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**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2021/2022**

COURSE NAME : COMPUTER ARCHITECTURE  
COURSE CODE : BIT 20303  
PROGRAMME CODE : BIT  
EXAMINATION DATE : JANUARY / FEBRUARY 2022  
DURATION : 3 HOURS  
INSTRUCTION : 1. ANSWER ALL QUESTIONS.  
: 2. THIS FINAL EXAMINATION IS  
CONDUCTED ONLINE AND CLOSED  
BOOK

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

**TERBUKA**

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**Q1** (a) Write the equivalent of the following numbers in 32-bit floating-point format..

(i) (-5) (2 marks)

(ii) (1.5) (2 marks)

(iii) (384) (2 marks)

(b) Construct the operation XOR from the basic Boolean operations AND, OR and NOT. (7 marks)

(c) Given a Boolean function as below.

$$Y = (\bar{A}B) + (C + B). \bar{C}$$

Construct a Truth Table for function Y. (7 marks)

**Q2** (a) There are **FIVE (5)** important instruction set design issues. List them with Brief explanation. (10 marks)

(b) Subtract  $(3250)_{10}$  from  $(72532)_{10}$  using 10's complement. (10 marks)

**Q3** (a) Analyze the differences between Sequential and Direct access methods in Computer storage system as for memory access and file access. (10 marks)



- (b) Consider a set-associative cache which contains 64 lines, or slots, divided into four-line sets. Main memory contains 4K blocks of 128 words each.

Show the format of main memory addresses.

(10 marks)

- Q4** (a) Describe the different types of the transfers must a computer's interconnection structure (e.g buses) support.

(10 marks)

- (b) You have purchased a computer before two years and it was very good performance at that time but after two years of intensive usage, you start to notice that the overall performance is degraded very obviously even though the computer is still running without any hardware problem.

Suggest Five (5) possibilities that can be very effective to increase the system performance.

(10 marks)

- Q5** (a) Discuss the advantages and disadvantages of memory-mapped I/O in comparison with Isolated I/O memory,

(6 marks)

- (b) Explain with the aid of proper block diagram the organization of a computer with Input/output Processor (IOP).

(6 marks)

- (c) Illustrate the communication channel between Central Processing Unit (CPU) with Input/output Processor (IOP).

(6 marks)

**- END OF QUESTIONS -**

