ΠΑΜΙΒΙΑ UΠIVERSITY
OF SCIEΠCE AΠD TECHΠOLOGY

FACULTY OF COMPUTING AND INFORMATICS

DEPARTMENT OF INFORMATICS

QUALIFICATIONS: Bachelor of Computer Science; Bachelor of Informatics; Bachelor of Computer Science (Cybersecurity)	
QUALIFICATION CODE: 07BCMS; 07BAIT; 07BCCY	**LEVEL:** 6
COURSE CODE: EFC621S	**COURSE:** Ethics for Computing
DATE: November 2023	**SESSION:** 1
DURATION: 3 Hours	**MARKS:** 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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MODERATOR(S):	Prof Attlee M. Gamundani

THIS EXAMINATION PAPER CONSISTS OF 9 PAGES
(INCLUDING THIS FRONT PAGE)

INSTRUCTIONS FOR THE CANDIDATE

1. Answer all questions.
2. When writing, consider the following: The style should be to inform rather than impress.
3. Information should be brief and accurate.
4. Please ensure that your writing is legible, neat and presentable.

SECTION A: SHORT STRUCTURED QUESTIONS	[20 MARKS]

1.	Which of the following statements is correct regarding ethics theories?
	    A. Everyone must choose one or a combination of ethical theories.
	    B. Teleological theories are the best theories.
	    C. Deontological theories are the best theories.
	    D. Social contract theory is the best ethical theory.
		[1]

2.	Which of the following statements is correct?
	    A. Everyone must choose one or a combination of ethical theories.
	    B. Teleological theories are the best theories.
	    C. Deontological theories are the best theories.
	    D. Social contract theory is the best ethical theory.
		[1]

3.	A patent is a property right granted to an inventor that permits its owner to exclude the public from making, using, or selling a protected invention. Which of the following is NOT a type of patent?
	    A. Utility patent
	    B. Design patent
	    C. Economic patent
		[1]

4.	Which of the following statements is correct?
	    A. An ethical action is, by default, legal.
	    B. An action can be legal but still be unethical.
	    C. An unethical action is, by default, illegal.
	    D. Ethical actions are, by default, illegal.
		[1]

5.	For an invention to be eligible for a patent _____.
	    A. i) it must be useful; ii) it must be novel; and iii) it must not be obvious to someone with ordinary skill in the same field.
	    B. i) it must be big in size; ii) it must use green energy; and iii) it must be computerised somehow.
	    C. i) an individual must do it; ii) must be new; and iii) must be able to generate money.
	    D. i) a group of people must do it; ii) must have worked for at least 3 years; and iii) must be registered with IEEE.
		[1]

6.	A Trade secret is better than a patent in that_____.
	    A. Trade secrets have time limitations.
	    B. There is no need to file any application.
	    C. The validity of trade secrets is determined by courts.
	    D. All the above
		[1]

7.	Which of the following statements concerning Competitive intelligence and Industrial espionage is correct? A. Competitive intelligence is where a company obtains information illegally to gain an advantage over its rivals.	[1]

	B. Industrial espionage is where a company obtains information legally to gain advantage over its rivals. C. Industrial espionage is where a company obtains information illegally to gain advantage over its rivals. D. Competitive intelligence and industrial espionage are one and the same thing.	

8.	Which of the following is not a good example of a trademark?
	  A. A company logo.
	  B. A company slogan.
	  C. A company's packaging design.
	  D. A company's street address
		[1]

9.	A good ethical theory enables you to _____
	  A. Make persuasive and logical arguments.
	  B. Gain competitive advantage.
	  C. Lose competitive advantage.
	  D. Qualify for a religious position.
		[1]

10.	According to Ethical Relativism, _____
	  A. An action is right if it maximises the happiness of many people.
	  B. One person can say "X is right," another can say "X is wrong," and both can be correct.
	  C. An action is wrong if the benefits outweigh the cost.
	  D. We should abolish our cultural beliefs and adopt a single standard of right and wrong.
		[1]

11.	We can use Ethical Theories to make ethical decisions. Which of the following statements best describes the drawback of Subjective Relativism?
	  A. It takes too much time to arrive at a decision.
	  B. It is not an Ethical Theory.
	  C. Decisions may not be based on reason.
	  D. It is outdated.
		[1]

12.	Which of the following explains why Divine Command Theory is not a workable ethical theory for our purposes?
	  A. Divine command theory is impractical because society is multicultural and secular.
	  B. Some modern moral problems are not directly addressed in scripture.
	  C. It is based on obedience, not reason.
	  D. All of the above.
		[1]

13.	Which of the following statements explains the disadvantage(s) of Act Utilitarianism?
	  A. B, C & D
	  B. It is unclear who to include in calculating benefits and costs.
	  C. It is difficult to predict the consequences of actions with certainty.
		[1]

	D. It is unclear how far into the future to consider when calculating the cost and benefits of an action.	
14.	_____ is seen as an appropriate ethical guideline. A. Divine Command Theory B. Act Utilitarianism C. Cultural Relativism D. Ethical Egoism	[1]
15.	One of the reasons why international piracy is on the increase is that _____ A. Piracy laws encourage piracy. B. Some countries openly support piracy. C. Some countries do not recognise or protect intellectual property. D. Pirates are part of the political team	[1]
16.	Out of the options given below, what is the best way to respond to piracy issues? A. Banning, suing and taxing. B. Publish codes of ethics from major professional bodies C. Remove tax on digital media to encourage innovation. D. Allow governments to interact with other countries regarding piracy. E. Ignore piracy.	[1]
17.	Which of the following statements regarding the Digital Millennium Copyright Act (DMCA) is correct? A. It was instituted in 2022. B. The DMCA also makes it legal to circumvent technical protection or develop and provide tools that allow others to access a technologically protected work. C. The DMCA maximises the liability of Internet service providers for copyright infringement by their subscribers or customers. D. None of the above. E. All the above.	[1]
18.	One's personal beliefs about what is wrong and right may be referred to as A. Code of ethics B. Ethics C. Virtues and vices D. Morals	[1]
19.	_____ is an effort to attract public attention to a negligent, illegal, unethical, abusive, or dangerous act by a company or some other organisation. A. Cyber-squatting B. Domain naming C. Duty ethics D. Whistleblowing	[1]

20.	Andrew lived in a part of the world where, by law, it is not allowed to go into someone's house without being invited. Andrew was walking home one day when he heard a young boy screaming for help. Andrew noticed that the house was also on fire. Andrew, who is also a nurse, had the option to walk away and another option to help the child. Either option would challenge his ethics or the law of the country. Andrew decided to help the child. What is the best description of Andrew's choice of action in this case? A. Ethical and legal B. Unethical and legal C. Unethical and illegal D. Illegal and ethical	[1]

SECTION B: SHORT STRUCTURED QUESTIONS	[40 MARKS]

1.	Which of the following statements is correct regarding ethics theories? E. Everyone must choose one or a combination of ethical theories. F. Teleological theories are the best theories. G. Deontological theories are the best theories. H. Social contract theory is the best ethical theory.	[1]
2.	Which of the following statements is correct? E. Everyone must choose one or a combination of ethical theories. F. Teleological theories are the best theories. G. Deontological theories are the best theories. H. Social contract theory is the best ethical theory.	[1]
3.	A patent is a property right granted to an inventor that permits its owner to exclude the public from making, using, or selling a protected invention. Which of the following is NOT a type of patent? D. Utility patent E. Design patent F. Economic patent	[1]

SECTION B [40 marks]

2.1) Using an example, explain how globalization has increased the likelihood of unethical behaviour. [5 marks]

2.2) Based on what you learnt in class, what is the most common employee misconduct? [2 marks]

2.3) Explain how ethical considerations can be included in decision making.
Hint: think of the five different steps involved [6 marks]

2.4) What relationships must an IT worker manage, and what key ethical issues can arise in each? [5 marks]

2.5) What can be done to encourage the professionalism of IT workers? Mention four (4). [4 marks]

2.6) Several IT-related professional organizations such as ACM, IEEE-CS, AITP, and SANS have developed a code of ethics. Outline four (4) benefits of adhering to a code of ethics. [4 marks]

2.7) Based on your knowledge of ethical issues that IT users face, what action can organisations take to encourage the ethical behaviour of IT users? Mention four (4). [4 marks]

2.8) Highlight two differences between trade secrets and patents. [4 marks]

2.9) What are some of the advantages of trade secrete over patents? Mention two (2) [2 marks]

2.10) Explain one tactic used by organisations to circumvent cybersquatting. [2 marks]

2.11) Technologies are ethically 'neutral', TRUE OR FALSE? Justify your answer. [2 marks]

SECTION C [40 marks]

3.1) **Case study 1:** XYZ is a major supplier of products and services to the Ministry of Health and Social Services (MHSS), and other institutions nationally and regionally. Julia accidentally stumbled upon XYZ's confidential data i.e., data that Julia was not authorised to access and should not have accessed. Nonetheless, Julia proceeded to secretly apply her data analytics skills and noticed the following:

- XYZ inadvertently and sometimes deliberately over-bills its clientele, and even goes so far as to charge for services and products they never provided.
- XYZ under-reports their profits, which minimises the tax dues.

XYZ is a top employer (providing over 500 000 direct employment and 300 000 indirect employment) in Namibia and contributes significantly to the economy of Namibia. XYZ's approach to business maximises their income. But unlike most business organisations, XYZ ensures that their profits trickle down to all its employees (from product handlers to top-executives), in form of competitive salaries/allowances/bonuses. It is also apparent that without the happenings uncovered by the analysis, XYZ would not be able to sustain its current workforce and would most likely go bankrupt and close down.

Answer the following questions based on Case study 1. Your answers must be specific to the case study.

(i) Provide a constructed and critical argument examining the ethicality of XYZ's business practices from a Utilitarian ethics point of view. **[4 marks]**

(ii) Provide a constructed and critical argument examining the ethicality of XYZ's business practices from a Deontological ethics point of view. **[4 marks]**

(iii) Discuss the ethicality of Julia's action (analysing data that she is not authorised to access). **[4 marks]**
Hint: was Julia's conduct ethical? Specify the ethical theory/framework your conclusion is based upon.

(iv) What should Julia do in response to the discovery? **[3 marks]**

3.2)   **Case study 2**: A married couple in their 20s, John and Mary, are seeking a business loan to help them realise their long-held dream of owning and operating their own restaurant. Mary is an experienced accountant, and John is a promising graduate of a prominent cooking school. They share a strong entrepreneurial desire to be "their own bosses" and bring something new and exciting to their local restaurant scene; outside consultants have reviewed their business plan and assured them that they have a very promising and creative restaurant concept as well as the skills necessary to successfully implement it. They should have no trouble receiving a loan to get the business off the ground, according to the advisors.

John and Mary's local bank loan officer uses an off-the-shelf software tool to evaluate loan applications, which synthesises a wide range of data profiles obtained from hundreds of private data sources. As a result, it has access to details about John and Mary's lives that go well beyond what was requested on their loan application. Some of this data is obviously relevant to the application, such as their history of on-time bill payments. However, much of the information used by the system's algorithms is information that no human loan officer would think to look at or have access to, such as inferences about their likely medical histories based on their pharmacy purchases, data about the books and movies they watch, and inferences about their racial background. While much of the material is correct, some of it is not.

A few days after applying, John and Mary receive a call from the loan officer informing them that their loan has been denied. When they inquire as to why, they are merely told that they were evaluated as 'moderate-to-high risk' by the loan system. When they seek for further information, the loan officer says he does not have any and that the software company that designed their loan system will not tell them anything about the proprietary algorithm or the data sources it uses, or even if the data was validated. Even the system's designers do not know how the data led to any particular outcome, they are told; all they can say is that the system is 'usually' dependable statistically. When John and Mary inquire about appealing the judgement, they are informed that they will be unable to do so since the system will just process their application again using the same algorithm and data, yielding the same outcome.

Answer the following questions based on Case study 2. Your answers must be specific to the case study.

(i)   Explain some ethically significant benefits that banks could   [6 marks]
       derive from adopting a data driven system to analyse loan
       applications? Mention three (3).

(ii)   What ethically substantial harms would John and Mary have   [6 marks]
       endured because of their loan denial? (*Be as specific as possible
       in your replies; think of as many different types of potential harm
       to their important life interests as you can.*)

(iii) Explain the greater societal damages that could come from the   [5 marks]
       widespread usage of this particular loan appraisal process, aside
       from the effects on John and Mary's lives?

(iv)   Could the loan officer, bank managers, and/or software system   [4 marks]
       designers and marketers have anticipated the harms you
       described in part (ii) and part (iii)? Should they have been
       foreseen, and if so, why?

(v)   What steps could the loan officer, the bank's managers, or the   [4 marks]
       software company's employees have taken to mitigate or avert
       such consequences?

~ END ~