RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. in Information Technology
First Year - Semester I Examination – May 2022

ICT 1201 – FUNDAMENTALS OF COMPUTER SYSTEMS

Answer all questions **Time: TWO (02) hours**

1.

a) "Finite State Machine (FSM) is the heart of most of digital designs." Explain using a real-world example application of FSM. (10 marks)

b) Differentiate between Von Neumann and Harvard architectures. (06 marks)

c) Explain the advantage of using microprocessors over transistors. (04 marks)

d) Compare special purpose computers with general purpose computers. (05 marks)

2.

a) What do you mean by an 'op code' of an instruction? Explain how is it used in instruction execution process. (08 marks)

b) Assume that there is a 16-bit word length Main memory, mention what is the size of that Main memory (how many memory locations are there in the main memory?) (05 marks)

c) Compare and contrast SRAM Vs DRAM. (06 marks)

d) Mention three (03) components of a CPU? Explain the functions of those components. (06 marks)

3.

a) What is the decimal equivalent value of the sign magnitude binary sequence 10110111? (04 marks)

b) Perform arithmetic operation of (24 – 45) using 2s complement method. (mention each step of your process) (10 marks)

c) Explain the advantages of using ASCII notation over BCD notation. (04 marks)

d) Represent the floating-point number 45.125 using IEEE 754 single precision floating point standard. (07 marks)

4.

a) Mention three (03) main functions of Operating System. (03 marks)

b) Compare and contrast Windows Vs DOS Operating systems. (08 marks)

c) Differentiate star and ring topologies of networks. (08 marks)

d) Explain the use of modems in computer networks. (06 marks)

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