**Higher National Diploma in Information Technology**
Second Year, Second Semester Examination – 2018
**HNDIT2403/IT4003 - Professional Issues in IT/IT and Society**
# Marking Scheme

Instructions for Candidates:
**Answer four (04) questions only.**                    No. of questions  : 05
**All questions carry equal marks.**                    Time          : Two (02) hours

**01.**

(i). 'Education sector has changed due to integration of Information Technology'. State two other fields which have changed due to integration of Information Technology and explain two uses of Information Technology in each field.

Should mention three fields and explain two uses, such as:

- Agriculture
    - Usage of internet and e-mail for various agricultural activities.
    - Exchange of climatic data essential for agriculture.
    - Exchange of details related to prices of agro products.
- Industries
    - Making fundamental sketches / plans in creating various things and tools.
    - Previewing 3D pictures of products on the computer before they are actually produced.
    - Process of production can be regulated by using Robots
- Health
    - Magnetic Resonance Imaging (MRI) Scanner provides photographs of internal human  organs taken at different dimensions.
    - Computer Axial Tomography (CAT) Scan provides 3D photographs using X-Ray      technology.
    - EEG or Electroencephalograph is an often used to detect malfunctions in the brain.

    Any relevant answer

    **Two fields ---------------- (1x2 = 2 marks)**

    **Two uses in each field ------------ (2x2 = 4 marks)**

(ii). A large number of college students enroll in online degree programmes. Discuss three advantages and three disadvantages (for students and society in general) of students getting degrees online instead of at traditional colleges where they are co-present with faculty and other students.

Should discuss three advantages and three disadvantages, such as:

Advantages:

- Flexible schedule

- No need to commute

- You do not have to sit in class

- Work at your own pace
- Convenient / Don't have to worry about obstacles like illnesses, childcare, work schedule, etc. **(1 x 3 = 3 marks)**

Disadvantages:

- Must be self-motivated, self-disciplined, organized
- Must have required technology and ability to use it
- Not all majors are available online (medicine, registered nursing, etc.)
- Interaction with professors and classmates is online, not in person (usually)

**(1 x 3 = 3 marks)**

(iii). Briefly explain three ways that Information Technology can be used for social, cultural and economic development in Sri Lanka.

Should explain three ways, such as:

- Implementing new systems
- Improving existing systems
- Integrate technological advancements in the fields of education, economic

Any relevant answer **(2x3 = 6 marks)**

(iv). 'Computer technology is a double edged sword.' Do you agree with this statement? Discuss the relevance of this statement to the world today.

Agree **(1 mark)**

Should discuss the relevance of this statement using positive and negative impacts of technology, such as:

Advantages:

- At the medical level, technology can help treat more sick people and consequently save many lives and combat very harmful viruses and bacteria.
- Communication is enhanced, and companies can communicate more easily with foreign countries. **(3 marks)**

Disadvantages:

- The decline of human capital implies an increase in unemployment. In some areas, devices can replace the human mind.
- Less work for people: the human is becoming ever so obsolete by the day

**(3 marks)**

**(Total 25 marks)**

**02.**

(i). Fill in the blanks using the given list of answers.

(Offshoring, Inshoring, Rules, Ethics, Deontological, Utilitarianism, Natural rights, Intellectual Property Act No. 36 of 2003, Computer Crime Act No. 24 of 2007, Electronic Transactions Act No. 19 of 2006, Children's Internet Protection Act of 2000, Computer Matching, Data mining)

a) **Inshoring** : Process of moving a business operation from overseas to the local country.

b) **Ethics** : Study of what it means to "do the right thing".

c) **Deontological** : Ethical theory concerned with duties and rights.

d) **Utilitarianism** : Promotes the greatest happiness for the greatest number.

e) **Natural rights** : Theory of universal rights that are seen as inherent in nature.

f) **Intellectual Property Act No. 36 of 2003** : Copyright protection for software in Sri Lanka.

g) **Computer Matching** : Combining and comparing information from different databases.

h) **Computer Crime Act No. 24 of 2007** : Takes legal actions against logging on to the SLIATE web server without permission.

i) **Computer Crime Act No. 24 of 2007** : Takes legal actions against the Internet based pornography in Sri Lanka.

j) **Electronic Transactions Act No. 19 of 2006** : Facilitate domestic and international electronic commerce by eliminating legal barriers.

**(2x10 = 20 marks)**

(ii). Describe two methods a business or agency can use to reduce the risk of unauthorized release of personal information by employees.

Should describe two methods, such as:

- Based on the risk assessment, organizations should create distribution policies for various types of confidential information
- Implement a monitoring and enforcement system

Any relevant answer                **(2.5 x 2 = 05 marks)**

**(Total 25 marks)**

> **Commented [A1]:** Akki does this mean the environment nature? Then it should be Nature (capital N)

**03.**

(i). a) What is free software?

Free software is software that can be freely used, modified, and redistributed with only one restriction: any redistributed version of the software must be distributed with the original terms of free use, modification, and distribution

**(03 marks)**

b) List two benefits of free software.

Should state two benefits, such as:

- Available at minimal cost
- Provides full freedom
- No imposed upgrades
- Auditability

Any relevant answer **(2 x 2 = 04 marks)**

(ii). State two factors to consider in deciding whether a use of copyrighted material is a fair use.

Should mention two factors, such as:

- The purpose and nature of the use, including whether it is for commercial purposes or nonprofit educational purposes. (Commercial use is less likely to be fair use.)
- The amount and significance of the portion used.
- The effect of the use on the potential market for or value of the copyrighter work.

Any relevant answer **(2 x 2 = 04 marks)**

(iii). A Sri Lankan company has developed a new computing device which is completely flexible and can be rolled up. Discuss the protection for the company that could be provided by a patent and a trademark.

A patent would protect the new invention and would cover how it works, what it does, how it does it, what it is made of and how it is made. A patent would give the company the right to prevent others from making, using, importing or selling the invention without permission, for a fixed period. **(04 marks)**

A trademark would prevent others from using the trademark in the countries or regions for which that class of goods (computing devices) had been registered. **(03 marks)**

Any relevant answer

(iv). You work for a social media company and have identified an individual who has been spreading a computer virus via a social media account. The individual has attempted to gain access to computers of other social media users in an attempt to obtain credit

card data. Explain how the Computer Crimes Act No. 24 of 2007 in Sri Lanka could be applied to this scenario.

Answer should show an understanding that distributing a virus, attempting to gain access to computers of others and attempting to obtain credit card data for the purposes of fraud is an infringement under the Computer Crimes Act No. 24 of 2007 in Sri Lanka.

**(07 marks)**

**(Total        25 marks)**

04.

(i). Define the term 'profession' and give two examples for professions.

Profession is an occupation, especially one that involves prolonged training and a formal qualification. **(02 marks)**

Example professions could include IT, lawyers, doctors, architects etc. **(1 x 2 = 02 marks)**

(ii). Briefly explain two functions of professional bodies.

Should explain two functions, such as:

- Providing support for continuing professional development through learning opportunities and tools for recording and planning.
- Publishing professional journals or magazines.
- Providing networks for professionals to meet and discuss their field of expertise.
- Issuing a Code of Conduct to guide professional behavior.
- Dealing with complaints against professionals and implement disciplinary procedures.

Any relevant answer **(2 x 2 = 04 marks)**

(iii). Briefly explain four professional techniques to improve reliability and safety of IT systems.

Should explain four techniques briefly, such as:

- Good software engineering
- Clearly defined professional responsibility
- User interfaces based on human factors and feedback and should behave as an experienced user expects
- Properly assigned workload. Less workload also can lead to mistakes.
- Redundancy and self-checking
- Testing including real world testing with real users

5

(iv). The CSSL Code of Conduct is divided into sections. One of these sections is 'professionalism'. Members of CSSL are expected work to improve the value and virtue of the society and respect all its members while protecting the safety, welfare and health of the community.Give three examples to explain what this means.

Three relevant examples would be discussed, which would typically cover the points mentioned in CSSL Code of Conduct, such as:

- To not infringe or misuse any intellectual property.
- Unfailing promise to treat all people with fairness
- Not engaging in harassment of any nature, be it sexual harassment, bullying or cyberbullying, in person, via technology or otherwise.
- Not being discriminatory in any aspect irrespective of age, colour, disability, ancestry, origin, race, religion, gender, appearance, political affiliation, marital status, etc.)   **(3 x 3 = 09 marks)**

**(Total 25 marks)**

**Commented [A2]:** Akki do you think this question will give hints for students to answer the first sub question?

**Commented [w3R2]:**

05.

(i). What is Digital Divide?

Digital divide is a term that refers to the gap between demographics and regions that have access to modern information and communications technology, and those that don't or have restricted access.   **(03 marks)**

(ii). Describe two health issues, other than RSI (repetitive stress/strain injuries), caused by the prolonged use of computer. For each health issue give a method of prevention.

Should describe two health issues and for each issue state a method of prevention, such as:

- Health issue - Carpel Tunnel Syndrome
  Method of prevention - Use of keyboard and mice produced to health standards.
                        - Use of a support to rest wrist.
- Health issue - Back ache and neck pain
  Method of prevention - Maintain a good posture.
- Health issue - Headaches and eye strains
  Method of prevention - Work in an appropriate light.   **(2 x 2 = 04 marks)**

(iii). What does Green Personal Computer (Green PC) mean? State three features of Green PC.

A green personal computer (green PC) is a computer designed to save energy. A green PC is built from environmental friendly materials.   **(03 marks)**

Should mention features of Green PC, such as:

- Low power consumption
- Computer power management (CPM) capabilities
- Generate less heat than their predecessors.
- Recycled Materials Used for Manufacturing            **(1 x 3 = 03 marks)**

    Any relevant answer.

(iv). Computer professionals must study failures in computer systems to learn how to avoid them. State three causes of failures in computer systems.

Should state three causes of failures, such as:

- Automated processing may not be able to recognize special cases
- Overconfidence in the accuracy of data
- Errors in data entry
- Lack of accountability for errors
- Problems in other systems and software
- Time allowed for development was insufficient

    Any relevant answer.            **(2 x 3 = 06 marks)**

(v). Technology has always had an impact on the environment that is both positive and negative. Discuss two benefits and two drawbacks of Information Technology in relation to environment.

Should discuss two benefits and two drawbacks, such as:

Benefits:

- Using email and working electronically means that less printing is required, and so less paper is used
- Using systems like Facebook, Skype and video conferences can reduce the need for people to travel to meet each other, and so less fuel is used
- People can work from home - which reduces commuting (less fuel is used) and means that less office space is needed            **(1.5 x 2 = 03 marks)**

Drawbacks:

- Technology consumes energy. Computers require electricity, and most smartphones and tablets require recharging after just a few hours of use. Tablets and mobile phones use less energy than desktops and laptops as the hand-held devices use flash memory instead of hard drives.
- Technological waste - also known as e-waste - sometimes contains poisonous chemicals and can be an environmental hazard.            **(1.5 x 2 = 03 marks)**

**(Total 25 marks)**

8