

SULIT



First Semester Examination
2022/2023 Academic Session

February 2023

EEE320 – Microprocessor II
(Mikropemproses II)

Duration : 2 hours
(Masa : 2 jam)

Please check that this examination paper consists of **THIRTEEN (13)** pages of printed material including appendix before you begin the examination.

[*Sila pastikan bahawa kertas peperiksaan ini mengandungi **TIGA BELAS (13)** muka surat yang bercetak termasuk lampiran sebelum anda memulakan peperiksaan ini.*]

Instructions : This paper consists of **FIVE (5)** questions. Answer **FOUR (4)** questions.

[*Arahan* : Kertas ini mengandungi **LIMA (5)** soalan. Jawab **EMPAT (4)** soalan.]

In the event of any discrepancies, the English version shall be used.

[*Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi Bahasa Inggeris hendaklah digunakan.*]

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1. Examination questions need to be prepared using this format.

Soalan peperiksaan perlu disediakan menggunakan format ini.

(10 marks/markah)

2. Second method having sentence followed by sub questions. Refer to Figure 2.

Kaedah kedua mempunyai ayat diikuti dengan sub soalan. Rujuk Rajah 2.

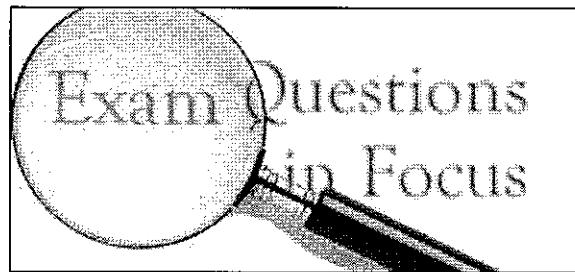


Figure 2. Exam Question
Rajah 2. Soalan peperiksaan

- a) Sentence one

Ayat pertama

(10 marks/markah)

- b) Sentence two

Ayat kedua

(10 marks/markah)

3. a) State 3 distinct bridges between HPS (Hard Processor System) and FPGA (Field Programmable Gate Array).

Nyatakan 3 jambatan yang berbeza di antara HPS (Sistem Pengawal Keras) dan FPGA (Medan Pengaturcaraan Tatasusunan Get).

(5 marks/markah)

...3/-

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- b) Which bridges (in (a)) is used to connect between HPS to FPGA and how to enable and disable the bridges?

Jambatan yang manakah (dalam (a)) digunakan untuk menghubungkan antara HPS kepada FPGA dan bagaimanakah hendak mengaktifkan dan menyahaktifkan jambatan tersebut?

(20 marks/markah)

- c) Discuss the following memory architectures:

Bincangkan tentang senibina ingatan yang berikut:

- i. Von Neuman Architecture

Senibina Von Neuman

(10 marks/markah)

- ii. Harvard Architecture

Senibina Harvard

(10 marks/markah)

- iii. Modified Harvard Architecture

Senibina Harvard Yang Telah Diubahsuai

(10 marks/markah)

Note: Your discussion must include: the differences, performance and block diagram.

Nota: Perbincangan anda mesti merangkumi: perbezaan, prestasi dan gambarajah blok.

- d) Discuss how Level 1 cache memory can improve the performance of processor.

Bincangkan bagaimana ingatan cache Aras 1 boleh menambah baikkan prestasi pemproses.

(25 marks/markah)

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- e) You are required to design an embedded system for smart farming application. The system will collect data from 10 temperature sensors, 10 humidity sensors and 2 cameras. The system will monitor the growth of mushroom. Based on the data, you have to decide the suitable time to harvest the mushroom. The available embedded system platform that you have are Novoton platform (NUC 140) and DE1 SoC platform. Select one of the embedded system platforms that is suitable for this application. Justify your answer.

Anda dikehendaki untuk merekabentuk satu sistem terbenam untuk aplikasi penanaman pintar. Sistem tersebut akan mengumpul data daripada 10 pengesan suhu, 10 pengesan kelembapan dan 2 buah kamera. Sistem tersebut akan memantau pertumbuhan cendawan.

Berdasarkan kepada data yang diperolehi, anda perlu menentukan masa yang sesuai untuk menuai cendawan tersebut. Platform sistem terbenam yang ada hanyalah platform Novoton (NUC 140) dan platform DE1 SoC.

Pilih salah satu platform sistem terbenam tersebut untuk aplikasi ini.

Berikan alasan bagi jawapan anda.

(20 marks/markah)

...5/-

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APPENDIX

LAMPIRAN

Question	Course Outcome (CO)	Programme Outcome (PO)
1	1	PO2
2	2	PO4
3	3	PO4

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