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 – 2021
HNDIT 1032-Computer and Network Systems

Instructions for candidates:
Answer Any five Questions
All Question carry equal marks
Calculators are allowed

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

Question 01.

I.   Define the term Data and Information.   (04 marks)

    a. Data

    b. Information

II. Briefly explain the key features of following computer generations.   (04 marks)

    a. First generation

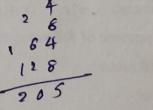   b. Second generation

III. Convert the following number systems into given number systems.   (06 marks)

    a. 135_{10} to Binary

    b. 11001101_2 to Decimal

    c. 247_8 to Hexadecimal

IV. Perform the following binary operations.   (06 marks)

    a. $1011010_2 + 111101_2$

    b. $10110110_2 - 10101001_2$

(Total 20 marks)

Question 02.

I.   Draw the symbol and truth tables of the following basic logic gates.   (04 marks)

    a. AND

    b. OR

II.   Simplify the following expressions using Boolean algebra laws.   (04 marks)

    a. $A + AB$ AB

    b. $(A + B)(A + C)$ $A(BC)$ $(AB) + (AC)$

III.   Draw a logic circuit for the following expression. $A+B$ (06 marks)

$$F = A.B.C + \bar{A}.\bar{B}.C + \bar{A}.B.C + \bar{A}.B.\bar{C}$$ 6

IV.   Simplify the following expression using the Karnaugh map.   (06 marks)

$$F = \bar{A}B + A\bar{B} + AB$$ 6

           AB **(Total 20 marks)**

Question 03.

I.   Draw the logic gates diagram and truth table for half adder.   (04 marks)

II.   Define the term "ROM" and state two (02) types of ROM.   4   (04 marks)

✓ III.   Briefly explain the memory hierarchy with a suitable diagram.   6   (06 marks)

IV.   Convert the following hard disk capacities into given units.   6   (06 marks)

    a. 2TB into Bytes 2048×1024^2 2×1024

    b. 500GB into bits 4000×1024^3

                                        (Total 20 marks)

Question 04.

I.   State two (02) functions of an Operating System (OS).   Process Management   (04 marks)
                                                      memory manage

II.   Name four (04) types of Operating System (OS).   (04 marks)

III.   Briefly explain the steps of following computer operations.   (06 marks)

    a. Disk Formatting   Quick / Full

    b. File Compression   .zip   → zipsharp, winrar

IV.   Briefly explain the purpose of following utility software.   (06 marks)

    a. Backup and Restore

    b. Device Driver

    c. Firewall

                                              (Total 20 marks)

Question 05.

I. Write two (02) advantages and two (02) disadvantages of setting up a computer network. (04 marks)

II. Briefly explain the following concepts with suitable examples. (04 marks)
   a. LAN
   b. WAN

III. Draw suitable diagrams for following network topologies. (06 marks)
   a. Bus
   b. Ring
   c. Star

IV. Briefly explain the functions of following network devices. (06 marks)
   a. NIC
   b. Switch
   c. Repeaters

(Total 20 marks)

Question 06.

I. Write down two (02) advantages and two (02) disadvantages of the Internet.
   (04 marks)

II. Briefly explain the following transmission modes with suitable diagrams. (04 marks)
   a. Half Duplex
   b. Full Duplex

III. Briefly explain the following network transmission media with examples. (06 marks)
   a. Guided media
   b. Unguided media

IV. Write down the file extensions for following file types. (06 marks)
   a. Microsoft Excel
   b. ASCII text only
   c. Graphics format
   d. Microsoft PowerPoint
   e. Compression format
   f. Microsoft Word (2007 and later)

(Total 20 marks)