SC015
Computer Science
Semester I
Session 2023/2024
2 hours

SC015
Sains Komputer
Semester I
Sesi 2023/2024
2 jam

Nama	No. Matrik	Praktikum

(Sila isi maklumat dengan jelas dan lengkap)

KOLEJ MATRIKULASI JOHOR
JOHOR MATRICULATION COLLEGE

PRA-PEPERIKSAAN SEMESTER PROGRAM MATRIKULASI
MATRICULATION PROGRAMME TRIAL EXAMINATION

SAINS KOMPUTER
2 jam

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU.
DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO.

Bahagian	No. Soalan	Markah	
		Pemeriksa	KP / KKP
	1 (10 M)		
	2 (18 M)		
	3 (20 M)		
	4 (18 M)		
	5 (6 M)		
	6 (8 M)		
JUMLAH	80 M		

Untuk Kegunaan Pemeriksa

1. McDonald's self-service kiosks have finally made their appearance in Malaysia, after already being available in other countries prior to the local roll-out. The new kiosks will basically let you skip the counter and queue together, letting you place your orders with minimal hassle. How this works is you order your Ala Carte meals or sets and then wait for your number to be called at the collection counter.

    a. Explain the operations of information processing cycle to place your order using the kiosk.

    [8 marks]

Operation	Explanation
Input	
Process	
Output	
Storage	

    b. Describe one activity involved in the storage operation in relation to the statement below.

    [2 mark]

    > Madam Salmi uses the Google Form application to construct a UPS trial exam for her students.

    _____
    _____

2. A number system is defined as a system of writing to express numbers.

    a. D-Qaseh Cake produces 2550 cakes a week. They make 1230 chocolate cakes and the rest are red velvet Nutella cakes. How many red velvet Nutella cakes do they produce? Give your answer in hexadecimal number.

b. For year 2023, all of the college students are eligible to receive a monthly allowance of 11111010_2 per month. Convert the value into decimal.
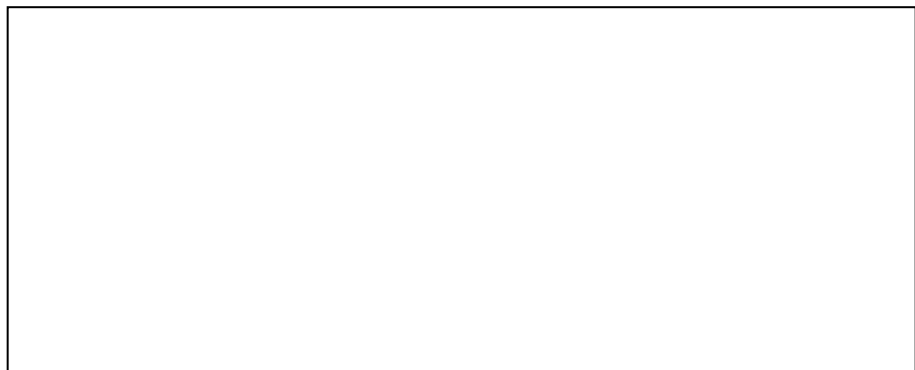
[4 Marks]

c. Convert the following numbers to the stated number system. Show your calculations.

    i. 111101_2 to hexadecimal.

[4 Marks]

    ii. 111101_{16} to binary

[4 Marks]

d. The Korean Hangul syllabary occupies the Unicode range from AC00 (decimal 44032) to D7A3 (decimal 55171).
Describe two (2) characteristics for Unicode coding systems.

[2 Marks]

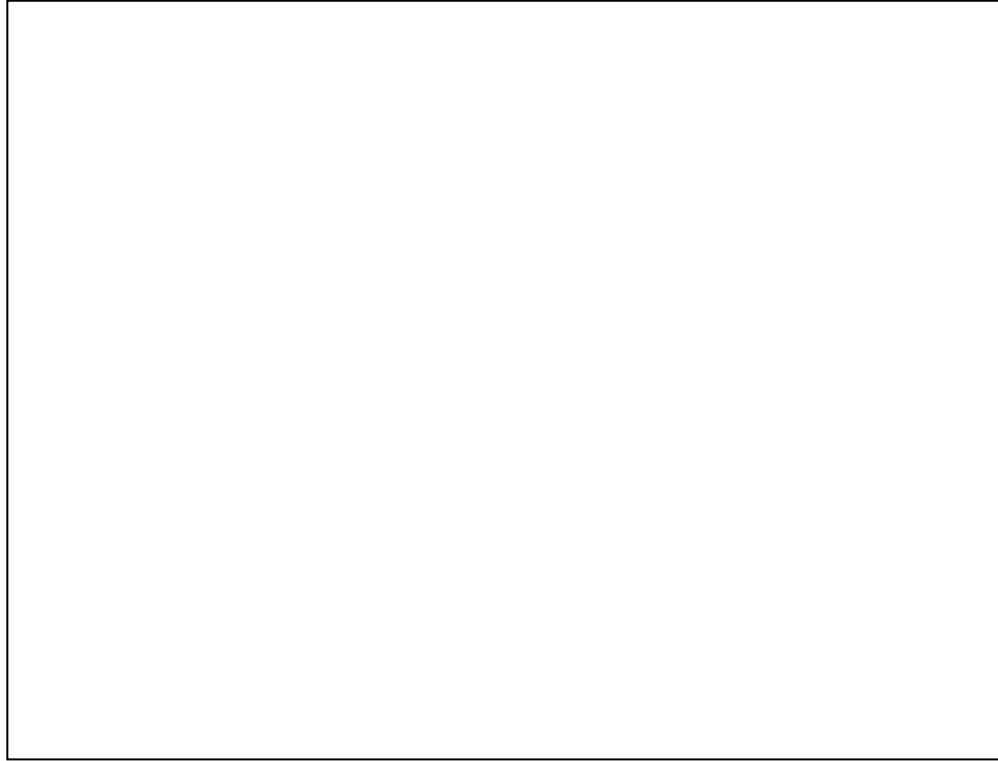| Characteristic	Unicode
Number of bytes	
Number of characters	

3. In order for Ahmad to register Data Structure (C1), he must pass two prerequisite courses, Fundamental Programming (C2) and Object-Oriented Programming (C3). However, he can straight away register Data Structure (C1) if he passed Advanced Programming (C4).

a. Derive the Boolean expression from the above scenario.

[2 Marks]

b. Derive the truth table from the above scenario.

c. Given a Boolean expression of Y = NOT A AND C OR B. Answer the following questions.
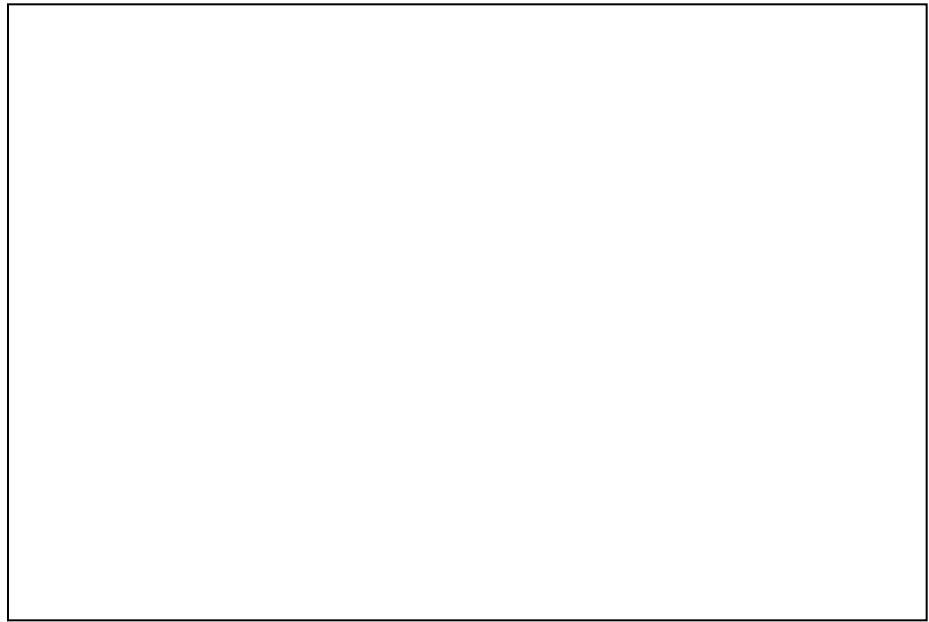
    i.   Draw the logic circuit based on the Boolean expression.

[3 Marks]

    ii. Derive the truth table.

d. Boolean expression is a logical statement that is either TRUE or FALSE.

   i. Derive Boolean expression based on a given logic statement.
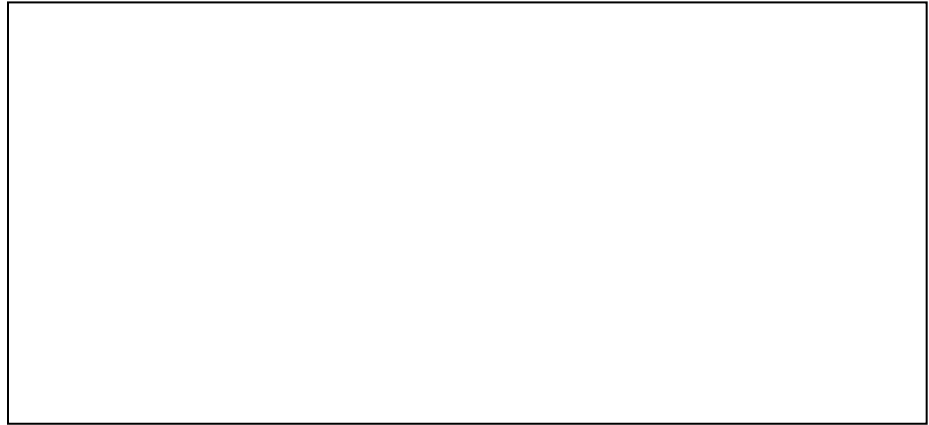   *"Amin has a hectic schedule. He will have his lunch at 1.00 pm if he has no class starts at 2.00pm. However, if the fried chicken is crispy and the sambal gravy is hot, he will have his lunch regardless the time."*

      [3 Marks]

   ii. Draw a logic gate based on a given logic statement.

       [4 Marks]

4. Razak wants to set up his office network. He needs to install all of the following devices and peripherals.

    a. Draw a peer-to-peer architecture layout if Razak needs to setup 2 computers, 2 laptops, 1 printer and 1 scanner.

    [4 Marks]

b. State two (2) differences between peer -to- peer and client/server architecture.

[4 Marks]

peer -to- peer	client/server

c. Three Matriculation colleges in a large city are to merge and become a single-college spread across the three sites. Each college has a Local Area Network (LAN) and these networks are to be joined together to from a Wide Area Network.

    i. List one (1) difference between LAN and a WAN.

[2 Marks]

_____
_____

    ii. State three (3) problems that could occur when using the new WAN.

[3 Marks]

_____
_____
_____
_____

d. The Internet address is a group of unique number that identifies a device on the Internet or a network.

    i. IPv6 has been replacing IPv4 as it has some limitation.
       Explain IPv4 limitation.

[2 Marks]

_____

_____

_____

_____

ii. Explain how domain name system (DNS) create the relationship between IP address and domain name.

[2 Marks]

_____

_____

_____

5. When computers first began to be used in society, the absence of ethical standards for their use and related issues caused some problems. However, as their use became widespread in every facet of our lives, discussions on computer ethics resulted in some kind of a consensus.

a. Identify the areas of computer ethics related to the following statement or situation below.

[3 Marks]

Situation	Area of Computer Ethics
(i) People may be tagged in photos or have valuable information exposed about themselves either by choice or unexpectedly by others through social media.	
(ii) Starbucks has filed a lawsuit against a Bangkok-based coffee stall owner in a dispute over its logo.	
(iii) Shila did not received the academic transcript sent by her college because she forgot to change her new home address when she filled in the online form.	

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b. Users of social networking websites include children and teenagers. Therefore, it is important for them to be aware of netiquette rules.

i. The table below shows a conversation between a secondary school's student and his class teacher in an instant messaging application.

Student X	GIVE ME A SAMPLE PROJECT A.S.A.P
Teacher Y	You may get samples of previous projects from our school library.
Student X	But, Sir, I WaNt it NOWWWWWWW!

Identify two (2) rules in netiquette that are against in the above conversation.

[2 Marks]

_____

_____

_____

ii. Amin types in "GOOD MORNING, EVERYBODY, HOW ARE YOU TODAY ???"
State whether the behavior is acceptable or not acceptable, and justify your answer.

[2 Mark]

_____

_____

6. A conceptual model for project management known as the systems development life cycle (SDLC) details the phases of an information system development project, from the early phase of a feasibility study to the ongoing maintenance of the finished application.

a. Explain the purpose of the last step in the Systems Development Life Cycle (SDLC).

[2 Marks]

_____

_____

_____

_____

b. One of the major activities in the fourth step of the Systems Development Life Cycle (SDLC) is install and test the new system. Describe the test that involved the end users.

_____
_____
_____
_____

c. Identify the phase of the Systems Development Life Cycle (SDLC) based on the given statements:

[4 Marks]

No	Statement	Phase
i	Teguh company plans to use the pilot conversion method to convert the existing system to a newly built system.	
ii	The purpose of this phase is to develop a clear understanding of the new system's development.	
iii	At this phase, the IT staffs maintain, enhances, and protects the system.	
iv	To ensure the system runs smoothly, the programmers and system analysts will fix errors that occurred and improve a system's operations.	

END OF QUESTION PAPER