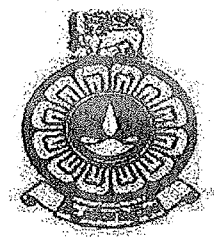THE OPEN UNIVERSITY OF SRI LANKA
B.SC. (IT) DEGREE PROGRAMME – 2023/2024
FINAL EXAMINATION
COU 4304 – COMPUTER ARCHITECTURE
DURATION: TWO HOURS ONLY (2 HOURS)

—021

Sample

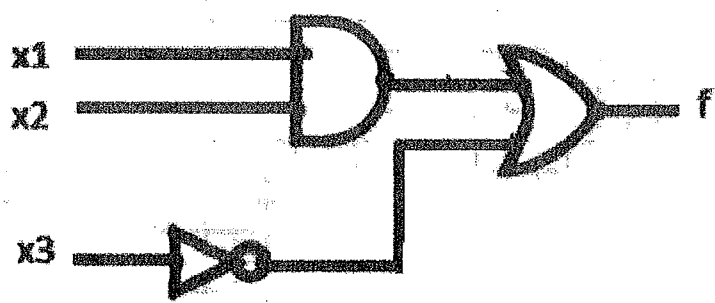Date: 25.08.2024   Time: 01.30 p.m. – 03.30 p.m.

Answer **FOUR** Questions ONLY.

Q1.

a) Define the term *"functions"* related to the computer organization?   [02 Marks]

b) Briefly explain four (04) main functions of a computer.   [08 Marks]

c) Define the term *"Cloud Networking"*.   [05 Marks]

d) Draw the schematic of PDP-8 Bus structure.   [10 Marks]

Q2.

a) What is the function of accumulator?   [03 Marks]

b) What are the two key functions that the QPI link layer performs?   [06 Marks]

c) Von Neumann architecture based on three (03) key concepts. What are they?

[06 Marks]

d) Write Verilog code for the below Circuit Figure 01.

Circuit Figure 01   [10 Marks]

Q3.

    a) What is the purpose of swapping?   [04 Marks]

    b) State the four (04) registers are essential to instruction execution.   [06 Marks]

    c) Write two (02) advantages of condition codes.   [06 Marks]

    d) Briefly describe four (04) services provide by an operating system.   [09 Marks]

Q4.

    a) Mention four (04) benefits of the glass substrate.   [06 Marks]

    b) State the functions of following control characters.

            i.   NUL

            ii.   ESC

            iii.   DEL

            iv.   CAN

            v.   ACK   [05 Marks]

    c) We can classify external devices into three (03) categories. Name them with one example for each category?   [06 Marks]

    d) Briefly explain the four (04) types of I/O commands that an I/O module may receive when it is addressed by a processor.   [08 Marks]

Q5.

    a) What are the three (03) types of data hazards?   [4.5 Marks]

    b) In branch prediction, what are the five (05) techniques used to predict whether a branch will be taken?   [7.5 Marks]

    c) State two (02) drawbacks of multiple streams in control hazards.   [05 Marks]

    d) Draw the branch prediction state diagram.   [08 Marks]

** End of the Paper**