SELF ASSESSMENT PAPER

COMPUTER SCIENCE

Answers

UNIT-1 : Numbers and Arithmetic Operations

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. The next 3 numbers of $(011)_2$ are
100 101 110

Ans. 2. Octal number system.

Ans. 3.

$$\begin{array}{r} 1001 \\ +\ \ 110 \\ \hline 1111 \end{array}$$

2 Marks Questions

Ans. 4. In hexadecimal number system, A = 10, B = 11, ..., F = 15.

$$\begin{array}{cccccc} & \mathbf{1} & \mathbf{1} & \mathbf{1} & & \\ & A & B & 4 & 6 \\ + & C & A & E & 3 \\ \hline 1 & 7 & 6 & 2 & 9 \end{array}$$

So, $(AB46)_{16} + (CAE3)_{16} = (17629)_{16}$

Ans. 5. The next 3 numbers of $(011)_2$ are

(a) $(634)_8 = (?)_2$

$(634)_8 = 6 \quad 3 \quad 4$

$= 110 \quad 011 \quad 100$

$(634)_8 = (110011100)_2$

(b) $(11001101.10)_2 = (?)_{16}$

$(11001101.10)_2 = \underbrace{1100}_{12 = C}\ \underbrace{1100}_{13 = D} \cdot \underbrace{1000}_{8}$

$(11001101.10)_2 = (CD8)_{16}$

Ans. 6. $(432.71)_8 = (?)_2$

$(432.71)_8 = (4 \times 8^2 + 3 \times 8^1 + 2 \times 8^0) + (7 \times 8^{-1} + 1 \times 8^2)$

$= 4 \times 64 + 3 \times 8 + 2 \times 1 + 7 \times 0.125 + 1 \times 0.015625$

$= (256 + 24 + 2) + (0.875 + 0.015625)$

$(432.71)_8 = (282.890625)_{10}$

3 Marks Questions

Ans. 7. $(432.210)_{10} \rightarrow (?)_8$

For integer part,

8	432	0
8	54	6
8	6	6
	0	

For fractional part,

	Inter	Part
.210 × 8 = 1.680	1	
.680 × 8 = 5.44	5	
.44 × 8 = 3.52	3	
.52 × 8 = 4.16	4	
.16 × 8 = 1.28	1	

So, $(432.210)_{10} = (660.15341)_8$

Ans. 8.

(i)

```
  1 11
  11011.10
+  1001.00
 100100.10
```

(ii)

```
  111
×  10
 000
111×
1110
```

(iii)

```
  111001
+ 100110
 1011111
```

5 Marks Questions

Ans. 9. **Step I :** Put leading 0s to make both Num1 and Num2 to have same number of digits, say n

Num1 = 110010110
Num2 = 000111001

Step II : Find Two's complement of Num2 and name it TNum2

Num2 = 000111001
CNum2 = 111000110
TNum2 = CNum2 + 1
= 111000111

Step III : Add Num1 and Num2 and store in R

```
   11    11
  110010110
+ 111000111
1101011101
```

Step IV : The carry is 1. So, the answer is positive and the answer is 101011101.

Ans. 10. **(i) Decimal to Octal :**

- To convert an integer decimal number to Octal, divide the decimal number continuously by 8 till it becomes 0. The corresponding Octal number can be obtained by tracing the remainders in reverse order.
- To convert the fractional part, multiply it with 8. Keep aside the integer generated (between 0 to 7) and next fractional part is multiplied by 8. The process stops when the fractional part's result is 0 or the value becomes recurring.

(ii) Hexadecimal to decimal

- To convert an integer hexadecimal number to decimal, multiply the digits of the hexadecimal number by 16^n, where n begins with 0 for the digit in unit's place and increases by 1 each time for the next digit with higher place value. Finally, add all these products.
- The process of converting the fractional part of a hexadecimal number to decimal is by multiplying the digits that appear after the decimal point by 16^p, where p begins with –1 and goes on decreasing by 1.

SELF ASSESSMENT PAPER

UNIT-2 : Encoding

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. Binary equivalent of 11 is 1011
In 6 bits + 11 will be represent as 001011.

Ans. 2. 00010100.

Ans. 3. American Standard Code for Information Interchange.

2 Marks Questions

Ans. 4. **UTF-8 : (i)** Uses anywhere from 1 to 4 bytes per character depending on characters.
(ii) UTF-16 : Uses 2 bytes for most characters, while very unusual characters take 4.

Ans. 5. (i)
$$\begin{array}{rr} & 1101101 \\ \text{AND} & 1000110 \\ \hline & 1000100 \end{array}$$

(ii)
$$\begin{array}{rr} & 1000111 \\ \text{OR} & 1100011 \\ \hline & 1100111 \end{array}$$

Ans. 6. (i)
$$\begin{array}{rr} & 4.21\times10^4 \\ + & 3.22\times10^4 \\ \hline & 7.43\times10^4 \end{array}$$

(ii)
$$\begin{array}{rr} & 4.21\times10^4 \\ - & 3.22\times10^4 \\ \hline & 0.99\times10^4 \end{array}$$

3 Marks Questions

Ans. 7. Binary representation of 33 in 8 bits is 00100001
Let
N = 00100001
CN = 11011110 [CN is One' Complement]
TN = CN + 1 [TN is Two's Complement]
= 11011110 + 1
= 11011111
Therefore, binary signed bit representation of –33 is
11011111

Ans. 8.

(i)

T	01010100
E	01000101
R	01010010
M	01001101

(ii)

H	01001000
O	01001111
P	01010000
E	01000101

(iii)

1	00110001
9	00111001
8	00111001
7	00110111

5 Marks Questions

Ans. 9. The ASCII tables is divided into three different sections as :

(i) Non-printable : It represents the system codes between 0 and 31.

(ii) Lower ASCII : It represents the codes between 32 and 127. This table originates from the American system, which worked on 7-bit character tables.

(iii) Higher ASCII : It represents the codes between 128 and 255. Foreign letters are also placed in this section. This portion is programmable, characters which are based on language of operating system or programs that users are using.

Ans. 10. (i) Floating point addition : To add two floating point values, they have to be aligned so that they have same exponent. After addition, the sum may need to be normalized.

Example :

$$\begin{array}{rr} & 2.137 \times 10^3 \\ + & 1.420 \times 10^3 \\ \hline & 3.557 \times 10^3 \end{array}$$

(ii) Floating point subtraction : Subtracting floating point values also require re-alignment so that they have same exponent. After subtraction, the difference may need to be normalized.

Example :

$$\begin{array}{rr} & 2.137 \times 10^3 \\ - & 1.420 \times 10^3 \\ \hline & 0.717 \times 10^3 \end{array}$$

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SELF ASSESSMENT PAPER

UNIT-3 : Propositional Logic
UNIT-4 : Hardware Implementation

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. A compound proposition that is always true.

Ans. 2.

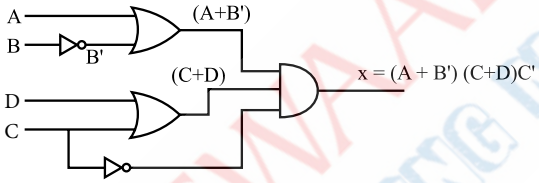
A	A′
0	1
1	0

Ans. 3. Sum (S) = A ⊕ B ⊕ C

Carry (C) = AB + BC + CA

2 Marks Questions

Ans. 4. The logic circuit for the given Boolean expression :



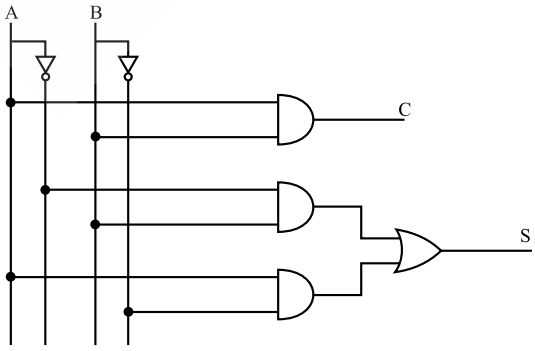
Ans. 5. AND gate connects two signals using the connective AND.

It implements the operation conjunction. It gives a True result only if both inputs are True.

Truth Table :

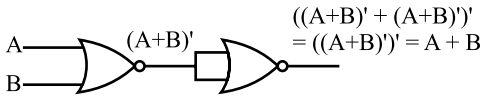
A	B	A.B
0	0	0
0	1	0
1	0	0
1	1	1

Ans. 6.

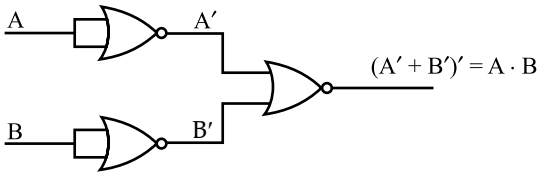


3 Marks Questions

Ans. 7. (i) OR using NOR



(ii) AND using NOR



(1/2 Marks for each part)

Ans. 8. **(i) Propositional :** It is a statement that has a value, which can be either true or false but can't anything else. The value of a propositional is called its Truth table.

(ii) Disjunction (v) : It is also known as OR and denoted with symbol (+). The result of disjunction is true if any of the propositions is true.

(iii) Conjunction (^) : It is also known as AND and denoted with symbol (.). The result of conjunction is true only when both the propositions are true.

5 Marks Questions

Ans. 9. WFF (Well Formed Formula) refers to a simple proposition and compound proposition. A WFF can be determined with the help of following properties :

(i) If p is a propositional variable, then it is a WFF.

(ii) If a is $\neg\alpha$ WFF, then a is WFF.

(iii) If a and are WFF, then
$(\alpha \vee \beta)$, $(\alpha \wedge \beta)$, $(\alpha \rightarrow \beta)$, $(\alpha \leftrightarrow \beta)$ are WFF.

(iv) A string of symbols is a WFF, if and only if it is obtained by many applications of rules (i) to (iii).

Ans. 10. A circuit that performs the addition of two bits is called a half adder.

A half adder circuit is a combinational arithmetic circuit that adds two bits and produces two bits, a Sum bit (S) and a Carry bit (C) as the output.

If A and B are the input bits, then the Sum bit (S) is the XOR of A and B and the Carry bit (C) is the AND of A and B.

Truth table of half adder

Input		Output	
A	B	S	C
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

$S = A'B + AB' = A \oplus B$

$C = A \cdot B$

SELF ASSESSMENT PAPER

UNIT-5 : Introduction to Object Oriented Programming

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. All related data and methods are closed within one boundary (a class).

Ans. 2. Two keywords are
package, static

Ans. 3. Java expression
$a = x*x + y*y^2$

2 Marks Questions

Ans. 4. (i) Java provides powerful error (exception) handing mechanisms.
(ii) Java programming language is secure.

Ans. 5. (i) double - primitive data type
(ii) interface - non-primitive data type

Ans. 6. Implicit conversion is automatic type conversion. This method is used when upcasting is required like : int to long.

3 Marks Questions

Ans. 7. (i) Where a Java program is compiled, the compiler creates a code called Java Byte code for the JVM.
(ii) For the different operating systems, the Java virtual Machine converts the Java Byte code to a machine executable code.
(iii) If the operating system is Windows, JVM creates a machine code that is executable in it.

Ans. 8. Java expression for given expression
double res = Math.sin (y) + Math.sqrt (a*a + b*b) + x;

5 Marks Questions

Ans. 9. **Variable :** It is a container that holds values that are used in a Java programming language. It can possess any combination of letter without space.
Each variable in Java has a specific type, which determines the size and layout of a variable's memory.
A declaration of a variable refers to the following :
(i) Specify the name of the variable
(ii) Specify the data type of the variable
(iii) Specify the scope of usage of the variable
Syntax : datatype variable-name;
e.g. int age;

Ans. 10. JVM (Java Virtual Machine) is a software that converts Java Byte Code to Machine Level Language. It works as a platform for a Java program and can be executed on any platform (Windows, Linux etc.)
JVM comes in between a compiled Java code and the computer system.
JVM is the main component of the Java architecture and is a part of the Java Runtime Environment (JRE). JVM combined with Java API makes the Java platform.
Most compilers provide code for a computer system but Java compiler produces code for JVM.
When a Java program is compiled, the compiler creates a code called Java Byte code for the JVM.

SELF ASSESSMENT PAPER

UNIT-6 : Java Statements and Scope
UNIT-7 : Exception Handling

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. while loop, for loop.

Ans. 2. while (condition)

```
{
   Block of statements
   increment/decrement
}
```

Ans. 3. A label is any valid Java variable name.

2 Marks Questions

Ans. 4.

```
int x = 3;
int i = 1;
while (i < 5)
{
   x = x* 2;
   System.out.println(x);
   i++;
}
```

Ans. 5. If break statement is not given, then all the statements that appear below the matching case, get executed, till a break is found. This leads to a logical error situation, which is called Fall through.

Ans. 6. For loop is also an entry control loop. It is a short method of looping which is commonly preferred by programmers. It tests the condition before entering the loop body. If the condition evaluates to true, the given statements are executed else the loop will not execute.

3 Marks Questions

Ans. 7. (i) wisdom
Knowledge
(ii) Acknowledgement
(iii) Choice is wrong

Ans. 8. In if-else if-else statement, a number of logical conditions are checked for executing various statements. It is based upon nested if and is often called the if-else-if ladder.

```
Syntax
        if (condition 1)
        {
                statement1;
        }
        else if (condition2)
        {
                statement 2;
        }
        else if (condition 3)
```

```
{
        statement 3;
}
else
{
        statement(s);
}
```

5 Marks Questions

Ans. 9.
```
import java.io.*;
public class Pattern
{
  public static void main (String args[]) throws IOException
  {
  InputStreamReader IR = new InputStreamReader (System.in);
  BufferedReader br=new BufferedReader (IR);
  String s = "HOPE";
  for (int i=1; i<=4; i++)
  {
    for(int j=1; j<=i; j++)
    {
      char res = s.charAt(j-1);
      System.Out.print (res + "\t");
    }
    System.out.println( );
  }
  }
}
```

Ans. 10.
```
public class Pattern
  {
    public static void main (String
      args[ ])
    {
      int term = 6;
      for (int i=1; i<=term; i++)
      {
        for (int j=term; j >= i; j --)
        {
          System.out.print ("*");
        }
        System.out.println ();
      }
     }
   }
```

SELF ASSESSMENT PAPER

UNIT-8 : Methods

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. Methods help in code reusability.

Ans. 2. A class may contain one or multiple function called member functions.

Ans. 3. Static variables and static methods are called the static members of a class.

2 Marks Questions

Ans. 4. Impure function changes the state of the object by modifying instance variables.
Example of impure function is set and random function.

Ans. 5. The parameters that are used in the super function, while calling the sub functions are called actual parameters.
Example :

```
int x = 2;
int y = 3;
sum (x, y); // actual parameters
```

Ans. 6. (i) Print the multiplication table of a number sent as an argument.
(ii) Return the sum of two arguments sent as arguments.

3 Marks Questions

Ans. 7.
- Constructor gets automatically executed when an object is created of that class.
- It is used to assign member data to their initial value, (null is general).
- It shares the same name as that of the class.

Ans. 8. **(i) Actual parameter :** The parameters that are used in the super function, while calling the sub functions are called actual parameter.
(ii) Formal parameter : The parameters that are used in the sub function are called formal parameter.
(iii) Pure functions are those functions which do not change the values of arguments sent to it.

5 Marks Questions

Ans. 9.

```
public int fib (int n)
{
  if (n < =1)
  {
    return n;
  }
  else
  {
    reutrn fib(n-1) + fib(n-2);
  }
}
```

Ans. 10.
```
int   perfectNo (int n)
{
    int sum=0;
    for (int j=1; j<n; j++)
    {
      if (n% j==0)
        sum + = j;
    }
    if (sum==n)
        return 1;
    else
        return 0;
    }
```

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SELF ASSESSMENT PAPER

UNIT-9 : Arrays
UNIT-10 : Array Applications
UNIT-11 : Strings

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. Keyword new is used to allocate memory.

Ans. 2. The cell numbers are continuous integers and hence can be generated by using a loop. It is called dynamic allocation.

Ans. 3. String concat (String s_2) concatenates the argument String s_2 behind the current string and returns the new string.

2 Marks Questions

Ans. 4. [69, 17, 38, 48, 4, 87] – Pass 1
[17, 38, 48, 4, 69, 87] – Pass 2
[17, 38, 4, 48, 69, 87] – Pass 3

Ans. 5. (i) *One dimensional array syntax*
Data_type array_name[ ] = new Data_type [size];
(ii) Two dimensional array
Data_type array_name [ ] [ ] = new Data_type [row_size] [column_size];

Ans. 6.

IndexOf()		last IndexOf()	
•	It returns the first index of character ch in the string.	•	It returns the last index of characters ch in the string.
•	**Syntax** int indexOf (char ch)	•	**Syntax** int lastIndexOf (char ch)

3 Marks Questions

Ans. 7.

	12	14	–54	24	70	33
Pass 1	14	12	–54	24	70	33
Pass 2	14	12	–54	24	70	33
Pass 3	24	14	12	–54	70	33

Ans. 8. (i) charAt(int p): It returns the character present at position p of the string.
(ii) to LowerCase(): It converts the current string to lower case and returns it.
(iii) trim () : It trims the spaces present before and after the 1st and last character of the current string and returns it.

5 Marks Questions

Ans. 9. Static void bubblesort (int [ ] arr)

```
{
   int n = arr. length;
   int temp = 0;
   for (int i = 0; i < n; i++)
   {
      for (int j = 1; j < (n – i); j++)
      {
         if (arr [j – 1] > arr [j])
         {
            temp = arr [j – 1];
            arr[j – 1] = arr [j];
            arr[j] = temp;
         }
      }
   }
}
```

Ans. 10. void words( )

```
{
  char c;
  int i, w = 1, v = 0, u = 0;
  for (i = 0, i < str. length(); i++)
  {
    c = str. char At(i);
    if (c== ' ')
        w++;
    else
    {
      if (c=='a'||c=='e'||(c=='i'|| c=='0'||(c=='u'||c=='A'|| c=='E'||c=='I'||
      c=='0'|| c=='u')v++;
      if(c >= 'A' && c<='z')
        u++;
    }}
  System.out.println("No of words" +w);
  System.out.println("No of uppercase" +u);
  System.out.println("No of words" +v);
}
```

SELF ASSESSMENT PAPER

UNIT-12 : Data File Handling

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. It returns true if the another line is available as its input.
Ans. 2. Java character streams are used to perform input and output for 16 bit unicode.
Ans. 3. System. out

2 Marks Questions

Ans. 4. (i) InputStream: It is used to read data form a source.
(ii) OutputStream: It is used to write data to a destination.
Ans. 5. (i) int nextInt()
(ii) long nextLong()
Ans. 6. Scanner class is a class which allows the user to read values of various types Scanner sc=new Scanner (System. in).

3 Marks Questions

Ans. 7. The advantages of data files are
(i) They store the data in text files in the computer memory.
(ii) They have a buge capacity of data storage.
(iii) They can be accessed even without the Java program.
Ans. 8. (i) FileWriter F = new Filewriter (filename);
(ii) FileReader F = new FileReader (filename);
(iii) FileObject. close();

5 Marks Questions

Ans. 9. Import java. io. *;

```
class copyfile
{
    public static void main String args[ ]                    throws IoException
    {
       FileInputStream Fin=new FileInput                Stream ("Original. txt");
       FileInputStream Fout=new FileInput               Stream ("Original. txt");
       int a;
       while ((a = Fin.read())!=-1)
       {
          fout.write(c);
          }
          Fout.clase();
       Fin .close( );
    }
}
```

Ans. 10. Import java. io . FileReader;

```
class Main
{
   public static void main (String [] args) {
   char[] array = new char [100];
   try
   {
   FileReader input = new FileReader                    ("Input.txt");
   input.read (array);
   System.out.printin ("Data in the file:");
   System.out.printin(array);
   input.close();
}
catch (Exception e)
{
     e. getStackTrace ( );
}
 }
}
```

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SELF ASSESSMENT PAPER

UNIT-13 : Recursion

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. The function call mechanism in Java supports this possibility, which is known as recursion.

Ans. 2. main() is the super function.

Ans. 3. Recursive procedure does not contain any valid test case in known as infinite recursion.

2 Marks Questions

Ans. 4.

```
First (argument list a)
{
     ....
     First (argument list b)
     ....
     ....
}
Here, First(...) makes a function call to itself.
```

Ans. 5. There are two types of recursion as

(i) Finite : Recursive procedure contains a valid test case.

(ii) Infinite : Recursive procedure does not coutain any valid test case.

Ans. 6. (i) A recursive function is a special kind of function that makes a call to itself.

(ii) The function call mechanism in Java supports this possibility, which is known as recursion.

3 Marks Questions

Ans. 7. (i) It makes a call to ilself with a change in the arguments

(ii) It terminates when it reaches its base case.

(iii) It does not use a variable to store the intermediate value instead uses the memory stack of the computer system.

Ans. 8. int FactorialRecur (int n)

```
    {
       if (n <=1)
       {
          return 1;
       }
       return (n* FactorialRecur (n - 1));
    }
```

5 Marks Questions

Ans. 9. The next 3 numbers of $(011)_2$ are

```
int GCD (int a, int b)
{
  if (a==b)
```

```
        {
            return b;
        }
        else if (a > b)
        {
            GCD (a - b, b);
        }
        else
        {
            GCD (a, b - a);
        }
    }
```

Ans. 10. public static boolean Palinolrome (string s)

```
    {
      if (s.length() = = 0 || s.length() = = 1)
      {
        return True;
      }
      if(s. charAt(0) == s.charAt ( )s.length()-1))
      {
        return Palindrome (s.substring                    (1, s.length() - 1));
      }
      return False;
  }
```

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SELF ASSESSMENT PAPER

UNIT-14 : Packages

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. Java.net certains classes for supporting networking operations.
Ans. 2. package package_name;
Ans. 3. Access modifiers are also knower as access specifiers.

2 Marks Questions

Ans. 4. The fields or methods that are declared as private are the most restrictive and cannot be used for other classes and interfaces.
Ans. 5. Java Development kit (JDK) is comprised of three basic components as
(i) Java compiler
(ii) Java virtual machine
(iii) Java Application Programming Interface
Ans. 6. (i) **java.io** contains classes for supporting input/output operations
(ii) **java.applet** contains classes for creating Applets.

3 Marks Questions

Ans. 7. (i) Static modifiers for creating the class member (methods and variables).
(ii) Final modifiers for finalizing the implementation of class members.
(iii) Abstract modifiers for creating abstract class and methods.
Ans. 8. Protected access specifier cannot be applied to class and interfaces. Methods, fields can be declared protected, however methods and fields in an interface cannot be declared protected. The protected access modifier is accessible within a package and outside the package but through inheritance only.

5 Marks Questions

Ans. 9. Java Development kit (JDK) is comprised of three basic components, as follows.
- Java compiler
- Java virtual machine (JVM)
- Java Application Interface (API)

Steps for creating user defined packages in Java
- Create a package with a class file
- Set the class path from the directory from which you would like to access it. It may be in a different drive and directory.
- Write a program and use the fill from the package.

Ans. 10. (i) **Default Access Specifier :** In Java, when no access modifier is used then it is called a default specifier. Any class, field, method or constructor that has not declared an access modifier is accessible only by the classes in the same package.
(ii) An API (Application Programming Interface) : In the context of Java, is a collection of prewritten packages, classes and interfaces with their respective methods, fields and coustructors.
Java API is a list of all classes that are a part of the JDK.

SELF ASSESSMENT PAPER

UNIT-15 : Trends in Computing

Timing : 1 hr **Maximum Marks : 25**

1 Mark Questions

Ans. 1. John Mccarthy.
Ans. 2. Virtual reality.
Ans. 3. GPL, BSD.

2 Marks Questions

Ans. 4. (i) Trick you into giving them information by asking you to uplate, validate or confirm your account.
(ii) Provides cyber criminals with your username and passwords so that they can access your accounts and steal your credit card numbers.

Ans. 5. **(i) Physical :** restriction on others to experience a person or situation through one or more of the human senses.
(ii) Informational : Restriction on searching for or revealing facts that or unknown or unknowable to others.

Ans. 6. Intellectual property rights provide legal protection and security to the creators of intellectual property. Intellectual properties are of immense help to the society for its overall improvement.

3 Marks Questions

Ans. 7. (i) A software license may allow a software to be used in only one machine.
(ii) A software license may allow a software to be used in a specific number of machines.
(iii) A software license may allow a software to be used in a given number of machines but at the some time only a single machine can work on it.

Ans. 8. **(i) Virus :** Malicious computer programs that are after sent as on email attachment or a download with the intent of infecting your computer.
(ii) Hacking : If is a term used to describe actions taken by source to gain unauthorized.
(iii) Phishing : It is used most often by cyber criminals because it is easy to execute and can produce the result they are looking for with very little effort.

5 Marks Questions

Ans. 9. Malware It is one of the most common ways to infiltrate or damage your computer.
Malware software that infects your computer, such as computer viruses, worms, Trojan horses, spyware and adware.

What it can do:

- Intimidate you with scare ware, which is usually a pop-up message that tells you, your computer has a security problem or other false information.
- Reformat the hard drive of your computer causing you to lose all your information.
- Alter or delete files
- Steal sensitive information
- Send emails on your behalf
- Take control of your computer and all the software running on it.

Ans. 10. Virtual Reality:

- Virtual Reality (VR) means experiencing things through computers that don't exist in the real world.

- It is a computer simulated reality in which a user can interact with replicated real or imaginary environments.
- The experience is totally immersive by the means of visual, auditory and haptic (tough) stimulation so, the constructed reality is almost indistinguishable from the real deal.

Augmented Reality.

- Augmented Reality (AR) is a technology that superimposes a computer generated image on the user's view of the real world, thus providing a merged view.
- Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it.

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