

[SULIT]

DKT217 COMPUTER SYSTEM TOPUP MTE

TIME : 9.30am ~ 11.00am
DURATION : 1 HOUR 30 MINUTES
UPLOAD CUT-OFF : 11.02am

ANSWER ALL QUESTIONS

QUESTION 1

- a) A 1K-bit memory cell can be organized into 128x8 or 1024x1 arrays. Draw the block diagram for both memory organization. (5 marks)

QUESTION 2

An 8-bit data E8H is to be stored into the memory.

- a) Find the Kin code when the data is stored into the memory.
b) Find the Kout code when the data is taken out from the memory if the data becomes ECH.
c) Determine the syndrome which proves the location of the faulty bit from the 8-bit data.

[5 marks]

QUESTION 3

- a) Assume a computer has the memory with the size of 16MB and a cache size of 64KB that addresses at the byte level. If the computer's cache line can contain 16 bytes, determine the format sizes of the following cache map :
- (i) Direct Mapped Cache
 - (ii) Associative Mapped Cache
 - (iii) 2-way Set Associative Mapped Cache
- b) Assuming a memory has 128 blocks and a cache consists of 32 lines. Determine where the 78th memory block will be located in the cache for :
- (i) Direct Mapped Cache
 - (ii) Associative Mapped Cache
 - (iii) 4-way Set Associative Mapped Cache

[10 marks]

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