UNIVERSITY COLLEGE TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET	
COURSE CODE	: DCT 1113
COURSE	: COMPUTER ORGANIZATION & ASSEMBLY LANGUAGE
SEMESTER/SESSION	: 2 – 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) Define a term of Computer Organization. (2 marks)

b) List **FOUR (4)** basic functions of a computer. (4 marks)

c) Give **THREE (3)** structures of CPU. (3 marks)

d) Identify **FOUR (4)** main structural components of the computer. (4 marks)

QUESTION 2

a) Based on Figure 1, list **FOUR (4)** tasks done by Arithmetic & Logic Unit (ALU). (4 marks)

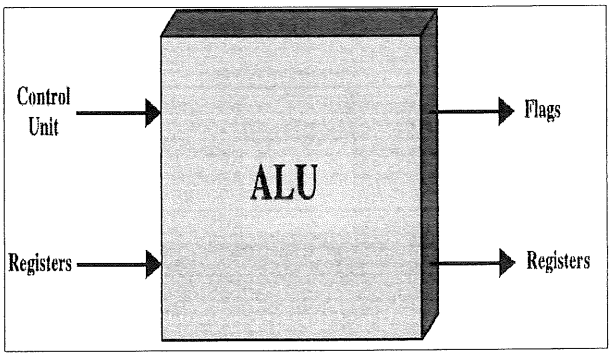

Figure 1: ALU diagram

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

c) Distinguish between data register and address register. (4 marks)

d) There are four control and status registers which are essential to instruction to be fetched. List **THREE (3)** out of four registers above. (3 marks)

e) State **THREE (3)** common instruction formats in machine language. (3 marks)

f) List **THREE (3)** advantages of register addressing. (3 marks)

QUESTION 3

a) Describe **FOUR (4)** features of memory system. (8 marks)

b) Based on Figure 2, state **THREE (3)** functions of RAM and ROM. (6 marks)

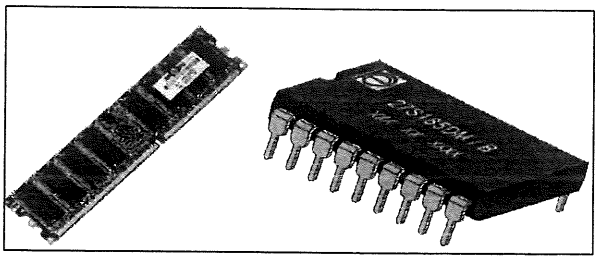

Figure 2: RAM and ROM

c) Convert each of the following hexadecimal numbers to binary, octal, and decimal formats. (6 marks)

i. $4FB2_{16}$ (6 marks)

ii. $88BAE_{16}$ (6 marks)

iii. $DC4_{16}$

d) Perform each of the subtraction operations below.

i. $100101_2 - 11011_2$ (3 marks)

ii. $1101011_2 - 111010_2$ (3 marks)

QUESTION 4

a) 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)

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

QUESTION 5

a) Define a term of Microprogramming. (2 marks)

b) List **TWO (2)** functions of microprogramming. (2 marks)

c) State **FOUR (4)** components of microprogramming. (4 marks)

d) Give **TWO (2)** components of data path in a microprogrammed. (2 marks)

e) Define **TWO (2)** classifications of microinstructions. (2 marks)

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