Extra.

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UNIVERSITY COLLEGE TATI

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FINAL EXAMINATION QUESTION BOOKLET	
COURSE CODE	: DCT 1043
COURSE	: COMPUTER ORGANIZATION ARCHITECTURE
SEMESTER/SESSION	: 1 – 2024/2025
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise your hands and ask the invigilator.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 4 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

a) Discuss **FOUR (4)** basic functions of a computer. (8 marks)

b) Explain **THREE (3)** structures of CPU. (6 marks)

QUESTION 2

a) Convert the following binary numbers to decimals.

i. 11001100 (2 marks)

ii. 101010 (2 marks)

iii. 111100111 (2 marks)

b) Give the calculation of those numbers into the hexadecimal numbering system.

i. 3456_8 (2 marks)

ii. 970_{10} (2 marks)

c) Write **THREE (3)** steps to convert the hexadecimal number system to the decimal number system. (3 marks)

d) Jane is trying to write the number 24 as a binary number.

Table 1: Binary Number

16	8	4	2	1
1	0	1	1	2

Her answer is 10112.

i. Identify **ONE (1)** mistake that Jane has made. (2 marks)

ii. Based on answer question (i), give the correct calculation. (2 marks)

e) List **FOUR (4)** types of numbering system. (4 marks)

QUESTION 3

a) List **FIVE (5)** types of basic logic gate. (5 marks)

b) Based on the statement below, illustrate an appropriate circuit.

i. Q = (A'BC + BC'D' + DE)' (4 marks)

ii. P = ABC + D'. (E' + F) + C. (D + F') (4 marks)

c) Extract truth table that P = (ABC' + BCD + CD')' for each A, B, C and D in (0, 1). (8 marks)

QUESTION 4

a) Explain **TWO (2)** roles Register in the CPU. (4 marks)

b) Define between data register and address register. (4 marks)

c) There are four control and status registers which are essential to instruction to be fetched. Identify **THREE (3)** registers above. (6 marks)

QUESTION 5

a) Justify **FOUR (4)** types of external memory. (8 marks)

b) State **TWO (2)** features of memory system. (2 marks)

c) Based on Figure 1, compare **THREE (3)** functions of RAM and ROM. (6 marks)

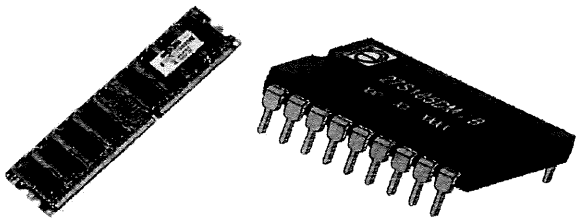

Figure 1: RAM and ROM.

d) Describe **THREE (3)** types of external devices. (6 marks)

e) List **THREE (3)** examples of input and output devices. (6 marks)

f) Define output operation. (2 marks)

----------END OF QUESTIONS----------