

Papua New Guinea University of Technology

Department of Mathematics & Computer Science

**FIRST SEMESTER EXAMINATIONS – 2021**

**FIRST YEAR BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

**CS113A – INTRODUCTION TO INFORMATION COMMUNICATION TECHNOLOGY (A)**

**TIME ALLOWED: 3 HOURS**

**INFORMATION FOR CANDIDATES**

1. Write your name and student ID number clearly on the front of the examination answer booklet.
2. You have 10 minutes to read this paper. You must not begin writing during this time.
3. There are two sections in this paper. Section A contains twenty (20) multiple choice questions. Section B contains five (5) short answer questions worth eighty (80) marks. You should attempt ALL questions.
4. All answers must be written in the examination answer booklets provided. No other written material will be accepted.
5. Write out the question number clearly on the answer sheet beside each answers. Do not use red ink or pencil.
6. Notes and textbooks are not allowed in the examination room.
7. Mobile phones and other recording devices are not allowed in the examination room.
8. Scientific and Business Calculators are allowed in the Exam room.

**MARKING SCHEME**

**Marks are indicated at the beginning of each question. The total is 100 Marks.**

**SECTION A – Questions 1 to 20 are multiple choice questions. Choose only one answer. You must answer all of them.**

**[1 MARK EACH = 20 MARKS]**

1. A computer

- (a) Is an emotional machine.
- (b) Is intelligent enough to solve all the problems.
- (c) Is an interactive machine.
- (d) Issues instructions to programmers.

2. Data in Computer Science is

- (a) Information.
- (b) Processed data.
- (c) A programmable object.
- (d) A set of raw facts and figures.

3. A technical source document for a programmer is a

- (a) User specification.
- (b) Networking schema diagram.
- (c) Flow chart.
- (d) Bar code reader.

4. NICTA is an authority in PNG that is mandated to

- (a) Control movements of Air Niugini flights.
- (b) Carry out regular maintenance on communication towers.
- (c) Regulate use of signal frequencies.
- (d) Construct undersea fiber-optic cable between POM and Brisbane.

5. Data lives in a database table as either a qualitative data type or a quantitative data type. An example of a qualitative type of data is

- (a) Calculated GPA of a student.
- (b) The assessment marks of students in tSMAS system.
- (c) Survey conducted to evaluate performance of PNG Power.
- (d) Daily journals in a diary for 365 days.

6. Which is not an example of an application of computer system in PNG?

- (a) NID registration.
- (b) Live streaming of Question Time in Parliament.
- (c) Google Classroom at UoT.
- (d) Boat riding along Papuan coastline.

7. Permission rights is a File System method that controls ability of users to
- (a) Post on Google classroom.
  - (b) Design layout of a file structure.
  - (c) Modify contents of files.
  - (d) Repair file servers.
8. One of the greatest risks to computer files is
- (a) Installation of anti-virus software.
  - (b) Computer hacking.
  - (c) Saving on Google drop box in the cloud.
  - (d) Data migration due to system upgrades.
9. Which statement is not correct?
- (a) GUI deals with graphics and icons.
  - (b) GUI is the user interface.
  - (c) Unix is an application system.
  - (d) Unix supports a multi-user, multi-tasking environment.
10. Header section of an email typically contains
- (a) Signatures.
  - (b) Contact details of the sender.
  - (c) Email messages.
  - (d) List of recipient(s).
11. A web server
- (a) Stores web pages.
  - (b) Contains a listing of IP addresses.
  - (c) Is the phonebook of the internet.
  - (d) Is the link between the user and web server.
12. Which is not an example of a business management software application
- (a) Student enrollment and registration system.
  - (b) Uni-Bookshop stationery inventory system.
  - (c) Ela-Motors parts & services system.
  - (d) Andersons supermarket point-of-sale system.
13. Which statement on computer images is not correct?
- (a) Bitmaps is also called raster graphics.
  - (b) Pixel is a picture element.
  - (c) Resolution is any number of pixels in an image.
  - (d) Image data also contains redundant data.

14. Which statement is not correct about MS Access?
- (a) A simple database.
  - (b) A product of Microsoft Inc.
  - (c) A record keeping tool.
  - (d) An instant messenger tool.
15. Integrated Development Environment (IDE) is not for
- (a) Computer Science students.
  - (b) Server administrators
  - (c) Programmers.
  - (d) Trainee programmers.
16. Which Microsoft application will generate a pivot summary report?
- (a) Access.
  - (b) Excel.
  - (c) Publisher
  - (d) Power point.
17. VBA programming toolkit is hidden within MS Excel. Which tab under Customize ribbon will allow you to access VBA?
- (a) Developer.
  - (b) Data.
  - (c) Add-Ins.
  - (d) View.
18. VB is an event-driven programming language. Which is not an example of an event?
- (a) Click of a mouse.
  - (b) Hover over an item.
  - (c) Key pressed on keyboard.
  - (d) None of the above.
19. The three (3) major types of tables in a database are
- (a) Master, transactional and view.
  - (b) Master, physical and logical.
  - (c) Master, base and form
  - (d) All of the above.
20. Teacher *teaches* Student, is an example of a relationship between two physical entities. What is the name given to this type of relationship?
- (a) Recursive.
  - (b) Quaternary.
  - (c) Ternary.
  - (d) Binary.

**SECTION B – Short Answer Questions**

**QUESTION 21.**

**[ (4 + 4) + 3 + 3 + 2 + 6 = 22 marks ]**

- (a) A computer (or computer system) can be divided into four (4) components.
  - i. Draw a block diagram to illustrate this basic organization of the components.
  - ii. Explain the functions of these four (4) components.
  
- (b) Computers are generally categorized into four main groups based on computational power, physical size and cost. Select any two (2) types of computers and distinguish between the two.
  
- (c) Define what a peripheral device is and provide two (2) examples.
  
- (d) A computer stores data using two different methods of data storage. Distinguish between primary storage and secondary storage.
  
- (e) Provided below are terms used in computer networking. Write the table and complete the blanks with the correct terms.
  - Analog signal, VPN, Repeater, Router, IP address, Fiber-optic cable, Frequency spectrum, Modem.

Terms	Description
	Converts frequency signals between digital and analogue.
	Easily transmitted over phone lines.
	Serves as a receiver and a transmitter.
	Naturally and freely available resource.
	Secured network.
	Transmission medium.

**QUESTION 22.**

**[ 4 + 2 + 3 + 2 + 3 = 14 Marks]**

- (a) Distinguish between an operating system and application software, and provide two (2) examples each as part of your answer.
  
- (b) State two (2) reasons why operating systems like Windows perform system upgrades to newer versions?
  
- (c) Differentiate between GUI (graphical user interface) and CLI (command line interface).
  
- (d) List two (2) examples of applications of computer system (or information system) implemented here at Unitech. Include who the users are and how they use the system.

- (e) Laptops may look similar in physical appearances and sizes, however prices vary significantly due to some internal features. State three (3) reasons why some laptops are more expensive than others.

**QUESTION 23.**

**[ 3 + 3 + 3 + (3 + 2 + 3) =17 Marks]**

- (a) State three (3) functions of a File Manager.
- (b) A typical email message consists of three (3) components. List them and briefly explain.
- (c) Most business companies use customized softwares in their business operations. State three (3) reasons why they do that?
- (d) The catch-phrase 'data is the heart-beat of any organization' is literally true for private business organizations. Most businesses usually employ computer systems to manage data entering, data processing, and data/information exiting the organization.
- i What do you think the catch phrase 'data is the heart-beat of any organization' means?
  - ii State two (2) methods or ways in which data enters the system.
  - iii State three (3) methods or ways in which data exits the system.

**QUESTION 24.**

**[ 2 + 2 + 3 + 3 = 10 Marks]**

- (a) Briefly explain graphics software.
- (b) Explain the term 'pixel' in computer images.
- (c) Discuss the term data or image compression, and one form of compression technique.
- (d) Briefly explain three (3) applications of computer graphics in the industries.

**QUESTION 25**

[ 2 + 3 + 2 + (2 + 2 + 2 + 2) + 2 = 17 marks ]

Study this MS Excel table and answer the following questions.

	A	B	C	D	E	F
1	<b>Staff-Profile</b>					
2	<b>StaffID</b>	<b>Department</b>	<b>Position</b>	<b>AnnualSalary</b>	<b>MonthlySalary</b>	<b>MonthlyTax</b>
3	ADM01	Admin	Manager	60,000	5,000	500
4	ADM02	Admin	Supervisor	48,000	4,000	400
5	STO01	Store	Manager	60,000	5,000	500
6	STO02	Store	Supervisor	48,000	4,000	400
7	WHS01	Warehouse	Manager	72,000	6,000	600
8				288,000	24,000	2,400

(NB: AnnualSalary is based on a 12 month calendar year period)

- (a) What is the name of the table, and how many rows and columns does it contain?
- (b) In database, columns are called attributes or fields. State the attributes of this table and state whether it is a 'numeric' or 'string' data type.
- (c) Which field do you think is the primary key attribute, and why?
- (d) 'MonthlySalary' is derived or calculated from 'AnnualSalary', and 'MonthlyTax' is derived from 'MonthlySalary'. Use cell referencing and show the formula to calculate
- MonthlySalary in cell E3.
  - MonthlyTax in cell F3.
  - Grand total MonthlySalary.
  - Grand total MonthlyTax.
- (e) Analyse the SQL statement below, and answer the following question.

```
SELECT * FROM Staff-Profile WHERE Department = 'Store';
(where * means ALL columns, and '=' means Equal To).
```

SQL will retrieve only the matching records/rows from Staff-Profile table according to the criteria specified. Write out the subset of staff-Profile table that will contain the resulting output if the SQL statement was executed.

**END OF EXAM**