles and elements**<br>*Principles:*<br>balance<br>rhythm<br>proportion<br>dominance<br>harmony/unity/proximity<br>repetition<br>movement<br>contrast<br>*Elements:*<br>space<br>alignment/position<br>line<br>colour<br>shape/form | |
| Accurately identifies three design principles and associated elements. | 3 |
| Accurately identifies two design principles and associated elements. | 2 |
| Accurately identifies one design principle and associated elements. | 1 |
| Answers could include:<br><br>• contrast of yellow and teal on black and white<br>• contrast of the colour in the picture of the girl against the background<br>• asymmetrical balance created due to the alignment of the top and bottom text, and the girl on the right and the lower text on the left<br>• movement created with the line of the text following the back of the girl<br>• the dominance of the girl due to the space around her | |
| Accept other relevant answers. | |
| **Target audience** | |
| Two aspects identified that specifically attracts a target audience. | 2 |
| One aspect identified that specifically attracts a target audience. | 1 |
| Answers could include:<br><br>Suited to the professional audience through:<br>• use of professional and elegant typography<br>• use of emotive graphic, through the use of young child<br>• linking to the medical profession through the use of language associated to the profession 'miracle'<br>• providing a name for the little girl, makes it more personal which should draw on the parents | |
| Accept other relevant answers. | |
| Total | 5 |

**Question 29** (continued)

    (iii)    Evaluate the effectiveness of the image on page 27 in terms of the following:
- the application of the design principles applied and the underlying design elements     (6 marks)
- suitability for the target audience.     (5 marks)

| Description | Marks |
|---|---|
| **Design elements and principles** | |
| Three of the design principles applied and underlying design elements and evaluation of their effectiveness. | 6 |
| Three of the design principles applied and underlying design elements with limited evaluation of their effectiveness. | 5 |
| Two of the design principles applied and underlying design elements and evaluates their effectiveness. | 4 |
| Two of the design principles applied and underlying design elements with limited evaluation of their effectiveness. | 3 |
| One of the design principles applied and underlying design elements and evaluates their effectiveness. | 2 |
| One of the design principles applied and underlying design elements with limited evaluation of its effectiveness. | 1 |
| Answers could include: (detailed explanation of the following)<br><br>• contrast of yellow and teal on black and white<br>• contrast of the colour in the picture of the girl against the background<br>• asymmetrical balance created due to the alignment of the top and bottom text, and the girl on the right and the lower text on the left<br>• movement created with the line of the text following the back of the girl<br>• the dominance of the girl due to the space around her | |
| Accept other relevant answers. | |
| | |
| **Suitability to the target audience** | |
| Justifies convincingly how at least three of the target characteristics are met, with direct reference to components of the image. | 5 |
| Justifies convincingly how at least two of the target characteristics are met, with direct reference to components of the image. | 4 |
| Discusses how three of the target audience characteristics are met. | 3 |
| Discusses how two of the target audience characteristics are met. | 2 |
| Justifies convincingly how at least one of the target characteristics is met in the image.<br>**or**<br>Identifies three target audience characteristics with limited explanation. | 1 |
| Answers could include: (detailed explanation of the following)<br><br>Suited to a professional audience through:<br>• use of professional and elegant typography<br>• use of emotive graphic, through the use of young child<br>• linking to the medical profession through the use of language associated to the profession 'miracle'<br>• providing a name for the little girl, makes it more personal which should draw on the parents | |
| Accept other relevant answers. | |
| **Total** | **11** |