



ST. LAWRENCE HIGH SCHOOL
FIRST TERM EXAM - 2018
CLASS - 11

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12/1/18

SUBJECT - COMPUTER SCIENCE SOLUTION
DURATION - 3 HOURS 15 MINUTES

F.M.: 70
DATE - 6.8.2018

GROUP - A

1. Select the correct option: 1X21=21
- i) The technology used in 4th Generation Computer:
(a) Microprocessor (b) Transistors (c) Vacuum Tubes (d) None of These
- ii) Collection of facts or raw materials is known as:
(a) Information (b) Data (c) Processing (d) Manipulation
- iii) _____ reader is used to recognize the magnetic ink characters automatically
(a) OCR (b) OMR (c) MICR (d) None of These
- iv) Program(s) that offers videoconferencing support:
(a) AOL instant messenger (b) Yahoo messenger (c) Skype (d) All of these
- v) What is used to store the result of any arithmetic operation in the ALU ?
(a) Accumulator (b) CU (c) RAM (d) None of These
- vi) The hexadecimal equivalent of 14 is:
(a) D (b) E (c) F (d) G
- vii) Example of Impact Printer is/are:
(a) Dot matrix (b) Daisy Wheel (c) Both (a) & (b) (d) None of these
- viii) $(37)_{10} = (?)_2$
(a) $(110101)_2$ (b) $(100111)_2$ (c) $(100001)_2$ (d) $(100101)_2$
- ix) $(10111)_2 = (x)_{10}$ -- the value of x is:
(a) 23 (b) 24 (c) 25 (d) 27

- x) $(1101+1011)_2$ yields:
 (a) 10001 (b) 11000 (c) 10101 (d) None of these
- xi) $(453+312)_8$ is equals to:
 (a) 657 (b) 576 (c) 765 (d) 756
- xii) Subtracting $(11)_2$ from $(1101)_2$ will give the result:
 (a) 1110 (b) 1001 (c) 1101 (d) 1010
- xiii) The OR operation is designated by the _____ operator
 (a) \pm (b) $-$ (c) $.$ (d) \oplus
- xiv) Example of Universal Gate is :
 (a) AND (b) NAND (c) OR (d) NOT
- xv) $1.1.\bar{1}$ will give the final output :
 (a) 1 (b) 1.1 (c) 0 (d) None of these
- xvi) If 1 & 0 are passed through OR gate, the output will be :
 (a) 0 (b) 0.1 (c) $\bar{1}$ (d) 1
- xvii) Fortran is an example of :
 (a) High level language (b) Low level language
 (c) Assembly Language (d) None of these
- xviii) How many bytes of memory space is required by integer data ?
 (a) 1 (b) 2 (c) 3 (d) 4
- xix) Example of keywords in 'C' is/are
 (a) break (b) if (c) both (a) & (b) (d) None of these
- xx) `int a=7, b;
 b = a ++;
 printf("%d",++a);`
 Correct output is:
 (a) 10 (b) 8 (c) 7 (d) 9

xxi) `int a=7 ; b=5;`
`a = a + b;`
`printf(“%d”,++a);`

Correct output is:

- (b) 13 (b) 14 (c) 12 (d) error

GROUP - B

2. Answer the following questions in brief (Alternatives are to be noted): 1X14 = 14

- i) **State the basic elements of the first two generations of computers.**
A: Vacuum Tubes & Transistors
- ii) **In which generation of computer, Direct Access Storage Devices (DASD) were introduced?**
A: Third(3rd)
- iii) **Write the full forms of: LSI and ULSI.**
A: LSI – Large Scale Integration
ULSI – Ultra Large Scale Integration

OR

What do you know about SSI?

A: An integration type for digital circuits that contain transistors numbering in the tens providing a few logic gates per chip.

- iv) **What are the different kinds of micro-computers ?**
A: Desktop, Laptops, Palmtops etc.

OR

State 2 differences between Mini computers and Micro computers.

A: Microcomputers usually refer to laptop or desktop PCs that you use in a typical household, whereas minicomputers, which were primarily used from 1960 to 1980, are generally larger, but have limited functionality and slower processors.

- v) **Give 2 examples each of Analogue and Digital computers.**
A: Analogue – Voltmeter, Speedometer
Digital - IBM PC, Apple Macintosh, modern smartphones
- vi) **State the major disadvantage of non – positional number system.**
- vii) **Convert $(110101)_2$ to $(?)_8$**
A: $(65)_8$
- viii) **Covert $(FADE)_{16}$ into its Binary equivalent.**

A: (1111 1010 1101 1110)₂

ix) Convert (0.125)₁₀ to corresponding Binary format.

A: (0.001)₂

x) Find (453+412)₈

A: (1065)₈

xi) Draw the truth table for NAND Operation.

A:

Inputs		Outputs
X	Y	Z
0	0	1
0	1	1
1	0	1
1	1	0

xii) Show the logical diagram of NOR gate.

xiii) Write the programming logic in 'C' to check whether an user given number is Odd or Even.

A:

```
if(number % 2 == 0)
    printf("%d is even.", number);
else
    printf("%d is odd.", number);
```

xiv) What will be the output of the following programming logic:

```
int x=5, y=1;
x++;
++y;
X=x+y;
printf("%d", ++x);
printf("%d",--y);
```

A: 91

GROUP – C

3. Answer the following questions (Alternatives are to be noted):

7X5 = 35

i) (a) Write a short note on mouse as an input device.

A: A computer mouse (plural: mice) is an input device that is most often used with a personal computer. Moving a mouse along a flat surface can move the on-screen cursor to different items on the screen. Items can be moved or selected by pressing the mouse buttons (called clicking).

(c) Explain the terms OCR and OMR.

A: OCR: OCR (optical character recognition) is the recognition of printed or written text characters by a computer. This involves photost scanning of the text character-by-character, analysis of the scanned-in image, and then translation of the character image into character codes, such as ASCII, commonly used in data processing.

OMR: OMR is the process of gathering information from human beings by recognizing marks on a document. OMR is accomplished by using a hardware device (scanner) that detects a reflection or limited light transmittance on or through a piece of paper.

3+(2+2)

OR

(a) State 3 differences between RAM & ROM.

A:

	RAM	ROM
Volatility	RAM is volatile in nature as it automatically erased when computer shutdowns	ROM is non-volatile since it is never erased when there is any shutdown or restart of computer.
Accessibility	RAM can be directly accessed by the processor	ROM can't be directly accessed by the processor since it is transferred into RAM where it is executed by the processor.
Storage	RAM is used to store the temporary information for limited time.	ROM is used to store permanent information which can't be deleted.
Hardware structure	RAM is in form of chip while	ROM is generally optical drivers made of magnetic tapes
Cost	Costlier than ROM	Cheaper than RAM
Size	Chip Size is larger than ROM	Chip Size is smaller than ROM
Writing speed	Writing data to a RAM chip is a faster process	Writing data to a ROM chip is a slow process
Storage Limit	A RAM chip can store multiple gigabytes (GB) of data, up to 16 GB or more per chip	A ROM chip typically stores only several megabytes (MB) of data, up to 4 MB or more per chip
Examples	Static and dynamic RAM	PROM, EPROM and EEPROM are types of ROM.

(b) State the full names of any two varieties of ROM.

A: Programmable Read-Only Memory (PROM)
 Erasable Programmable Read-Only Memory (EPROM)
 Electrically Erasable Programmable Read-Only Memory (EEPROM)

(c) State 2 differences between SRAM & DRAM

A:

SRAM	DRAM
Stores data till the power is supplied	Stores data only for few milliseconds even when power is supplied
Uses an array of 6 transistors for each memory cell	Uses a single transistor and capacitor for each memory cell
Does not refreshes the memory Cell	Needs to refresh the memory cell after each reading of the capacitor
Data access is faster	Data access is slower
Consume more power	Consume less power
Low density/less memory per chip	High density/more memory per chip
Cost per bit is high	Cost per bit is low

3+2+2

- ii) (a) Find y if : $(98)_{10} + (y)_2 = (AB)_{16} + (20)_8$
 A: $y = (1011001)_2$
 (b) Multiply the following : $(1010)_2 \times (101)_2$
 A: $(110010)_2$

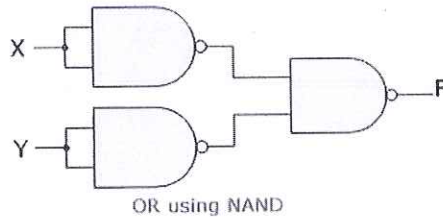
5+2

OR

- (a) Find the value of x in the following expression:
 $(56)_8 + (1100110)_2 = (x)_{16} + (42)_{10}$
 A: $x = 6A$
 (b) Convert $(ABCD)_{16}$ to Octal.
 A: $(125715)_2$

5+2

- iii) (a) Draw the circuit diagram for the expression
 $F = \overline{A.B} + A.\overline{B} + \overline{A}.\overline{B}$
 (c) Form an OR logic gate using only NAND gates.
 A:



4+3

OR

- (a) How many NAND gates are required to design a NOT gate?
 A: 1(One)
 (b) Prove that NOR gate is Universal
 A: Derive the working of basic gates (AND, OR and NOT) using NOR gate only to prove NOR gate is Universal.

1+(2+2+2)

- iv) (a) Write a C program to convert a temperature value input in Fahrenheit to Celsius scale using the relation $C = 5(F - 32)/9$.

A:

```
#include <stdio.h>

void main()
{
    float celsius, fahrenheit;
```

```

printf("Please Enter the temperature in Fahrenheit: \n");
scanf("%f", &fahrenheit);

// Convert the temperature from fahrenheit to celsius
celsius = (fahrenheit - 32) * 5 / 9;

printf("\n %f Fahrenheit = %f Celsius", fahrenheit, celsius);

}

```

(b) Write a C program to interchange the contents of two variable a & b using a third variable. 4+3

A:

```

#include <stdio.h>
void main()
{
    int firstNumber, secondNumber, temporaryVariable;

    printf("Enter first number: ");
    scanf("%d", &firstNumber);

    printf("Enter second number: ");
    scanf("%d", &secondNumber);

    // Value of firstNumber is assigned to temporaryVariable
    temporaryVariable = firstNumber;

    // Value of secondNumber is assigned to firstNumber
    firstNumber = secondNumber;

    // Value of temporaryVariable (which contains the initial value of firstNumber) is assigned to
    secondNumber
    secondNumber = temporaryVariable;

    printf("\nAfter swapping, firstNumber = %d", firstNumber);
    printf("After swapping, secondNumber = %d", secondNumber);

}

```

v) (a) Write a program in C to Display the following pattern:

```

*
**
***
****

```

. Upto 'n' number of rows.

A:

```
#include<stdio.h>

void main()
{
    int i,j,n;
    printf("Enter the number of Rows: ");
    scanf("%d",&n)

    for(i=1 ; i<= n ; i++)
    {
        for(j=1 ; j<=i ; j++)
        {
            printf("*");
        }
        printf("\n");
    }
}
```

(c) Write the syntax of 'for' loop.

A: for (initialization ; condition ; increment/decrement)
 {
 statement(s);
 }

5+2
