Version No.			

ROLL NUMBER						

Answer Sheet No._____

Sign. of Candidate _____

Sign. of Invigilator _____

COMPUTER SCIENCE HSSC–II

SECTION – A (Marks 13)

Time allowed: 20 Minutes

Q.1 Fill the relevant bubble for each part on bubble sheet. Each part carries one mark.

1. Which one of the following states transitions is valid?
   A. Ready to Blocked B. Blocked to Running
   C. Running to Ready D. Terminated to Running
2. In which SDLC phase, the Project team must decide whether the project should go ahead with available resources or not:
   A. Coding phase B. Maintenance phase
   C. Analysis phase D. Planning phase
3. Which one of the following DOS commands is used to display content of the directory?
   A. DIR B. CD
   C. MD D. VIEW
4. Identify the type of system conversion in which the old system is directly replaced by the new system:
   A. Pilot B. Parallel
   C. Direct D. Phased
5. If a = 10; b = a++; what will be the value stored in b?
   A. 1 B. 9
   C. 10 D. 11
6. Which one of the following statements transfers the control to the start of loop body?
   A. Switch B. Continue
   C. Break D. Exit
7. If *x* = 5, which one of the following accesses the seventh element stored in an array A?
   A. A[x++] B. A[++x]
   C. A[7] D. A[x]

8. The phenomenon of having two or more functions in a program with the same name but different numbers and types of parameters is called:

A. Inline function
B. Nested function
C. Function overloading
D. Recursive function

9. The dereference operator is denoted by:

A. *
B. &
C. **
D. &&

10. Which one of the following indicates the address of a variable "temp" of type float?

A. float temp&
B. &temp
C. &float temp
D. temp&

11. Which one of the following is the default access specifier of C++ class?

A. Private
B. Public
C. Protected
D. Default

12. Identify the header file needed to read, write, and manipulate the file:

A. ifstream
B. ofstream
C. istream
D. fstream

13. Which one of the following functions is used to write a single character to a file?

A. get( )
B. gets( )
C. put( )
D. write( )

Federal Board HSSC-II Examination
Computer Science Model Question Paper(Curriculum 2009)

Time allowed: 2.40 hours Total Marks: 62

Note: Answer all parts from Section 'B' and all questions from Section 'C' on the **E-sheet**. Write your answers on the allotted/given spaces.

SECTION – B (Marks 42)

Q.2 Attempt all parts from the following. All parts carry equal marks. (14×3=42)

i. Why is memory management required? Give any three reasons. (3)

OR

Write down any three differences between process and thread.

ii. Write down the reasons of the following invalid variable names: (3)

a. 3a b. S$ c. long

OR

Differentiate between unary and binary operators with one example each.

iii. Write down any three differences between text and binary files. (3)

OR

How is Constructor different from Destructor? List down any three differences.

iv. Write down any three responsibilities of System analyst. (3)

OR

Write down any three objectives of SDLC.

v. What will be displayed after executing the following statements? (3)

```
int x = 3, y = 17;
cout << x / y << "\t" <<  y / x <<  "\t" << x % y;
```

OR

Write down the output of the following statements:

a. A = (x > 0) && (y < 10) where x = 5, y = 15

b. S = 13 + 21 % 4

c. m *= 2; where m = 12

vi. Write down the purpose and syntax of break statement. (1.5+1.5)

OR

Write down the purpose and syntax of exit() function.

vii. Why is it important to write Comments in a program? Also differentiate its two types.

OR (1+2)

What is the difference between constant and variable? Give examples also.

viii. Write down the output of the following program segment: (3)

```
char c = 'A';
do
```

```
{
    cout << c << ”\t”;
    c = c + 2;
}
while (c <= ‘K’ );
```

OR

Write down the output of the following program segment:

```
int values [ ] = {4, 17, 20, 9, 23};
cout << values [2] << "\n";

cout << ++values [0] <<"\n";
cout << values [1]++ <<"\n";
```

ix. Rewrite the following statement using **if-else** statement: (3)

```
cout << ( ( (num % 2) = = 0) ? "Even \ n" : "Odd \ n");
```

OR

Convert the following while loop to a **for** loop such that the output remains same.

```
int i = 20;
while (i > 0)
{
    cout << i << “\t”;
    i = i - 2;
}
```

x. What is the difference between array size and index? Illustrate with example. (1+2)

OR

Differentiate between string and array with one example of each.

xi. Compare local and static variables in terms of scope, lifetime, and storage duration. (3)

OR

Write down any three differences between actual and formal parameters.

xii. Rewrite the program segment after removing errors: (3)

```
int a{10}, i;
cout >> ” enter ten numbers ;
  for (i = 0; i < 10; i--)
       cin << a{i};
```

OR

Consider the array definition: float table[5][5]; (1+2)

a. How many elements does an array have?
b. Write statement that assigns 36.5 to the first element of array.

xiii. What is reference operator? Give example. (2+1)

OR

Write down the purpose of sizeof() function with example. (2+1)

xiv. Define a class **Student** that contains public data members including function **get**().

OR (3)

Write a C++ program that reads base and height of a triangle and displays its area by using formula: area = ½ b h

SECTION – C (Marks 20)

Note: Attempt all questions. Marks of each question are given within brackets. (4×5=20)

Q.3 Write a C++ program that displays the following menu: (5)

Geometry Calculator

1. Display Area of a Circle
2. Display Area of a Rectangle
Enter your **choice** (1-3):

- If user enters **1**, the program should ask for the radius of the circle and then displayits area. Use formula: area = πr^2.
- If user enters **2**, the program should ask for the length and width of the rectangleand then displays its area, use formula: area = length x width.
- Display an **error message** if the user enters a number outside the range of 1 - 3.

OR

Write a C++ code that prints sum of the following series: $1^2 + 3^2 + 5^2 + 7^2 + \ldots\ldots + 99^2$ (5)

Q.4 What is the importance of SDLC? Explain in detail the Feasibility and Testing phases. (1+2+2)

OR

Explain the Batch processing and Real-Time operating systems with one example of each. (2.5+2.5)

Q.5 Explain the concept of Polymorphism and Inheritance with one example of each from daily life. (2.5+2.5)

OR

Consider the following statements and complete the following table: (5)

Line No.	Statement	Purpose
1	fstream datafile;	
2	datafile.open("datafile.txt" , ios::in);	
3	if (! datafile)	
4	datafile >> ch;	
5	datafile.close( );	

Q.6 Write a program that prints product of three numbers by using default arguments in function. (5)

OR

Write a C++ code that defines a function named **Celsius**, that takes Celsius temperature as an argument, and returns its equivalent temperature in Fahrenheit. (Use formula: F = 9/5 (C + 32) (5)

Federal Board HSSC-II Examination

Computer Science Model Question Paper

(Curriculum 2009)

Alignment of Questions with Curriculum Student Learning Outcomes

Sr No	Section: Q. No. (Part no.)	Contents and Scope	Student Learning Outcomes *	Cognitive Level **	Difficulty level ***	Allocated Marks in Model Paper
1	A: 1(i)	1.3 Process Management	Describe the new, running, waiting/blocked, ready and terminated states of a process	U	M	1
2	A:1(ii)	2.1 System Development Life Cycle	iii) Explain the following Analysis	K	M	1
3	A: 1(iii)	1.1 Introduction to Operating System	Describe commonly-used operating systems(DOS, Windows, Unix, Macintosh)	K	E	1
4	A: 1(iv)	2.1 System Development Life Cycle	iii) Explain the following Deployment/Implementation	K	M	1
5	A: 1(v)	3.4 Operators in C++	Increment and decrement operators (++, --) - Prefix – Postfix	U	M	1
6	A: 1(vi)	4.1 Decisions	iii) Use break statement and exit function	K	M	1
7	A: 1(vii)	5.1 Introduction	v) Explain how to access and write at an index in an array	U	D	1
8	A: 1(viii)	6.3 Function overloading	Understand the use of function overloading with: • Number of arguments • Data types of arguments • Return types	K	M	1
9	A: 1(ix)	7.1 Pointers	Know the use of dereference operator (*)	K	M	1
10	A: 1(x)	7.1 Pointers	v) Declare variables of pointer types	U	D	1
11	A: 1(xi)	8.1 Classes	iii) Understand and access specifier: • Private • Public	K	M	1
12	A: 1(xii)	9.1 File Handling	v) Use the following streams • String	K	M	1
13	A: 1(xiii)	9.1 File Handling	v) Use the following streams • Single character	K	E	1
14	B: 2(i)	1.2 Operating System Functions 1.3 Process Management	Describe the following main functions of operating system: • Memory Management OR Differentiate between: • Thread and process	U	E	3
15	B: 2(ii)	3.2 C++ Constants and Variables 3.4 Operators in C++	ii) Explain the rules for specifying variable names OR Identify unary, binary and ternary operators	U	M	3

16	B: 2(iii)	9.1 File Handling 8.1 Classes	i) Know the binary and text file OR v) Define constructor and destructor	U	M	3
17	B: 2(iv)	2.1 System Development Life Cycle	vi) Explain the role of following in the system development life cycle • System Analyst OR Describe objectives of SDLC	K	E	3
18	B: 2(v)	3.2 C++ Constants and Variables 3.4 Operators in C++	vi) Use type casting OR iv) Define and explain the order of precedence of operators.	U	M	3
19	B: 2(vi)	4.1 Decisions	iii) Use break statement OR iii) Use exit function	K	M	3
20	B: 2(vii)	3.1 Introduction 3.2 C++ Constants and Variables	v) Explain the purpose of comments and their syntax OR Explain the difference between constant and variable	U	E	3
21	B: 2(viii)	4.2 Loops 5.1 Introduction	i) Explain the use of the following looping structures: • do-while OR v) Explain how to define and initialize an array of different sizes and data types v) Explain how to access and write at an index in an array	U	D	3
22	B: 2(ix)	4.1 Decisions 4.2 Loops	i) Explain the use of the following decision statements: • If-else OR Explain the use of the following looping structures: • For	A	M	3
23	B: 2(x)	5.1 Introduction 5.2 Strings	iii) Explain the following terms related to arrays • Size of array • Index OR Explain the concept of an array Explain what are strings.	U	M	3
24	B: 2(xi)	6.1 Functions	v) Explain the difference between local, global, and static variables OR vi) Explain the difference between formal and actual parameters	U	D	3
25	B: 2(xii)	5.1 Introduction 5.2 Two dimensional Arrays	vi) Explain how to traverse an array using all loop structures OR iii) Explain how to access and write at an index in a two-dimensional array	U	M	3
26	B: 2(xiii)	7.1 Pointers 5.1 Introduction	iii) Know the use of reference operator (&) OR vii) Use the size of ( ) function to find the size of an array	K	M	3

27	B: 2(xiv)	8.1 Classes 3.2 C++ Constants and Variables	iii) Understand and access specifier: • Private • Public OR vi) Use type casting	A	M	3
28	C: 3	4.1 Decisions 4.2 Loops	i) Explain the use of the following decision statements: • If • If-else • Else-if • Switch-default OR i) Explain the use of the following looping structures: • For • While • Do-while	A	E	5
29	C: 4	2.1 System Development Life Cycle 1.1 Introduction to Operating System	ii) Explain System Development Life Cycle (SDLC) and its importance v) Explain the following: • Feasibility Testing OR iii) Explain the following types of operating system: • Batch Operating System • Real-Time Operating System	K	M	5
30	C: 5	8.1 Classes 9.1 File Handling	vii) Understand the concept of following only with daily life examples: • Inheritance • Polymorphism OR v) Use the following streams • Single character • String	U	M	5
31	C: 6	6.2 Passing arguments and returning values	ii) Use default argument OR i) Pass the arguments: • Constants • By value • By reference	A	M	5

*** Student Learning Outcomes**
National Curriculum for Computer Sciences Grades IX-XII, 2009
(Page no. 37-46)

****Cognitive Level**
K: Knowledge
U: Understanding
A: Application

*****Difficulty Level**
E: Easy
M: Moderate
D: Difficult

ASSESSMENT GRID FOR COMPUTER SCIENCE HSSC-II MODEL PAPER 2023

Analysis of questions of Syllabus (content) and Assessment Objectives

Assessment Objectives		Unit 1: Operating System **10%**	Unit 2: System Development Life Cycle **10%**	Unit 3: Object Oriented Programming Using C++ **10%**	Unit 4: Control Structure **15%**	Unit 5: Arrays and Strings **15%**	Unit 6: Functions **15%**	Unit 7: Pointers **5%**	Unit 8: Objects and Classes **10%**	Unit 9: File Handling **10%**	Marks	Total marks (111)	Total % Covered **100%**
Knowledge based	Section - A	1-iii-(01)	1-ii-(01) 1-iv-(01)		1-vi-(01)		1-viii-(01)	1-ix-(01)	1-xi-(01)	1-xii-(01) 1-xiii-(01)	**9**	**37**	**27**
	Section - B		2-iv-(03) 2-iv-(03)		2-vi-(03) 2-vi-(03)	2-xiii-(03)		2-xiii-(03)			**18**		
	Section - C	4(05)	4(05)								**10**		
Understanding based	Section - A	1-i-(01)		1-v-(01)		1-vii-(01)		1-x-(01)			**4**	**68**	**49.6**
	Section - B	2-i-(03) 2-i-(03)		2-ii-(03) 2-ii-(03) 2-xv-(03) 2-xv-(03) 2-vii-(03) 2-vii-(03)	2-viii-(03)	2-viii-(03) 2-x-(03) 2-x-(03) 2-xii-(03) 2-xii-(03)	2-xi-(03) 2-xi-(03)		2-iii-(03)	2-iii-(03)	**54**		
	Section - C								5(05)	5(05)	**10**		
Application based	Section - A										**0**	**32**	**23.4**
	Section - B			2-xiv-(03)	2-ix-(03) 2-ix-(03)				2-xiv-(03)		**12**		
	Section - C				3(05) 3(05)		6(05) 6(05)				**20**		
Total marks		**13**	**13**	**22**	**26**	**19**	**17**	**5**	**12**	**10**	**137**		**100**
Percentage		**9**	**9**	**16**	**19**	**13.9**	**12.4**	**3.6**	**8.7**	**7.2**	**100**		

KEY: 1-i-(01) : Question No - Part No - (Allocated Marks)