

Total No. of Printed Pages—12

X/22/CSc

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COMPUTER SCIENCE

(FOR CANDIDATES WITH INTERNAL ASSESSMENT)

Full Marks : 80

Pass Marks : 24

(FOR CANDIDATES WITHOUT INTERNAL ASSESSMENT)

Full Marks : 100

Pass Marks : 30

Time : 3 hours

(FOR ALL CATEGORIES OF CANDIDATES)

General Instructions :

- (i) The candidates are advised to attempt all questions accordingly.
- (ii) Marks allocated to every question are indicated against each.
- (iii) Sections A and B are to be answered by all candidates.
- (iv) Section C is to be answered by candidates without internal marks.

(2)

SECTION—A

(*Maximum Marks* : 30)

(Objective-type Questions)

1. Choose and write the correct answer for the following :
1×10=10

(a) Which of the following is purely a CUI based operating system?

(i) MS-Windows

(ii) MS-DOS

(iii) Linux

(iv) Mac OS

(b) Adobe Flash is an example of

(i) presentation software

(ii) DTP

(iii) compression utility

(iv) multimedia software

(c) The most popular protocol used for transferring electronic mail is

(i) HTTP

(ii) HTTPS

(iii) SMTP

(iv) FTP

(3)

- (d) Which of the following HTML tags occurs only once in the document?
- (i)
 - (ii) <BASEFONT>
 - (iii) <COMMENT>
 - (iv) <BIG>
- (e) Which of the following features of OOPs represents the essential characteristics of an object or class?
- (i) Data abstraction
 - (ii) Inheritance
 - (iii) Data encapsulation
 - (iv) Polymorphism
- (f) An error of indefinite looping in a program is a/an
- (i) syntax error
 - (ii) logical error
 - (iii) execution error
 - (iv) general error
- (g) _____ is used for creating dynamic Web pages in Java.
- (i) JDBC
 - (ii) JavaBean
 - (iii) J2EE
 - (iv) JSP

(4)

- (h) Every Java program must be enclosed in a/an
- (i) main()
 - (ii) object
 - (iii) class
 - (iv) parenthesis
- (i) Vienna is an example of a _____ virus.
- (i) direct action/access
 - (ii) file infector
 - (iii) macro-infector
 - (iv) boot sector
- (j) Which one of the following is not a malware?
- (i) Virus
 - (ii) Trojan horse
 - (iii) Worm
 - (iv) Operating system

(Short Answer-type Questions)

2. Answer any *three* questions in 2–3 sentences each : $2 \times 3 = 6$

- (a) Differentiate between program and software.
- (b) What are language translators?
- (c) Write the steps of conversion from binary to decimal.
- (d) What are antivirus programs? Name any two commonly used antivirus programs. $1 + 1 = 2$
- (e) Define the term 'defragment'. Which utility is used to defrag files? $1\frac{1}{2} + \frac{1}{2} = 2$

(5)

3. Answer any *three* questions in 2–3 sentences each : $2 \times 3 = 6$

- (a) What is a Web browser? Name any two popular Web browsers.
- (b) What is the use of comment tag?
- (c) What is the use of Internet in the field of education?
- (d) Name the tags and attributes for the following :
 - (i) To display visited hyperlinks in yellow colour
 - (ii) To flash the text “World Wide Web” when user hovers the mouse pointer on the text WWW
- (e) Differentiate between Internet and Intranet.

4. Answer any *two* questions in 2–3 sentences each : $2 \times 2 = 4$

- (a) Evaluate and write the output for the following C++ codes :

```
int a, b=4, c=2;
```

 - (i) `a!=(b<=c);`
`cout<<a;`
 - (ii) `for(a=--b; a>c; a--){`
`cout<<a;`
`}`
- (b) What do you mean by an identifier?
- (c) Explain GOTO statement.
- (d) Define debugging.

5. Answer any *two* questions in 2–3 sentences each : $2 \times 2 = 4$

- (a) What are the primary goals set at the time of creation of Java programming language?

(6)

- (b) Explain main() function of Java.
- (c) Explain JVM.
- (d) Write the steps to evaluate the following expression :
 $y = a * b \% 2 / (c + d);$

SECTION—B

(Maximum Marks : 50)

(Descriptive-type Questions)

[Computer Fundamentals]

6. *Either*

- (a) Explain any four different types of operating systems based on their functions. 1½×4=6

Or

- (b) Write the commands in operating system to perform the following operations : 1½×4=6

(i) Display files stored in the directory **MYDIR** and all its subdirectories.

(in DOS)

(ii) Create a new text file **computer.txt** using text editor command.

(in DOS)

(iii) Delete an empty directory **FOLDER**.

(in Linux)

(iv) List all the hidden files on the screen.

(in Linux)

(7)

7. *Either*

- (a) Add the following decimal numbers after converting them into their equivalent binary numbers. Also write the ASCII equivalent character of the result obtained : 6

$(13)_{10}, (35)_{10}, (52)_{10}$

Or

- (b) What are logic gates? Define NOR and NAND gate. Write their truth tables using two inputs. $2+2+2=6$

[**Internet Basics**]

8. *Either*

- (a) What is modem? Explain the functions of a modem. Explain its types. $1+2+2=5$

Or

- (b) Explain how Web address is different from URL with examples. 5

9. *Either*

- (a) Debug the following HTML codes which are written in bold letters : $1 \times 5 = 5$

(i) `<MARQUEE SCROLL=6> a moving text
</MARQUEE>`

(ii) `<P ALIGN="MIDDLE">Board Examination</P>`

(iii) `<HR LENGTH="70%">`

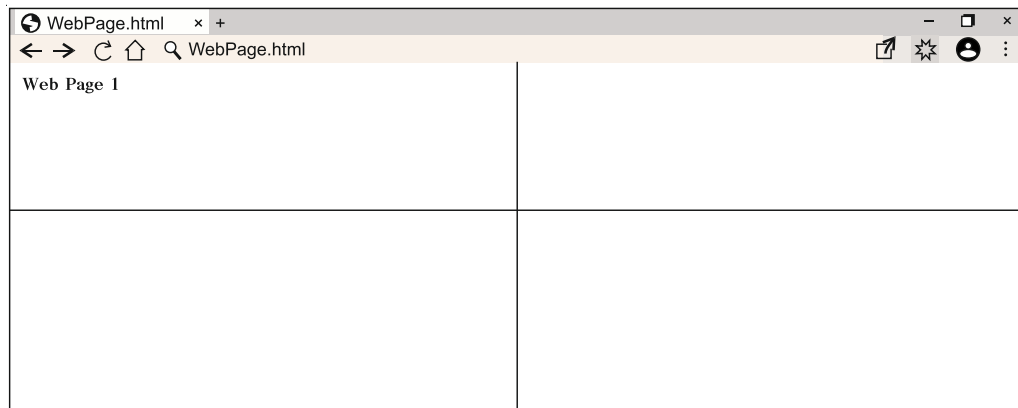
(8)

(iv) `<OL TYPE="A" START="C">`

(v) Let us show `
` how to give line breaks
`</BR>` in HTML.

Or

(b) Write an HTML code to split the Web browser into four rectangular windows using frames where an individual HTML document can be loaded and write the HTML code only for the first frame to display WebPage 1 : 3+2=5



[Object-Oriented Programming I—C++]

10.

Either

(a) Write a program in C++ to determine the nature of roots of the quadratic equation $ax^2 + bx + c = 0$ for the given inputs a , b and c . 6

Or

(b) Write a program in C++ to display the sum of the digits of any integer number given by the user.
[Example : if input = 3524 then output = $3+5+2+4=14$] 6

(9)

11.

Either

(a) Write the output generated by the following program in C++ :

6

```
#include<iostream.h>
using namespace std;
int main()
{
    int a=0;
    while(a<10)
    {
        if(a==5)
            break;
        cout<<a<<'\n';
        a++;
    }
    a=0;
    do
    {
        if(a==5)
            break;
        cout<<a<<'\n';
        a++;
    }while(a<0);
    return 0;
}
```

Or

(b) Explain the three logical operators with their symbols, purposes and examples for each.

6

(10)

[Object-Oriented Programming II—Java]

12.

Either

- (a) Write a program in Java to display whether a given number is positive, negative or zero. 5

Or

- (b) Write a program in Java to accept marks in three subjects out of 100 marks each and print out total and percentage. 5

13.

Either

- (a) Write the output generated by the following program in Java : 5

```
public class Output
{
    public static void main (String[]args)
    {
        char chr1='A', chr2='z';
        int i;
        System.out.println();
        for(i=1; i<=5; i++)
        {
            System.out.println(chr1+""+chr2+",");
            chr1++;
            chr2--;
        }
    }
}
```

(11)

Or

- (b) Debug the following Java program which is in bold letters to swap value of two integer numbers without using the third variable :

5

```
import java.*;  
public class Swap  
{  
    Public static void main( )  
    {  
        int a, b;  
        Scanner sc = new Scanner(System.out);  
        System.out.println('a=?');  
        a = sc.nextInt();  
        System.out.println('b=?');  
        b = sc.nextInt();  
        System.out.println("Before swapping :  
                            "+"a="+a+"b="+b);  
  
        a = a+b;  
        b = b-a;  
        a = a-b;  
        System.out.println("After swapping :  
                            "+"a="+b+"b="+a);  
    }  
}
```

[**Societal Impacts of IT-II**]

14.

Either

- (a) Define the following terms : 2×3=6
- (i) Cybercrimes
 - (ii) Encryption
 - (iii) Data Backup

Or

- (b) Write down any six different ways to protect your computer system and data from cybercrimes. 6

(12)

SECTION—C

[For Candidates without Internal Assessment]

(Maximum Marks : 20)

15. Answer any *five* from the following questions : $2 \times 5 = 10$

- (a) Convert $(10110)_2 = (?)_{10}$.
- (b) What are the different types of wired and wireless connection?
- (c) What are the arithmetic operators? Write their purposes.
- (d) Write the complete syntax of *if* structure.
- (e) What type of security system should an e-commerce have?
- (f) What do you mean by variable?
- (g) Define computer network.

16. Answer any *two* from the following questions : $5 \times 2 = 10$

- (a) Differentiate between CUI and GUI based operating systems with one example for each.
- (b) Explain the structure of an HTML document.
- (c) Explain built-in data types available in C++.
- (d) Explain the different ways through which a virus can spread.
