



**UNIVERSITY OF COLOMBO, SRI LANKA**

**UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING**



**DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)**

**Academic Year 2014/2015 – 3<sup>rd</sup> Year Examination – Semester 5**

***IT5104 - Professional Issues in IT***  
***Structured Question Paper***

**7<sup>th</sup> March, 2015**  
**(TWO HOURS)**

**To be completed by the candidate**

BIT Examination Index No: .....

**Important Instructions:**

- The duration of the paper is **2 (two) hours**.
- The medium of instruction and questions is English.
- This paper has **4 questions** and **12 pages**.
- **Answer all questions.**
- All Questions carry equal marks.
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper.  
If a page is not printed, please inform the supervisor immediately.

**Questions Answered**

Indicate by a cross (x), (e.g. ☐) the numbers of the questions answered.

	Question numbers			
	1	2	3	4
<b><u>To be completed by the candidate by marking a cross (x).</u></b>				
To be completed by the examiners:				

**CASE STUDY - Scenario 1**

Geetha had some bad experiences in her family as a young person at the age of 6. Her father died of a heart attack on a flight from Singapore to Sri Lanka when returning from a family holiday and Geetha was a witness to this incident. Since then she has been very nervous and shy in school. She often seemed exhausted in class and sometimes fell asleep. Staff learned that this was because she had nightmares and sleep problems. When she was young, Geetha had a few panic attacks getting onto an aircraft or even a train. A doctor diagnosed Geetha with post-traumatic stress, an illness that affects people who have had traumatic experiences.

Geetha's post-traumatic stress decreased over time with medication and therapy and, she is now an undergraduate in a University. She has friends and is much more outgoing. Her sleep is normal and she has not had a panic attack since she was 16. However, her mother still tends to think of her as delicate. Geetha has been offered a student exchange programme by the University for one year in a foreign country and she is very excited about it and keen to participate. Her mother is worried that Geetha may panic or may not cope with the trip and brings it to the attention of the University authorities who decide that Geetha should not travel abroad.

1) Answer parts (a), (b), (c) using Scenario 1 given above.

(a) Is what is described in Scenario 1 discrimination? Give reasons to support your answer and if it is so then also identify what kind of discrimination it is.

**(05 marks)**

**ANSWER IN THIS BOX**

**This is discrimination. [1]**

**Even if Geetha has now recovered from her illness, if she is treated unfavourably because she used to have an illness, or because her mother/University authorities believe she still has an illness, it is still discrimination. [1]**

**The family and University authorities have a duty of care towards its family**

**Members and students respectively. At the same time, it must not discriminate. [1]**

**This is disability discrimination. [2]**

- (b) How should the University and Geetha's mother have handled this?

(03 marks)

**ANSWER IN THIS BOX**

If concerned, University authorities / mother could have asked for a doctor's recommendation to say whether Geetha would be well enough to undertake the trip. [1]

It could also ask for medical advice on what to do for Geetha if she had a panic attack while on this trip or in the university later. [1]

Possibly, if Geetha is cleared to go on the trip, the University / Family could inform her host parents / airline etc. about her condition and a way for her to let them know if she was feeling panicky, before things developed into an attack. [1]

- (c) What action could Geetha have taken?

(02 marks)

**ANSWER IN THIS BOX**

Discuss the issue with her mother / University authorities / Host parents and get a letter from her doctor saying that she is well enough to go [1]

and what should be done in case of a panic attack. [1]

- (d) Sunil often goes to a video shop with his friends after school. However, the shop recently changed hands and, last time he went, Sunil noticed a sign at the door saying 'No school bags'. As Sunil had his school bag with him, he did not go in, but he was upset about this.

Could the sign in the shop be discrimination and How? What type of discrimination would it be?

(04 marks)

**ANSWER IN THIS BOX**

The sign on the door sets a special requirement for school children coming to the shop, that is, those aged 5 to 18 years approximately. If other customers are allowed to bring their bags in, the rule could be discrimination. [2]

*Continued...*

This would be age discrimination because the rule is harsher on people in the school age group. [2]

- (e) What would be a safer alternatives for the shop owner, if they were worried about shoplifting?

(04 marks)

**ANSWER IN THIS BOX**

They could require that everyone open their bags for inspection before leaving the store. This does not treat any particular group harshly so it would not be discrimination. [2]

An alternative might be to require that no bags at all are brought into the store, but this could still be problematic (for instance, people with small children may have to carry bags with them) and would also discourage many customers from entering the store because of concern that their bags could be stolen. Also a counter to keep bags can be introduced. [2]

- (f) What actions could Sunil take to overcome this act of discrimination?

(02 marks)

**ANSWER IN THIS BOX**

Talking or writing to the shop manager to suggest that the sign is unfair. [1]

Taking his business to a more student-friendly shop. [1]

- (g) Explain why anti-discrimination laws are important to software engineers.

(05 marks)

**ANSWER IN THIS BOX**

**Reason 1: They will be working in managerial and supervisory positions as professionals and they have to prevent people working under them behaving in a discriminatory manner and to avoid such behaviour themselves. [3]**

**Reason 2: When designing and constructing information systems, attention has to be paid to develop systems which can be accessed and used by disabled people. Especially web applications and web authoring tools have to be accessible and usable by blind, whose vision is impaired, unable to use the mouse, or those suffering from dyslexia. [2]**

**[Pages 135 and 141 of Ref 1]**

- 2) (a) BCS Code of conduct is divided into 4 sections. Name the four sections.

(04 marks)

**ANSWER IN THIS BOX**

**Public Interest, Duty to Relevant Authority, Professional Competence and Integrity, Duty to the Profession**

**[Page 26: Ref. 1]**

- (b) The clauses given in Column A belong to the 4 sections of the BCS Code of Conduct. Write the name of the correct section against each clause in Column B. See Row 1 for an example.

(11 marks)

**ANSWER IN THIS BOX**

	Column A	Column B
1	Only undertake to do work or provide a service that is within your professional competence.	<b>Professional Competence and Integrity</b>
2	Respect and value alternative viewpoints and, seek, accept and offer honest criticisms of work.	<b>Professional Competence and Integrity</b>
3	Have due regard for the legitimate rights of Third Parties.	<b>Public Interest</b>
4	Uphold the reputation and good standing of BCS, the Chartered Institute for IT.	<b>Duty to the Profession</b>
5	Have due regard for public health, privacy, security and wellbeing of others and the environment.	<b>Public Interest</b>
6	<b>NOT</b> misrepresent or withhold information on the performance of products, systems or services (unless lawfully bound by a duty of confidentiality not to disclose such information), or take advantage of the lack of relevant knowledge or inexperience of others.	<b>Duty to Relevant Authority</b>
7	Avoid injuring others, their property, reputation or employment by false or malicious or negligent action or inaction.	<b>Professional Competence and Integrity</b>
8	Notify BCS if convicted of a criminal offence or upon becoming bankrupt or disqualified as a Company Director and in each case give details of the relevant jurisdiction.	<b>Duty to the Profession</b>

*Continued...*

9	Accept professional responsibility for your work and for the work of colleagues who are defined in a given context as working under your supervision.	<b>Duty to Relevant Authority</b>
10	Reject and will not make any offer of bribery or unethical inducement.	<b>Professional Competence and Integrity</b>
11	Promote equal access to the benefits of IT and seek to promote the inclusion of all sectors in society wherever opportunities arise.	<b>Public Interest</b>
12	Conduct your professional activities without discrimination on the grounds of sex, sexual orientation, marital status, nationality, colour, race, ethnic origin, religion, age or disability, or of any other condition or requirement	<b>Public Interest</b>
<b>/Ref 3: BCS Code of conduct: <a href="http://www.bcs.org/server.php?show=nav.6030/">http://www.bcs.org/server.php?show=nav.6030/</a></b>		

(c) Illustrate the following clauses of the BCS Code of Conduct giving a suitable example for each clause.

- (i) Seek to avoid any situation that may give rise to a conflict of interest between you and your Relevant Authority.

(05 marks)

**ANSWER IN THIS BOX**

**Your employer says to do a quick fix to some code that you know will eventually cause problems and lead to costly maintenance to the client - is your responsibility to your employer higher than that to your client. There is a conflict of interest here between your employer & your client.**

- (ii) **NOT** disclose or authorise to be disclosed, or use for personal gain or to benefit a third party, confidential information except with the permission of your Relevant Authority, or as required by Legislation.

(05 marks)

**ANSWER IN THIS BOX**

**Confidential business information whose disclosure may harm the business.**

**Such information may include program code, trade secrets, sales and marketing plans, new product plans, notes associated with patentable inventions, customer and supplier information, financial data, and more.**

**CASE STUDY - Scenario 2**

An eavesdropping (spying) device with a microphone may be installed in a private car to record or monitor speech within that car. If one or both ends of a telephone conversation held in that car are recorded during the course of the operation, this will not constitute unlawful interception provided the device obtains the product from the sound waves in the vehicle and not by interference with, or modification of, any part of the telecommunications system. Proper authorizations would be needed for such installation to be legal.

- 3) The Regulations of Investigatory Powers Act (RIPA) 2000, sets up a frame work controlling the lawful interception of computer, telephone and postal communications. Scenario 2 given in the case study is an example for such interceptions.
- (a) List the authorities (organizations) that are allowed by the above Act to intercept, monitor and investigate electronic data. For what purpose could this data be used?

(08 marks)

**ANSWER IN THIS BOX**

**Government security services and Law enforcement authorities can intercept, monitor and investigate electronic data. [3]**

**Police and Intelligence services, the Inland Revenue and Customs and Excise too have the right to ask for interception warrants from courts to monitor communication traffic to or from specific persons or organizations. [3]**

*Continued...*



**Purpose is for preventing and detecting crimes. [2]**

- (b) What other organizations can monitor and record communications without the consent of the users of the service under the RIPA Act?

**(04 marks)**

**ANSWER IN THIS BOX**

**Organizations that provide computer and telephone services including ISPs, other telecommunication service providers and most employers too can monitor and record communications.**

- (c) The above organizations can monitor and record communications provided it is done for certain purposes. List eight such purposes.

**(08 marks)**

**ANSWER IN THIS BOX**

- **to establish facts, for example on what date a specific order was placed;**
- **to ensure that organization's regulations and procedures are being complied with;**
- **to ascertain or demonstrate standards which are or ought to be achieved;**
- **to prevent or detect crime whether computer related or not;**
- **to investigate or detect unauthorized use of telecommunication systems;**
- **to ensure the effective operation of the system, for example, by detecting viruses or denial of service attacks;**
- **to find out whether a communication is a business or a private one;**

*Continued...*

- to monitor calls for confidential, counselling helplines run free of charge by the business, provided that users are able to remain anonymous if they so choose.

(d) Name one concern of security experts regarding the provisions of the RIPA Act.

(05 marks)

**ANSWER IN THIS BOX**

The provisions that allow for the seizure of keys will undermine the security of Public Key systems.

[Pages 188 – 189 Ref 1]

**Scenario 3**

When Solar radiation from the sun reaches earth, things on earth like plants take in the sunlight. The leftover heat goes back into space. With the increase in greenhouse gases, the leftover solar rays are not able to escape back into space. Instead they are kept inside Earth atmosphere and as a result the earth's temperature rises.

- Ref 12: Global warming - [http://library.thinkquest.org/CR0215471/global\\_warming.html](http://library.thinkquest.org/CR0215471/global_warming.html)
- Ref 13: Green computing - <http://explainingcomputers.com/green.html>

4) (a) How do the events described in Scenario 3 affect the lives of people?

(02 marks)

**ANSWER IN THIS BOX**

Global warming cause the sea level to rise and when the sea level rises the water floods many low regions and islands.

*Continued...*

**This is a big problem for many of the plants animals and people who live and grow on these islands.**

[Ref 12: [http://library.thinkquest.org/CR0215471/global\\_warming.html](http://library.thinkquest.org/CR0215471/global_warming.html)]

(b) What are some of the Greenhouse gases that lead to above effects?

(02 marks)

**ANSWER IN THIS BOX**

**Some of these gases are water vapour, carbon dioxide, nitrous oxide and methane.**

[Ref 12: [http://library.thinkquest.org/CR0215471/global\\_warming.html](http://library.thinkquest.org/CR0215471/global_warming.html)]

(c) List six measures of Green Computing.

(06 marks)

**ANSWER IN THIS BOX**

**Lower power hardware**

**Virtualization**

**Cloud computing**

**Energy efficient coding**

**Improved repair, re-use, recycling and disposal**

**Less pollutant manufacture**

[Ref 13: Green computing - <http://explainingcomputers.com/green.html>]

- (d) Fill in the blanks in the paragraphs numbered (i) to (v) with the most appropriate words selected from the list given below.

**Travel Reduction, Virtualization, Dematerialization, Good Housekeeping, Teleworking, Cloud Computing, Increase Business Efficiency, Less Pollutant Manufacture, Improved repair-Re-use-Recycling and Disposal**

- (i) A typical desktop computer uses about 8W of electricity an hour when shut down but not switched off. That's about 1KW of electricity being wasted a week for a PC turned off around 16 hours a day. It therefore really is worth remembering that simply turning off a PC at the back or at the wall when not in use can have a major impact on energy consumption and its environmental impact. This may be known as .....(i).....
- (ii) Associated with the use of the Internet – It can help us to be greener by enabling.....(ii)..... This refers to the replacement of physical items or physically manipulative services with purely digital equivalents. Music, video, computer software, tickets (air/cinema/theatre) and a range of financial and business paperwork have started to become digital commodities. Reading the news on a mobile computer results in the release of 32 to 140 times less carbon dioxide and other gases (including nitrogen and sulphur oxides) than consuming a hardcopy newspaper.
- (iii) Most obviously, some face-to-face meetings can now quite effectively be replaced with audio or video conferences. This can be facilitated with access to the latest tools which will reduce the number of business trips made. The environmental savings made through .....(iii).....would be very significant.
- (iv) With many company resources (including e-mail, intranets and SaaS applications) now often available anytime, anywhere online, .....(iv).....is also a highly resource-efficient possibility. Existing and implemented use of flexible work indicates that 10 million 'flexiworkers' in Europe could save more than 11 million tons of [carbon dioxide] emissions through office space and commuting savings. Thirty million flexiworkers could save more than 34 million tons"
- (v) A great many hazardous chemicals - including lead, mercury, cadmium, beryllium, brominated flame retardants (BFRs) and polyvinyl chloride (PVC) are used to make computers. There are also some interesting new products starting to become available, including some computers that have substituted bamboo for some of the plastics used in the casing. This kind of initiatives will lead to .....(v).....

**(15 marks)**

**ANSWER IN THIS BOX**

**(i) Good Housekeeping**

**(ii) Dematerialization**

**(iii) Travel Reduction**

**(iv) Teleworking**

**(v) Less Pollutant Manufacture**

**[Ref 13: Green computing - <http://explainingcomputers.com/green.html>]**

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