Practice Aptitude Quiz

Information Technology

Part 1:   About this Information Technology Resource

Guidance

This Practice Aptitude Quiz is intended to be a general illustration of some of the key learning standards required of people attempting an Australian Apprenticeships entry level qualification in Information Technology.

This Practice Aptitude Quiz is neither a formal tool nor a direct pre-requisite for any job application.

The quiz focuses on literacy, numeracy, comprehension and problem solving questions contextualised to this specific industry.

This quiz has been developed with the assistance of industry, TAFE and the secondary school sector as a careers resource.

The quiz can be utilised by numerous organisations and people such as careers practitioners working with young people, Group Training Organisations and Job Services Australia providers working with job seekers.

The Practice Aptitude Quiz can be:

> Used by careers practitioners with individuals or in a class setting to provide general guidance on the level of study involved in undertaking an entry level qualification in this industry;

> Provided to people to enable them to practice their skills before sitting an actual aptitude test;

> Used by mathematics teachers as a guide to industry maths requirements at the entry point of this particular Australian Apprenticeship career path;

> Used by teachers as classroom based activities for students in Year 12 VET Information Technology studies.

The level of reading, writing and mathematical skills assessed by this quiz is equivalent to that of a typical young person at Year 11 level.

Please note that rates quoted in this assessment for various items, including pay rates, are not meant to reflect today's values, but are used purely for mathematical purposes.

The quiz should be able to be completed in approximately 60 minutes.

Calculators may be used to complete this practice exercise.

Answers are located at the end of the quiz.

Information Technology Career, Occupational Information and Job Hunting Resources

Information and links on the Information Technology industry, careers, job prospects as well as career websites and job hunting resources can be found at www.aapathways.com.au/Career-Resources.

After the Quiz

There are a range of support services available to help you find out about courses
that may help you improve your literacy and numeracy skills and also your readiness for work.

If you are still at school you should discuss any concerns you may have with your career adviser. Further information may also be provided by a Job Services Australia provider, an Australian Apprenticeships Centre, a Group Training Organisation or a training provider.

Useful Contacts

Here are some links to job seeker support services:

> Search for your local Australian Apprenticeships Centre - www.aapathways.com.au/aac

> Find a local Group Training Organisation - www.grouptraining.com.au/Find/find_gto.html

> Job Services Australia providers work with eligible job seekers to develop an individually tailored Employment Pathway Plan. The plan maps out the training, work experience and additional assistance needed to find job seekers sustainable employment - www.jobsearch.gov.au/provider/default.aspx

Part 2:   The Quiz

Section 1 - Literacy, Reading and Comprehension

Spelling

1.   **Write the following IT terms in alphabetic order:**

Optical drive	
Keyboard	
Mouse	
Network cable	
Monitor	
Solid state drive	
Operating system	

2.   **Read the following passage and answer the questions that follow.**

Multimedia is media and content that uses a combination of different content forms. Multimedia includes a combination of text, audio, still images, animation, video, and interactivity content forms.

Wireless network refers to any type of computer network that is not connected by cables of any kind.

Broadband in telecommunications refers to a signalling method that includes or handles a relatively wide range (or band) of frequencies. Broadband is always a relative term, understood according to its context. The wider (or broader) the bandwidth of a channel, the greater the information-carrying capacity, given the same channel quality.

A **cable** is two or more wires that are running side by side and are bonded, twisted or braided together to form a single assembly. An optical cable contains one or more optical fibres in a protective jacket that supports the fibres.

a.   **What are the benefits of a wider bandwidth?**

_____

_____

_____

_____

_____

b.   **List at least four examples of multimedia.**

_____

_____

_____

_____

c.   **Is optical fibre used in a wireless network? (Circle the correct response)**

YES   or   NO

d.   **What is an optical cable?**

_____

_____

_____

_____

_____

3.   **The following text has ten (10) spelling or grammar errors. Correct the errors and list them in the order they appear in the text. List the mistakes below, as you find them.**

It is everyone's responsibility to keep their workplace safe. Hasards can be items or situations that can ingure you. The best way to avoid hazards is to prevant them hapening in the first place. When using a computer it is the user's responsibillity to adjust the position of the computer screen, keybord, and mouse then ajust the chair to allow the operator to use the computer safeley and comfortably with there body in an apropriate ergonomic posture.
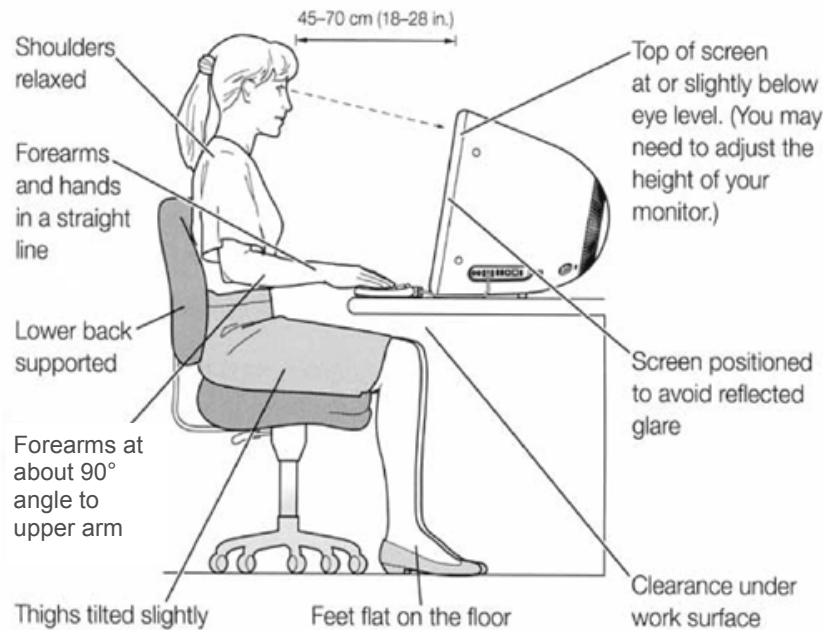
_____

_____

_____

4.   **Read the following article about ergonomics and answer the questions that follow.**

Office Ergonomics

Ergonomics is concerned with "fitting work to people". It is the process of designing or arranging workplaces, products and systems so that they fit the people who use them.

A well-designed workstation can eliminate some office health hazards. Elements of good design include the appropriate chair, lighting, noise level, screen, keyboard and document position.

The diagram below shows you how you should set up your workstation for maximum posture benefit.

- Top of the screen at or slightly below eye level.

- Distance from operator a minimum of 45 cm, typically at an arm's length.

- Wrists should be a natural extension of the forearm, not angled up or down. Elbow relaxed. Lower arm open approximately 90° to upper arm.

- Adjust the back rest to accommodate the normal curve of the lower spine.

- Keyboard placed flat at elbow level and if required a palm rest to support hands during rest.

- Thighs approximately parallel to the floor.

- Easily adjustable seat height. Seat pan short enough (front to back) for knee clearance and with a waterfall front edge.

- Swivel chair with 5-point base and casters.

- Feet resting firmly on the floor. Use a footrest if feet are not supported by the floor.

- Document holder in line with front of monitor. Height and angle adjusted for the comfort of the user.

a.   How should you place your feet when sitting at a workstation?

_____

_____

_____

_____

b. **What portion of the computer screen should be at or below eye level?**

_____

_____

_____

_____

c. **List the six elements of good workstation design?**

_____

_____

_____

_____

_____

_____

d. **Apart from your eyes what six parts of the body assist with correct posture at a workstation?**

_____

_____

_____

_____

_____

_____

Comprehension

5. **Read the following article and answer the questions that follow.**

The range and types of computers available to the user is increasing. Today we can use desktops, towers, media centres, personal video recorders (PVRs), laptops, netbooks, ultrabooks, personal digital assistants (PDAs), tablets, pads, and smartphones, to mention a few.

This is leading to changes in the demand for different types of computers. Computer users find that as the capabilities increase, size, weight and the price decreases. For users, the ease of connecting to the Internet increases and the usefulness and desirability of the equipment alters.

A number of factors are driving changes in the sizes of computers, including hardware miniaturisation, interface design, the speed, capacity and availability of data communications and price reduction as consequence of mass production and widespread adoption.

As a society we are realising that electronic equipment no longer has the lifespan, or holds its stability of value, as appliances bought thirty years ago did. The build quality, reliability, design availability of spare parts and cost of repairs has changed our attitude to computer hardware.

As the price of computers continues to fall and their capabilities rapidly increase users are finding more benefits in upgrading or replacing their computers. The realisation of the lower actual value of their current computers means people are overcoming their resistance to disposing of the existing computer and spending money on updated equipment.

a.   What is the key change in physical size of computers? (Circle the correct answer)

   i.   None

   ii.   Smaller

   iii.   Larger

b.   Are computers becoming easier to repair? (Circle the correct answer)

                              YES   or   NO

c.   What are the three basic changes to computers?

   _____

   _____

   _____

   _____

d.   Is the effective life of a computer becoming longer or shorter? Explain why.

   _____

   _____

   _____

   _____

   _____

Section 2 - Mathematics

Conversion and Rounding

1. **Rounding & Conversion:**

   a. 52.28565 to 2 decimal places   _____

   b. 4568.5 x 10^{-4} to two decimal places   _____

   c. 2 hours and 12 seconds to seconds   _____

   d. 189 days to weeks   _____

   e. 425.8 to the nearest tens   _____

2. **Sometimes it is necessary to round numbers up or down, especially when dealing with money. Round the following numbers:**

   a. 789.322 to the nearest whole number   _____

   b. $10,234.12 to the nearest dollar   _____

   c. $35.6754 to dollars and cents   _____

   d. 425.831 to two decimal places   _____

3. **Write as a number:**

   a. Three thousand four hundred and twenty four   _____

   b. Thirty six thousand and ninety two   _____

4. **Write as words:**

   a. 506   _____

   _____

   b. 5,020   _____

   _____

   c. 100,389 _____

   _____

   d. 2,000,000 _____

   _____

5. **Rearrange in ascending order (from smallest to largest):**

   5,   -3,   ½,   0,   -7,   4.1

   _____

6. **How many hours and minutes from 8:45 am to 3:25 pm?**

   _____

7. **Which of the following represents the number 62,000,000,000 in scientific notation?**
   (Circle the correct response)

   a. 62×10^{10}

   b. 6.2×10^{10}

   c. 6.2×10^{-10}

   d. 0.62×10^{10}

8. **Which fraction is larger? (Circle the correct response)**

   a.   i. $^3/_5$ or   ii. $^1/_2$

   b.   i. $^4/_9$ or   ii. $^1/_3$

Arithmetic (Addition, Subtraction, Multiplication and Division)

9. **Select the best estimate for the following by circling the correct response:**

   a.   4249 x 71

        i.   280,000

        ii.   150,000

        iii.   28,000

        iv.   43,000

   b.   80,000 ÷ 38

        i.   200

        ii.   2,000

        iii.   20,000

        iv.   4,000

10. **Solve the following:**

    a. $4562 - 1277$ _____

    b. $86 + 22 - 16$ _____

    c. $-25 + 82 + 5$ _____

11. **Multiply the following:**

    a. 53.86×10 _____

    b. 25.4×3 _____

    c. 128.5×10^{-2} _____

12. **Divide the following:**

    a. $2.56 \div 10$ _____

    b. $1024 \div 8$ _____

    c. $256 \div 4$ _____

13. **Solve the following:**

    a. $3 + 6 \times 4$ _____

    b. $22 - 80 \div 4$ _____

    c. $(25 + 50) \div (2 \times 12.5)$ _____

    d. $(12 - 8) \times 3$ _____

Fractions

14. **Solve and express your answer in fractions:**

    a. $\frac{1}{4} + \frac{1}{2}$ _____

    b. $\frac{2}{9} + \frac{5}{6}$ _____

    c. $3\frac{1}{4} - \frac{1}{8}$ _____

15. **Evaluate the following:**

    a.   10% increase from $20   _____

    b.   120.8 cut to 25%   _____

16. **Tania is an apprentice who earns $520 per week and is awarded a pay rise of 5%. What is Tania's new weekly wage?**

    _____

17. **For a particular computer power supply, the input power is rated at 200 watts with an output efficiency of 80%.**

    a.   What is the available output power, in watts?

          _____

    b.   If 20% of input power is lost to heat, running the cooling fan and noise how much is lost in watts?

          _____

Decimals

18. **Express as a decimal:**

    a.   3/5   _____

    b.   26.25 + 54.5 – 30.3   _____

    c.   7 x 2 ÷ 5   _____

    d.   10 ÷ 4 + 3 ÷ 2 + 5 ÷ 4   _____

Algebra

19. **Remove the brackets and simplify the following:**

    a. $(2x + 3y) – (x – 2y)$ _____

    b. $(4a – 2b) – (5b – 2a)$ _____

Ratios

20.   A cube has a volume of 8 cubic metres. If each side of the cube is doubled in length, what is its new volume in cubic metres?

   _____

Problem Solving

21.   The ACME Computer Company's file storage is made up of two-drawer filing cabinets and four-drawer filing cabinets. They counted the number of cabinets and got 10. They counted the number of drawers and got 34. How many of two 2-drawer filing cabinets are there and four-drawer filing cabinets are there?

   _____

22.   Rohit runs an information technology consultancy that charges clients $120 for the first hour, or part thereof, then $2 per minute charged in 5 minute blocks for consultations, plus $65 for written quotes.

   How much income will the consultancy generate from each client? Where:

   a.   Client A has a two hour consultation.

      _____

   b.   Client B has a one and a half hour consultation.

      _____

   c.   Client C also has a one and a half hour consultation and requests a written quote.

      _____

Section 3 - Specific knowledge

Read the following glossary of terms as it will assist you to answer some of the questions that follow.

ADSL	**Asymmetric Digital Subscriber Line** (**ADSL**) is a type of Digital Subscriber Line technology, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide. It does this by utilizing frequencies that are not used by a voice telephone call. A splitter, or DSL filter, allows a single telephone connection to be used for both ADSL service and voice calls at the same time. Asymmetric because it is faster from Internet to PC than the other way (also true of a 56K modem).
Bit	The smallest unit of information in a computer can either equal 0 or 1. Eight bits equal one **byte**.
Binary numeral system	Or **base-2 number system** represents numeric values using two symbols, 0 and 1. More specifically, the usual base-2 system is a positional notation with a radix of 2. Because of its straightforward implementation in digital electronic circuitry using logic gates, the binary system is used internally by almost all modern computers.
Bps	*(Bits Per Second)* A measure of how quickly information is being transferred, usually via a modem or network. Divide by ten to get an approximation of the number of characters per second (**cps**). See also **Kbps**, **Mbps**.
exe (or .exe)	*(EXEcutable*; pr. "exie", "dot exie") A **file** which is usually the main part of a program. A program may consist of just an exe file and nothing else or there may be dozens of files, including more exes.
Gigabyte (or Gig)	Unit of measurement for pieces of information: approximately 1 billion bytes, 1 million kilobytes, or 1,000 megabytes. Hard disk sizes are usually measured in gigabytes. Often shortened to "GB", "Gig" or just G.
Malware	A catch-all term for software installed by stealth onto a PC for malevolent purposes (hence the name). These may include displaying unwanted ads (**adware**), installing software you didn't ask for, or spying on your activities (**spyware**) and reporting them back to the person spying on you.
Modem	*(MOdulator/DEModulator)* A device for allowing computers to communicate over a phone line. May be built into the **motherboard** or an **expansion card**, or an external device plugged into one of the **serial ports**.
RAM	*(Random Access Memory*; pr. "ram") The computer's main **memory**, which it uses to hold whatever you are currently working on. The contents of RAM are lost when the computer is switched off. Adding more RAM is often the most cost-effective upgrade for an ageing or slow computer.
Trojan	A program similar to a **virus** which is disguised as something harmless like a game, but when launched actually sabotages or takes control of the computer on which it is running.

1. **A computer can be connected to a broadband network using one of the following. (Circle the correct response)**

   a. Memory stick

   b. Modem

   c. MP3 Player

   d. Internet

2. **Describe the difference between Malware and Trojan.**

   _____

   _____

   _____

   _____

3. **What is the binary answer to the following?**

   111 + 011   _____

4. **What is the decimal value of the following binary terms?**

   a. 101   _____

   b. 111 + 011   _____

5. **Match the abbreviations to the computer terminology:**

   Text file
   Microsoft Word document
   Portable document
   Compressed file
   Multimedia file
   Markup language for web pages
   Bitmap image
   Compressed digital image

TXT	
JPG	
GIF	
ZIP	
PDF	
DOC	
AVI	
HTML	

ANSWERS

Section 1 - Literacy, Reading and Comprehension

1. Keyboard, Monitor, Mouse, Network cable, Operating system, Optical drive, Solid state drive

2.
   a. Wider broadband has greater information-carrying capacity.
   b. Text, audio, still images, animation, video, and interactivity.
   c. NO
   d. Optical cable contains one or more optical fibres in a protective jacket that supports the fibres.

3.
Incorrect	Correct
Hasards	Hazards
ingure	injure
prevant	prevent
hapening	happening
responsibillity	responsibility
keybord	keyboard
ajust	adjust
safeley	safely
there	their
apropriate	appropriate

4.
   a. Firmly on the floor or on a footrest.
   b. The whole screen.
   c. Appropriate chair, lighting, noise level, screen, keyboard and document position.
   d. Shoulders, forearms, lower back, thighs, feet and hands.

5.
   a. ii. Smaller
   b. NO
   c. Increase in usefulness, reduction in size and reduction in price.
   d. Shorter due to the build quality, reliability, design availability of spare parts and cost of repairs.

Section 2 – Mathematical and Problem Solving Questions

1.
   a. 52.29   b. 0.46   c. 7212   d. 27
   e. 430

2.
   a. 789   b. 10,234   c. 35.68   d. 425.83

3.
   a. 3,424   b. 36,092

4.
   a. Five hundred and six
   b. Five thousand and twenty
   c. One hundred thousand, three hundred and eight nine
   d. Two million

5. -7,   -3,   0,   ½,   4.1,   5

6. 6 hours and 40 minutes

7.   **b.** 6.2×10^{10}

8.   **a.**   i. $^3/_5$ **b.**   ii. $^4/_9$

9.   **a.**   i. 280,000   **b.**   ii 2,000

10.   **a.**   3285   **b.**   92   **c.**   62

11.   **a.**   538.6   **b.**   76.2   **c.**   1.285

12.   **a.**   0.256   **b.**   128   **c.**   64

13.   **a.**   27   **b.**   2   **c.**   3   **d.**   12

14.   **a.**   ¾   **b.** $^{19}/_{18}$ **c.** $^{27}/_8$

15.   **a.** $22   **b.**   30.2

16. $546

17.   **a.**   160 watts   **b.**   40 watts

18.   **a.**   0.6   **b.**   50.45   **c.**   2.8   **d.**   5.25

19.   **a.**   x + 5y   **b.**   6a - 7b

20.   64 cubic metres

21.   3 2-drawer and 7 4-drawer filing cabinets

22.   **a.** $240   **b.** $180   **c.** $245

Section 3 – Specific Knowledge

1.   b. Modem

2.   Malware covers all software installed for malevolent purposes such as unwanted ads, software you don't want or spying. Trojan is similar to a virus and is usually disguised as a game that sabotages or takes control of the computer on which it is running.

3.   1010

4.   **a.**   5   **b.**   10

5.

TXT	Text file
JPG	Compressed digital image
GIF	Bit image
ZIP	Compressed file
PDF	Portable document
DOC	Microsoft Word Document
AVI	Multimedia file
HTML	Markup language for web pages

Contributions

This Practice Aptitude Quiz was developed by:

Australian Apprenticeships Pathways Website - www.aapathways.com.au
This website, part of the Australian Apprenticeships and Traineeships Information Service, provides sample Australian Apprenticeships job descriptions and links to more Australian Apprenticeships information and resources. The service is funded by the Department of Industry.

Innovation and Business Services Australia - www.ibsa.org.au
Innovation & Business Skills Australia (IBSA) is one of 11 Industry Skills Councils which have custodianship of all VET Education Training Packages. IBSA oversees 12 Training Packages in the following industry sectors: Financial Services, Education, Business Services, Cultural & Related Industries, Information & Communications Technology and Printing & Graphic Arts. IBSA works closely with industry, education and government to ensure that the qualifications in these sectors reflect real industry skill requirements and to build capability, professionalism, and innovative capacity in Australia's workforce.

University of Ballarat - www.ballarat.edu.au
The University of Ballarat (UB) is Australia's only regional multi-sector university. We are the third oldest site of higher learning in Australia, and offer secondary schooling, TAFE, higher education, and research opportunities. We have campuses including Mt Helen, SMB and Camp Street in Ballarat, and at Horsham, Stawell and Ararat. We also work with a range of partner institutes across Australia and globally.

The Career Education Association of Victoria - www.ceav.vic.edu.au
The CEAV is the Victorian peak body for secondary school career practitioners, work experience coordinators, VET coordinators and MIPS coordinators. The CEAV provides professional development opportunities for members and also works with business, industry, and the education and training sector.

Industry Training Australia P/L - www.itaust.com.au
Industry Training Australia (ITA) delivers consultancy services to government and non-government organisations in the education and training sector. ITA develops and delivers information and communication services, including the Australian Apprenticeships Pathways website, for service provider networks and the general public.

For enquiries about this Practice Aptitude Quiz contact the Australian Apprenticeships and Traineeships Information Service on 1800 338 022.