ROLL NUMBER

Answer Sheet No. _____

Sign. of Candidate _____

Sign. of Invigilator _____

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. **Do not use lead pencil.**

COMPUTER SCIENCE
HSSC–II
SECTION – A (Marks 15)
Time allowed: 20 Minutes

حصہ اول لازمی ہے۔ اس کے جوابات اسی صفحہ پر دے کر ناظم مرکز کے حوالے کریں۔ کاٹ کر دوبارہ لکھنے کی اجازت نہیں ہے۔ لیڈ پنسل کا استعمال ممنوع ہے۔

Fill the relevant bubble against each question:

ہر سوال کے سامنے دیے گئے درست دائرہ کو پر کریں۔

#	Question	A	B	C	D
1.	The && and || operators:	○ Compare two numeric values	○ Combine two numeric values	○ Compare two Boolean values	○ Combine two Boolean values
2.	Which concept allows you to reuse the written code in C++?	○ Inheritance	○ Polymorphism	○ Abstraction	○ Encapsulation
3.	Pick the **incorrect** statement about inline functions in C++?	○ Saves overhead of a return call from a function	○ They are generally very large and complicated functions	○ These functions are inserted/substituted at the point of call	○ They reduce function call overheads
4.	What will be the output of the following C++ code? `#include<iostream.h>` `using namespace std;` `int main ()` `{` `int a = 5` `int b = 4;` `cout<<sizeof(a);` `cout<<a+b;` `return 0;` `}`	○ 46	○ 47	○ 48	○ 49
5.	If i, j are integer type and k is long type, k+j would represent which type of value:	○ Integer	○ Float	○ Long	○ Double
6.	Which of the following **correctly** declares an array in C++?	○ array {10};	○ array array [10];	○ int array;	○ int array[10];
7.	Which operating system allows execution of application software on different computers in a network?	○ Parallel processing operating system	○ Multi-tasking operating system	○ Distributed operating system	○ Multi-processor operating system
8.	Which method of implementing from an old system to a new system involves a gradual introduction of the new system?	○ Step-by-step implementation	○ Phased implementation	○ Parallel implementation	○ Pilot implementation

9.	Which of the following creates user groups and assigns privileges to them?	○ Process management	○ I/O management	○ File management	○ Network management
10.	Which is **correct** syntax?	○ f:open("x.txt",ios::out);	○ f.open("x.txt",ios::out);	○ f::open("x.txt",ios::out);	○ f.open("x.txt",ios:out);
11.	The expression *test can be said to:	○ Be a pointer to test	○ Refer to the contents of test	○ Dereference test	○ Refer to the value of the variable pointed to by the test
12.	What will happen in the following C++ code? int a = 100, b=200; int*p=&a,*q=&b; p=q;	○ b is assigned to a	○ p now points to b	○ a is assigned to b	○ q now points to a
13.	What should be done to correct the following 'for loop' statement? for (int k=2, k<=12, k++)	○ The increment should always be ++k	○ The variable must always be the letter i when using a for loop	○ There should be a semicolon at the end of the statement	○ The commas should be semicolons
14.	A static local variable is used to:	○ Make a variable visible to several functions	○ Make a variable visible to only one function	○ Conserve memory when a function is not executing	○ Retain a value when a function is not executing
15.	Which of the following returns **FALSE** if X=2 and Y=3?	○ if(X==Y)||(Y>X)	○ If(X==2)&&(Y>2)	○ If(X<Y)&&(X>2)	○ if(!(Y>3))

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COMPUTER SCIENCE HSSC–II

36

Time allowed: 2:40 Hours   **Total Marks Sections B and C: 60**

NOTE: Answer any twelve parts from Section 'B' and any three questions from Section 'C'. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly. Statistical table will be provided on demand.

SECTION – B (Marks 36)

Q. 2 Attempt any TWELVE parts. All parts carry equal marks.   **(12 x 3 = 36)**

(i)   Differentiate between Multiprogramming and time-sharing operating system.

(ii)   Write a C++ code to copy the contents of ABC.txt to XYZ.txt.

(iii)   What is a constructor? Also write the rules/features for naming constructor.

(iv)   What is access specifier? Also enlist different types of access specifier used in a class.

(v)   What is the purpose of requirement engineering? Differentiate between the types of requirements gathering.

(vi)   What is Ternary operator? Write its generalized syntax with an example.

(vii)   What will be the output of the following program?

```
void main () {
int a = 15, b;
b = a%9;        a = ++a-a(--b);
cout<<"a="<<a<<"b<<b<<endl;
cout<<"a now ="<<a++<<"b="<<b++<<endl;
cout<<"value of a="<<++a<<"value of b="<<b<<endl;  }
```

(viii)   Write the purpose and example of following escape sequence: \r, \b, \a.

(ix)   Write an expression to test each of the following relationships: (any three)

    a.   **age** is from 18 to 25

    b.   **temperature** is less than 40.0 and greater than 25.0

    c.   **year** is divisible by 4 (Hint: use%)

    d.   **speed** is not greater than 80

    e.   **y** is greater than x and less than z

    f.   **w** is either equal to 6 or not greater than 3

(x)   Write a C++ code that:

    a.   insert strings of S1 and S2 in S3 by strcat() function and displays S3

    b.   displays the comparison result of S1 and S2

    c.   displays the lengths of S3

(xi)   Write a code to find the sum of all elements in a matrix of 4x4 in C++.

(xii)   What is an Array? Write syntax of the declaration and initialization of two-dimensional array with example.

(xiii)   Briefly describe the features of function overloading.

(xiv)   A program uses a function named **convert()** in addition to its main function. The function **main()** declares the variable **x** within its body and the function **convert()** declares two variables **y** and **z** within its body, **z** is made **static**. A fourth variable **m** is declared ahead (i.e. at top) of both the functions. State the visibility and lifetime of each of these variables.

(xv)   What are the benefits of arrays? Differentiate between one and two-dimensional arrays.

(xvi)   What is a pointer variable? Differentiate between reference operator (&) and dereference operator (*).

Note: **Attempt any THREE questions. All questions carry equal marks.** **(3 x 8 = 24)**

Q. 3 **a.** Describe any three of the five states of a process with labeled diagram. **(04)**

b. Differentiate between following deployment methods: (2-pionts each) **(04)**

    (i)   Direct vs Parallel

    (ii)   Phased vs Pilot

Q. 4 Write a program: **(08)**

    That takes a number from user and finds whether this number is prime or otherwise

    If it is prime it takes value of its exponent from user and prints its power

    If not prime then prints the factorial of the given number

Q. 5 Write a C++ program to overload area() function to calculate area of shapes like triangle, square, circle, rectangle and test it by taking values from user. **(08)**

    *Hint

    (i)   area of a circle is $A = \pi r^2$

    (ii)   area of a triangle $A = \dfrac{1}{2}bh$

    (iii)   area of square = side^2

    (iv)   area of rectangle = length*breath

Q. 6 **a.** Describe the terms:

    (i)   Inheritance

    (ii)   Polymorphism

    Each with an example from our daily life. **(04)**

b. Explain the steps involved in reading and writing to a file in C++ program. **(04)**