SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology
First Year First Semester Examination – 2023
HNDIT 1032-Computer & Network System(New)

Instructions for candidates:

Answer Any five Questions

All Question carry equal marks

No. of question : 06
No of pages : 04
Time: Three (03) hours

Q1)

I. Briefly explain the following terms. (04 marks)

    a. Analog Signal.

    b. Digital Signal.

II. Summarize the main technologies of following computer generations. (06 marks)

    a. 1st Generation.

    b. 2nd Generation.

    c. 4th Generation.

III. What are the key characteristics of followings. (04 marks)

    a. Microcomputer.

    b. Mainframe.

IV. Explain the usages of computers in following areas. (06 marks)

    a. Education.

    b. Banking.

    c. Government.

(Total 20 marks)

Q2)

I. Define following data units. (02 marks)

    a. Nibble.

    b. Word.

II. What is non positional number system? (02 marks)

III. Perform following calculations. (12 marks)

    a. 135_{10} to Binary.

    b. 425_{10} to Octal.

    c. 754_{10} to Hexadecimal.

    d. 10111101_{2} to Decimal.

    e. 625_{8} to Binary.

    f. ABC_{16} to Octal.

IV. Identify the key characteristics following concepts. (04 marks)

    a. ASCII.

    b. Unicode.

(Total 20 marks)

Q3)

I. Briefly explain the following circuits with examples. (04 marks)

    a. Sequential circuit.

    b. Combinational circuit.

II. "Half Adder is one of the fundamental circuits inside the CPU." (04 marks)

    a. Draw the circuit diagram.

    b. Draw the truth table.

III. Write down the Boolean expression of following laws. (08 marks)

    a. Association

    b. Commutative.

    c. Distributive.

    d. De Morgan

IV. Draw the Karnaugh map and simplify the circuit. (04 marks)

$$F = \overline{A}\overline{B}\overline{C} + A\overline{B}\overline{C} + AB\overline{C} + ABC + \overline{A}B\overline{C}$$

(Total 20 marks)

Q4)

I. Define the following CPU components? (04 marks)

    a. ALU

    b. Register

II. Briefly explain the following concepts. (06 marks)

    a. Fetch

    b. Decode

    c. Execute

III. Give examples on following memory types. (04 marks)

    a. DRAM.

    b. SRAM.

    c. Volatile memory.

    d. Nonvolatile memory.

IV. Calculate the hard disk capacity with following information. (06 marks)

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512 bytes/sector
300 sectors/track (on average)
20,000 tracks/surface
2 surfaces/platter
5 platters/disk
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(Total 20 marks)

Q5)

I. Write down the functions of Operating System. (04 marks)

II. Define the following terms. (04 marks)

    a. Multitasking OS.

    b. Embedded OS.

III. The motherboard is the hub, which is used to connect all the essential components of a computer. Briefly explain the interfaces and port with examples. (04 marks)

IV. Briefly describe System Buses . (04 marks)

V. Briefly explain following system utilities. (04 marks)

    a. Disk Defragment

    b. Event viewer

(Total 20 marks)

Q6)

I. Write down the advantages of Computer Network?   (04 marks)

II. Define following terms.   (04 marks)

     a. LAN

     b. WAN

III. Identify the functions of following network devices.   (04 marks)

     a. NIC.

     b. Repeater.

     c. Switch.

     d. Router.

IV. Draw the diagrams to represent following topologies.   (04 marks)

     a. Bus.

     b. Star.

V. What are main functionalities of following OSI layers.   (04 marks)

     a. Physical.

     b. Network.

     c. Transport.

     d. Application.

(Total 20 marks)