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Gampaha Education Zone

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II

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Second Term Evaluation - 2025

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Grade

12

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Subject

Information and Communication Technology II

3 hours

**PART A – Structured Essay**

- Answer **all four questions** on this paper **itself**.

1.(a) Fill in the blanks with the appropriate words from the words given in brackets.  
(platform services, main, phishing, infrastructure, range, cache, type) (0.5 Marks x4)

- (i) ..... temporarily stores data that is constantly needed by the processor in memory.
- (ii) When preparing students' mathematics marks using a spreadsheet software, the ..... check is used to check whether the marks in all subjects are between 0 – 100.
- (iii) A person's credit card details have been stolen by an external party. This is known as .....
- (iv) Customer management is an example of providing ..... as a service in cloud computing.

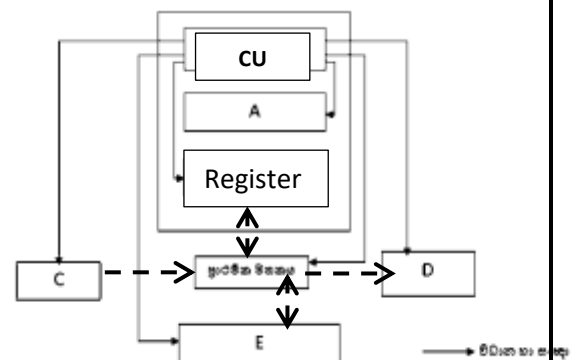
(b). The following is a computer system block diagram. Study it and answer the questions asked based on it.

- (i). Name the units represented by the letters A,C,D and E. (0.5 Marks x4)

- A- .....
- C- .....
- D- .....
- E- .....

- (ii). Write device that can be used for both C and D.

(1 Mark)



- (iii). Identify the volatile memory. (1 Mark)

(iv). Use the list of words given here to fill in the blanks below. (1 Mark x 4)

(Register memory, FLASH DRIVE, ROM, RAM / RAM)

A. Erasable and rewritable.....

B. Read-only.....

C. Volatile memory.....

D. Memory that is only available in the CPU.....

**2. (a). NAND and NOR gates are known as Universal gates.**

(i) When designing a circuit, state advantage of designing it using universal gates. (0.5 Marks)

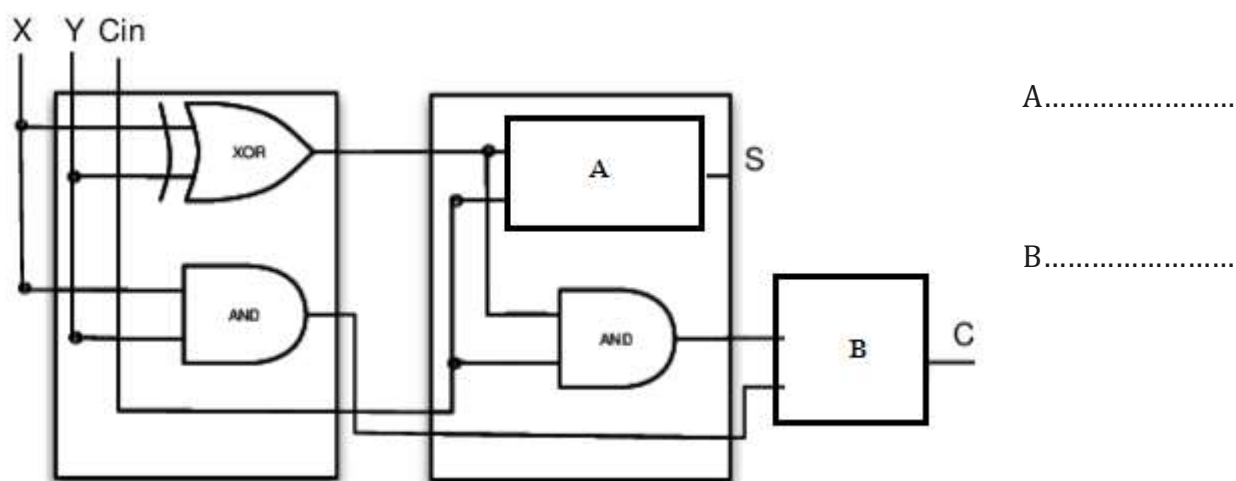
(ii) Simplify the expression  $F = A'BC + AB'C + ABC' + ABC$  using Boolean Laws. (3 Marks)

(iii) Draw the circuit for the expression obtained in (ii) using only NAND gates. (3 Marks)

(b) Write down the fetch execute cycle.

(0.5 Marks x 3)

(c) Following is the circuit for full adder. Write down the appropriate gates for A and B.(2 marks)



3. The same data can be represented in various ways. This leads to both advantages and disadvantages.

(a) Convert the decimal number **1348<sub>10</sub>** to its Binary Coded Decimal (BCD) representation.  
(1 Mark)

(b) Representing this number in binary is more advantage than representing it as Binary Coded Decimal. Explain the reason for this.  
(1 Marks)

(c) Show how **16+ (-24)** is calculated using 8-bit two's complement method. Explain how you handle the carry generated at the most significant bit. *(3 Marks)*

(d) Convert **121.0625** to its binary representation. *(2 Marks)*

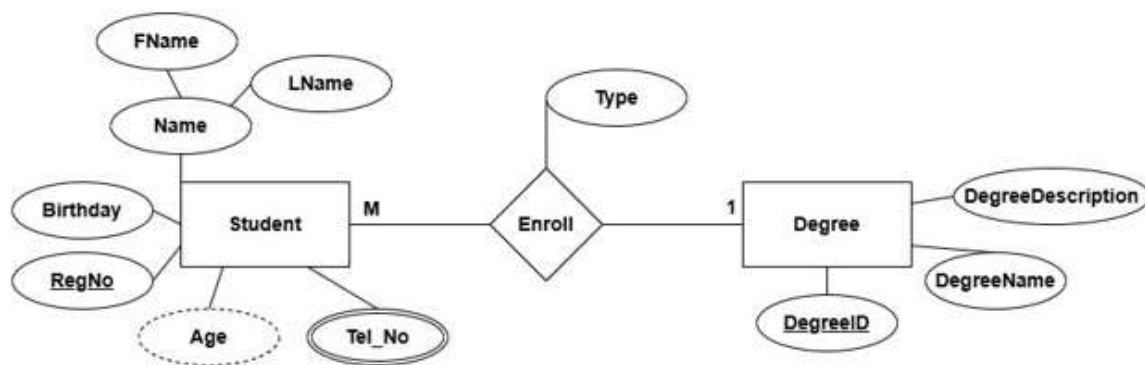
(e) Given  $A=10001100_2$  and  $B=01101000_2$ , find the values of A AND B , A OR B, A XOR B. *(3 Marks)*

4. (a).The Central Processing Unit (CPU) is called as the brain of the computer. It is installed on the motherboard. Define a **multi-core processor**. *(0.5 Mark)*

(b). The following is an excerpt from the ASCII Code table. Accordingly, **@AL ICT** is written in binary form using the ASCII code system. Take it as 7 bits) (0.5 Marks x 8)  
 Character ASCII code as a decimal number **A -65    Space -32    @ -64    L -76    I -73    C -67    T -84**

**@AL ICT -**

(c) Consider the following ER diagram.



(i). Name the multi-valued attribute of this ER diagram. (0.5 marks)

(ii). Name the composite attribute of this ER diagram. (0.5 marks)

(iii). What is the derived attribute here? (0.5 marks)

(iv) Construct the relational model for this ER diagram. (2 marks)

(d). Write the html code to display the web page as follows. Here the image is given as **car.jpg**. (4 marks)

## **The Future of Transportation: Electric Vehicles (EVs)**



### **What are EVs?**

Electric Vehicles (EVs) are cars that are powered entirely or partially by electricity. Instead of a gasoline engine, EVs use electric motors and batteries to drive the vehicle.

### **Types of EVs**

1. **Battery Electric Vehicles (BEVs):** Fully electric with no gasoline engine.
2. **Plug-in Hybrid Electric Vehicles (PHEVs):** Use both electricity and gasoline.

### **Benefits of EVs**

- Zero tailpipe emissions
- Lower operating costs