SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology
Second Year, Second Semester Examination – 2016
HNDIT2403 / IT4003 – Professional Issues in IT / IT and Society
Model Answers

Instructions for Candidates:

Answer four questions only.

All questions carry equal marks.

No. of questions : 05

No. of pages : 03

Time : Two (02) hours

Question 01.

i.   State three fields which ha been changed due to integration of information technology and mention two uses of information technology in each field.

(06 marks)

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.
- Creation of websites for exchanging information among scientists in the field of agriculture.
- Computerizing the reports on payments / expenditure regarding agriculture.
- Establishing Community Broadcasting Stations, Telecasting Stations as well as Community Service Centers.

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.

Government Sector

- Not only government documents, common data and information, newspapers, gazettes, laws (rules and regulations) legal and

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information notices, but the services with national value are also computerized.

- State (Government) Information Centre established in Sri Lanka by now can be cited. Anybody can obtain information or advice by dialing the telephone number 1919.

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.
- Telemedicine uses Information technology in examining and observing the patients, maintaining medical reports by doctors irrespective of the venue where the doctor and the patient are.

Education

- Computer Based Training (CBT)
- Web Based Training (WBT)
- Learning Management System (LMS)
- Distance Education System (DES)

Mention any correct three fields ----------→ 1x3 = 3 marks
Uses of information technology in each field ----→ (0.5x2)x3 =3 marks

ii. Information technology (IT) has both positive and negative effects to the students.

a) List three (03) negative effects of IT to the students.   (03marks)

- Reduce creativity and thinking ability
- Use of false and irrelevant information
- Waste of time in surfing web
- Risk of Crime and fraud
- Loss of privacy
  Any other relevant answer

b) List three (03) positive effects of IT to the students.   (03marks)

- Ability to obtain up to date information
- Following on line courses from home
- Supported by learning Management systems

Any other relevant answer

iii. Briefly explain the following terms related to global workforce. (06 marks)

    a) Outsourcing

    Phenomenon where a company pays another company to build parts for its products or services instead of performing those tasks itself

    b) Offshoring

    Relocation of a business process from one country to another, typically an operational process (e.g. Manufacturing) or supporting processes (e.g. accounting)

    c) Inshoring or Onshoring

    Opposite of Offshoring. It is the process of moving a business operation from overseas to the local country

iv. Explain the difference between law and ethics. (03 marks)

Laws are rules and regulations that have specific penalties and consequences when violated. Ethics are social guidelines based on moral principles and values. Ethics do not have punishments, fines or penalties for violations

v. Ethical views can be divided into 3 categories as Deontological, Utilitarianism and Natural rights. Briefly explain two (02) of them. (04 marks)

Deontological: Ethical theory concerned with duties and rights. How people accomplish their goals is usually (or always) more important than what people accomplish.

Utilitarianism: A system of ethics according to which the rightness or wrongness of an action should be judged by its consequences. The goal of utilitarian ethics is to promote the greatest happiness for the greatest number.

Natural rights: Theory of universal rights that are seen as inherent in the nature of people and not dependent on human actions or beliefs.

(Total 25 marks)

Question 02.

i. In using information technology, everybody wish to protect privacy. Mention three (03) aspects of privacy. (03 marks)

- Freedom from intrusion (being left alone)
- Control of information about oneself
- Freedom from surveillance (being tracked, followed, watched)

ii. Briefly explain three (03) of the following terms in relation to computer data.
   (06 marks)

   a) Invisible information gathering: collection of personal information about someone without the person's knowledge

   b) Secondary use: use of personal information for a purpose other than the one it was provided for

   c) Computer matching: combining and comparing information from different databases (using social security number, for example, to match records)

   d) Computer profiling: analyzing data in computer files to determine characteristics of people most likely to engage in certain behavior

iii. Explain the way the concept of computer hacking changed over time from early 1960's up to today.   (09 marks)

Phase 1: early 1960s to 1970s –It was a positive term –A "hacker" was a creative programmer who wrote elegant or clever code –A "hack" was an especially clever piece of code

Phase 2: 1970s to mid 1990s –Hacking took on negative connotations –Breaking into computers for which the hacker does not have authorized access –Still primarily individuals –Includes the spreading of computer worms and viruses –Companies began using hackers to analyze and improve security

Phase 3: beginning with the mid 1990s –The growth of the Web changed hacking; viruses and worms could be spread rapidly –Political hacking (Hacktivism) surfaced –Denial-of-service (DoS) attacks used to shut down Web sites –Large scale theft of personal and financial information

(03 marks per each phase)

iv. Consider the following statements.

   Statement 1: "If the owners of a computer system want to keep outsiders out, it is their responsibility to provide better security."

   Statement 2: "Breaking into a computer system can be considered as same as breaking into a neighbor's house. It should not matter that the neighbor's door is locked or unlocked."

   Decide the correct statement, giving reasons to prove your answer.   (03 marks)

   Correct statement: statement 1 (01 mark)

   Unauthorized access to a computer and any information held in any computer is illegal.   (02 marks for the reasons)

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v. A company that supplies filtering software to schools (to block access of websites with violence or pornography) has sold statistical data about the Web sites visited by school children, to a third party. Critically discuss this incident.

(04 marks)

This is a privacy violation known as secondary use.

(Total 25 marks)

Question 03.

i. Briefly describe three (03) requirements of forming laws for the field of Information and Communication Technology. (06 marks)

- Good governance of IT assets and Information management
- Conformity with Intellectual Property Laws
- Controls to prevent misuse or computer crimes
- Secure transactions and retention of information

(Give marks for any 3)

ii. Mention three (03) key provisions relevant to IT systems defined under Intellectual Property Act No. 36 of 2003. (06 marks)

- Copyright protection for software
- Exclusive rights (right to copy, translate, adapt and distribute) reserved for owners
- Scope of copying "fair-use"
- Licensing rights
- Information safeguards

(Give marks for any 3)

iii. The Computer Crime Act 24 of 2007 specifies three broad categories of computer crimes. Briefly explain these categories. (06 marks)

- **Computer related Crimes** – Computers used as a tool for criminal activity such as theft, fraud etc.
- **Hacking** – Affects integrity, availability and confidentiality of a computer system or network (also includes viruses, worms etc.)
- **Content related Cyber Crime** – Computers with internet used to distribute illegal data. E.g.: Internet based pornography, criminal copyright violation.

iv. Define the term anonymity. (03 marks)

Anonymity on the Internet applies to any interaction a user has on the Internet that protects his or her identity from being shared with another user or with a third party.

OR

Anonymity means that the real author of a message is not shown

v. Explain pros and cons of protecting anonymity on the internet. (04 marks)

Pros: Secure billing facility, Ability to send anonymous emails, anonymous blogging and posting, openly discuss personal stuff which would be embarrassing to tell many people about, (02 marks for any 2)

Cons: It hides crime or protects criminals, Glowing reviews (such as those posted on eBay or Amazon.com) may actually be from the author, publisher, seller, or their friends, Anonymity can be used to seek contacts for performing illegal acts, anonymity can be used for offensive or disruptive communication.

(02 marks for any 2)

(Total 25 marks)

Question 04.

i. a) What is intellectual property? (02 marks)

Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.

b) Types of intellectual property rights relevant to software can be given as Copyrights, Patents, Marks, Designs and Trade Secrets. Briefly explain three (03) of them. (06 marks)

Copyright: copyright would protect the source and object code, as well as certain unique original elements of the user interface. The owner of a copyrighted software program has certain exclusive rights (with some exceptions): The right to copy the software, create derivative or modified versions of it, and distribute copies to the public by license or sale

Patents: The State grants the inventor, by means of a patent, the right to exclude others from making, using and selling the qualified invention for a period of 20 years from the date of application for patent.

Marks: A mark- trademark or service mark or certification mark is a visible sign that is capable of distinguishing the goods or services of different enterprises. •

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A mark may consists of a word, a symbol, a device, letters, numerals, a name, surname or geographical name, a combination or arrangement of colors and shapes of goods or containers etc.

Designs: It is the ornamental or aesthetic aspect of an article. – It does not have any functional character. – A design can be three dimensional such as shape of an article (design for a toy, bottle, jewelry or chair etc.) or two dimensional such as pattern or lines.(design for a greeting card etc).

Trade Secrets: Trade secrets' legal status as a protectable intellectual property right will be sustained if the owner can prove the trade secret was not generally known and reasonable steps were taken to preserve its secrecy. Trade secrets are subject to theft.

ii. a) What is NIPO of Sri Lanka?   (02 marks)

National Intellectual Property Office of Sri Lanka

    b) Mention the responsibility of NIPO of Sri Lanka.   (02 marks)

Responsible for the administration of the intellectual Property System in Sri Lanka. It provides Protection for Copy rights, Patents, Marks and Industrial Designs

iii. State three (03) international organizations, which administer certain areas of Intellectual Property.   (03 marks)

- World Intellectual property organization (WIPO)
- UNESCO (Universal Copyright Convention)
- World Trade Organization
- The International Union for the protection of New Varieties of Plants

(Give marks for any 03)

iv. "Digital technology and the Internet has made copyright violation easier and cheaper".

    a) Do you agree with this?   (01 marks)

Agree

    b) Give reasons to prove your answer.   (03 marks)

- New compression technologies have made copying large files (e.g. graphics, video and audio files) feasible
- New tools allow us to modify graphics, video and audio files to make derivative works

- Scanners allow us to change the media of a copyrighted work, converting printed text, photos, and artwork to electronic form

    (2x02 marks for any 2 reasons)

v. a) Mention two (03) possible health problems arise due to IT industry. (03 marks)

- Computer Vision Syndrome (CVS)
- Painful condition of the back, especially pain of the spine and neck.
- Painful condition on the palm or wrist

b) Briefly explain how those problems can be avoided.   (03 marks)

Computer Vision Syndrome (CVS)   (1 mark for 2 of the followings)

- Monitor should be positioned at eye-level or slightly below.
- It should be located 20-30 cm from the eye-level of the user.
- It should be possible rotate up/down and left/right as necessary, and adjusted as necessary.
- There should be facilities for the adjustment of "brightness" and "contrast" as required by user.
- Eye-exercises.

Painful condition of the back, especially pain of the spine and neck. (1 mark for 2 of the followings)

- The seat used should have the facility to adjust height.
- It should have the facility at the back for one to lean against
- It should contain adjustable arm supports.
- While feet should be firmly placed on the floor when seated, there should be a foot rest when the seat has to be elevated
- When seated, the back and neck should always be erect.

Painful condition on the palm or wrist (1 mark for 2 of the followings)

- Use of keyboard and mice produced to health standards.
- Use of a support to rest wrist.
- Keeping palms and wrists straight when typing
- Taking a proper break.

(Total 25 marks)

Question 05.

i. a) Describe the term "computer crime." (04 marks)

Crimes that use computers, computer devices or computer networks. Some of them are supported by a computer or the Internet in the commission of the crime. Others, like hacking, are uniquely related to computers.

b) List four (04) examples for computer crimes. (04 marks)

- Improperly accessing a computer, system, or network
- Modifying, damaging, using, disclosing, copying, or taking programs or data
- Introducing a virus or other contaminant into a computer system
- Using a computer in a scheme to defraud
- Interfering with someone else's computer access or use
- Using encryption in aid of a crime
- Falsifying email source information
- Stealing an information service from a provider

ii. People use various techniques in stealing personal and financial information in the web. Briefly explain the following techniques.

a) Phishing: e-mail fishing for personal and financial information disguised as legitimate business email (02 marks)

Attempt to obtain sensitive information such as usernames, passwords, and credit card details for malicious reasons by disguising as a trustworthy entity in an electronic communication

b) Pharming: false Web sites that fish for personal and financial information by planting false URLs in Domain Name Servers (02 marks)

iii. State three (03) techniques to protect your personal and financial information in case of online shopping. (06 marks)

- Activation for new credit cards
- Using services, like PayPal, act as third party allowing a customer to make a purchase without revealing their credit card information to a stranger
- Use software to detect unusual spending activities and prompt retailers to ask for identifying information

OR any relevant answer

iv. List two (02) examples for digital forgery. (02 marks)

fake checks, passports, visas, birth certificates (any 2)

v. Explain the term 'Net neutrality' and state the purpose of it.

Net neutrality, or open Internet, is the principle that Internet service providers (ISPs) should give consumers access to all legal content and applications on an equal basis, without favoring some sources or blocking others. (02 marks)

It prohibits ISPs from charging content providers for speedier delivery of their content on "fast lanes" and deliberately slowing the content from content providers that may compete with ISPs. (03 marks)

(Total 25 marks)