Version No.			

ROLL NUMBER						

Answer Sheet No._____

Sign. of Candidate _____

Sign. of Invigilator _____

COMPUTER SCIENCE SSC–II (2nd Set Solution)

SECTION – A (Marks 12)

Time allowed: 15 Minutes

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.**

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

(1) Which symbol is used to obtain the total marks from the values given by users, in the flow chart development?

A.	Rectangle	●	B.	Parallelogram	○
C.	Diamond	○	D.	Oval	○

(2) Which one of the following problem-solving stage refers to dividing the solution into steps and arranging in order to solve the problem?

A.	Planning	●	B.	Analyzing	○
C.	Defining	○	D.	Selecting	○

(3) Which of the software examines the values stored in variables and help in finding and removing the errors?

A.	Loader	○	B.	Linker	○
C.	Editor	○	D.	Debugger	●

(4) What is the range of numbers that can be stored in a variable of type float?

A	10^{-38} - 10^{38}	●	B.	10^{-308} - 10^{308}	○
C.	10^{38} – 10^{38}	○	D.	10^{-38} - 10^{32}	○

(5) Which symbol with the variable, refers to the memory location in scanf() function:

A.	#	○	B.	$	○
C.	%	○	D.	&	●

(6) What is the value of **"z"** after evaluating the given expressionwhere a = 5, b = 3?
z = b / 2 + b * 4 / b && b < a + a / 3

A.	5	○	B.	0	○
C.	1	●	D.	6	○

(7) What is the value of "z" after evaluating the given expressionwhere x=10, y=3?
z = 4*++x ||--y<x%2&&x+y

A.	41	○	B.	0	○
C.	1	●	D.	40	○

(8) What is the output of the following codes where a=1 and b= 5?

```
if (a-b<6)
        printf("%d", a);
        else
        printf("%d", b);
printf("%d", a+b);
```

A. 1 ○ B. 5 ○
C. 15 ○ D. 16 ●

(9) Which one of the following is a valid statement for "For loop"?

A. for(;;) ○ B. for(int I =1; ;) ○
C. for(; ;k++) ○ D. All of these ●

(10) Which logic gate is represented by the function = $(\overline{xy})$?

A. NAND ● B. NOR ○
C. Exclusive-OR ○ D. Exclusive-NOR ○

(11) A computer that makes the web pages available through the internet is called:

A. website ○ B. web-server ●
C. web-browser ○ D. web-link ○

(12) Which part of the web address tell the server type of file is being requested?

A. www ○ B. http:// ●
C. .html ○ D. URL ○

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

Time allowed: 2.45 hours Total Marks: 43

Note: Answer any nine parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book. Write your answers neatly and legibly.

SECTION – B (Marks 27)

Q.2 Attempt any **NINE** parts from the following. All parts carry equal marks. $(9 \times 3 = 27)$

i. What are the features to select the best solution of a problem?(1+1+1)

Ans. The selection of final solution of a problem should be based on the following criteria.
Speed: The selected solution of the problem should be efficient. In other words, it means when the solution is implemented in a programming language, the program should run fast.
Cost: The selected solution of the problem should provide a cost-effective way of implementation.
Complexity: The selected solution of the problem should not be complicated. It should contain minimum number of instructions/simple steps.

ii. Write an algorithm to find the sum, product and average of five given numbers? (1+1+1)

Ans. Algorithm:
Start:
Input: five numbers
Step 1 : input a,b,c,d,e
Step 2: sum=0,average=0 , product=1
Step 3: sum = a+b+c+d+e
Step 4: average = sum /5
Step 5: product= a*b*c*d*e

Output: the sum, product and average

Step 6: print sum.
Step 7: print product.
Step 8: print average.
Stop:

iii. Briefly describe the three fundamental element of structured programming in C language? (1+1+1)

Ans. Structured languages consist of three fundamental elements, which are sequence, selection and repetition.
Sequence: It means, writing program statements in a logical sequence. Each step in the sequence must logically progress to the next without producing any undesirable effects.
Selection: It allows the selection of any number of statements based on the result of evaluation of a condition which may be true or false. Examples of statements that implement selection in programming are if, else-if, switch, etc.

Repetition (loop): It means executing one or more statements a number of times until a condition is satisfied. Repetition is implemented in programs using statements, such as for and while loops.

iv. What happens if header-files were not used in C program? List at-least two header-files with their purpose (1+2)

Ans. If we are not including header file than we will not be able to use functions like printf() or scanf(). These functions are premade in stdio.h

stdio.h	Mainly used to perform input and output operations like printf(),scanf()
string.h	Mainly used to perform string handling operations like strlen(), strcmp() etc.
conio.h	With this header file, you can execute console input and output operations.
math.h	Mainly used to perform mathematical operations like sqrt(),pow() etc.

v. Compare printf() and puts() function with at-least one example. (3)

Ans.

printf()	**puts()**
It is used to display all types of data and messages.	It is used to display only string data and messages.
It requires a format specifier to display formatted data.	It does not require a format specifier to display string.
It can display multiple data at a time by multiple format specifiers in one printf( ).	It is used to display only one string at a time.
Syntax: printf("list of format specifier or message", list of variables);	Syntax: puts(variable);
Example: intx,y; printf ("%d%d",x,y);	Example: char ch[]="Hello"; puts(ch);

vi. Write at-least three differences between format specifiers and escape sequence characters. (3)

Ans.

Escape sequences	**Format specifier**
In C language Escape sequences are mostly used in printf() function to take the control to specified point.	In C language format specifiers are used in printf() and scanf() functions to specify the type of variable the

Escape sequences	Format specifier
Escape sequences are not mandatory part of printf() function. Common Escape sequences are: \n New line \t Horizontal tab space \r Carriage return \b Backspace \f Form feed \a Beep sound \' Single quote \" Double quote \\ Backslash	function is dealing with. Format specifier are mandatory part of scanf() function and in printf() mandatory if variable or expression is used. Common format specifiers are: %c Prints a single character Read a character %d Prints a decimal integer Read a signed decimal integer %f Prints a floating point Read floating point number %s Prints a String Read a string (till null character)
Syntax: printf("list of format specifier or message or escape sequence", list of variables);	**Syntax:** printf("list of format specifier or message", list of variables);
Example: For example \n takes the control to new line, and \t prints a tab space.	**Example:** %c Prints a single character Read a character %d Prints a decimal integer Read a signed decimal integer

vii. Draw precedence table of operators used in the following expression: (3)
z = !(4*++x-y || x==y/--y<x%2&&x+++y)

Ans.

No.	Operator	Description
1	++ --	increment/ decrement
2	* / %	Multiplication/division/modulus
3	+ -	Addition/subtraction
4	< <= > >=	Relational less than/less than or equal to Relational greater than/greater than or equal to
5	== !=	Relational is equal to/is not equal to
6	&&	Logical AND
7	||	Logical OR
8	=	Assignment

viii. Differentiate between if-else-if and switch structure. (3)

Ans.

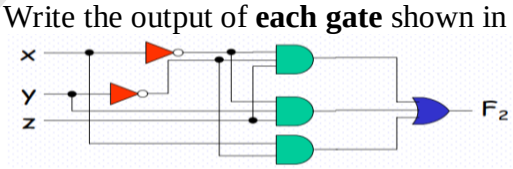
Criteria	IF-ELSE-IF	SWITCH
Basic	It's determines the statement which will be executed depend upon the output of the expression inside if statement	It's determines the statement which will be executed is decided by user
Expression	if-else statement uses multiple statement for multiple choices.	switch statement uses single expression for multiple choices.
Testing	if-else statement test for equality as well as for logical expression.	switch statement test only for equality.
Evaluation	if statement evaluates integer, character, pointer or floating-point type or boolean type.	switch statement evaluates only character or integer value.
Sequence of Execution	Either if statement will be executed or else statement is executed.	switch statement execute one case after another till a break statement is appeared or the end of switch statement is reached.
Default Execution	If the condition inside if statements is false, then by default the else statement is executed if created.	If the condition inside switch statements does not match with any of cases, for that instance the default statements is executed if created.

ix. W r i t e a code that prints the given sequence of numbers on a single line also print its sum by using any loop. (2+1)

30 27 24 21 18 15 12 9 6 3 0 -3 -6 -9

Ans.
```
for(i=30; i<=-9; i-=3)
{
printf("%d  ", i);
sum+=i;
}
printf("\n The sum of series is %d", sum);
```

x. Write the output of **each gate** shown in the following figure: (3)



Ans.
x̄
ȳ
x̄ ȳz
x̄ yz
x ȳ
f= x̄ ȳz+ x̄ yz+ x ȳ

xi. Differentiate between ordered list and unordered list used in HTML. (3)

Ans.

Unordered list	**Ordered list**
In an unordered list, each item is displayed with a bullet.	In an ordered list, each item is displayed along with the numbers or letters instead of bullets.
It is also known as bulleted list.	It is also known as number list.
UL is an Unordered List.	OL is an Ordered List.
and tags are used.	and tags are used.

xii. Define the following terms: (1+1+1)

a. Web-Hosting b. Web-Server c. Hyper-Link

Ans. a. Web-Hosting: is an online service that allows you to publish your website files onto the internet. So, anyone who has access to the internet has access to your website.

b. Web-Server: is a computer where the web content is stored. Basically, web server is used to host the web sites but there exist other web servers also such as gaming, storage, FTP, email etc.

c. Hyper-Link: is a word, phrase, or image that you can click on to jump to a new document or a new section within the current document.

xiii. Differentiate between Frame and Frame set by giving one example used in HTML. (3)

Ans.

Frame	**Frame-set**
Frame allows dividing a browser window into multiple sections.	Frame set consist of a collection of frames in the browser.
Frame holds a separate document.	Frameset holds one or more frames.
Frame has the attributes such as frameborder, marginwidth, marginheight, name, ……	Frame has the attributes such as cols, rows…..

SECTION – C(Marks 16)

Note: Attempt any **TWO** questions. (8 × 2 = 16)

Q.3 Write a C program to input electricity unit charge and calculate the total electricity bill according to the given condition: (5+3)

For first 50 units Rs. 0.50/unit
For next 100 units Rs. 0.75/unit
For next 100 units Rs. 1.20/unit
For unit above 250 Rs. 1.50/unit
An additional surcharge of 20% is added to the bill.
Also justify your selection of conditional control structure.

Ans.

```
#include <stdio.h>
int main()
{
int unit;
floatamt, total_amt, sur_charge;
printf("Enter total units consumed: ");
scanf("%d", &unit);
if(unit <= 50)
   {
amt = unit * 0.50;
   }
else if(unit <= 150)
   {
amt = 25 + ((unit-50) * 0.75);
   }
else if(unit <= 250)
   {
amt = 100 + ((unit-150) * 1.20);
   }
else
   {
amt = 220 + ((unit-250) * 1.50);
   }
sur_charge = amt * 0.20;
total_amt  =amt + sur_charge;
printf("Electricity Bill = Rs. %f", total_amt);
}
```

Justification:

If-else-if is better choice because:
In it this statement will be executed depend upon the output of the expression inside if statement.
Test for equality as well as for logical expression.
If statement evaluates integer, character, pointer or floating-point type or Boolean type.

Q.4 Write a program that read a number and prints its power (take it from user) if it is a prime number otherwise print its factorial by using any control structure. (8)

Ans.

```
#include<stdio.h>
void main()
{
intn,i,m=0,flag=0, exponent, power=1, f=1;
printf("Enter the number to check prime:");
```

```
scanf("%d",&n);
m=n/2;
for(i=2;i<=m;i++)
 {
if(n%i==0)
   {
printf("\n\nNumber is not prime\n\n");
flag=1;
break;
    }
 }
if(flag==0)
 {
printf("\n Enter Exponent: ");
scanf("%d",&exponent);
while(exponent!=0)
     {
power *= n;
exponent--;
      }
printf("\n\nThe result of power of given No. is  = %d\n\n", power);
  }
else
     {
for(i=1;i<=n;i++)
      f=f*i;
printf("\n\nThe Factorial of %d is: %d\n\n",n,f);
     }
}
```

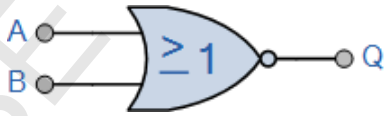
Q.5 a. Briefly describe NOR and ExclusiveNOR(XNOR) logic gate with circuit diagram and truth table. (4)

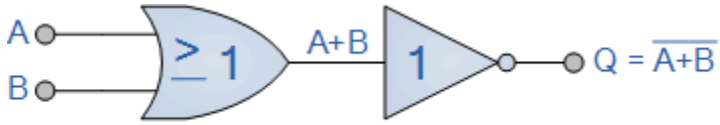
Ans.

NOR Gate:

The Logic NOR Gate gate is a combination of the digital logic OR gate and an inverter or NOT gate connected together in series:

Truth Table+ circuit diagram:

Symbol	Truth Table		
 2-input NOR Gate	B	A	Q=$\overline{A+B}$
	0	0	1
	0	1	0
	1	0	0
	1	1	0

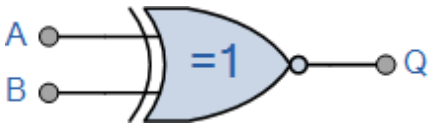


2-input "OR" gate plus a "NOT" gate

Exclusive-NOR Gate:

The Exclusive-NOR Gate function is a digital logic gate that is the reverse or complementary form of the Exclusive-OR function.

Truth Table+ circuit diagram:

Symbol	Truth Table		
 2-input Ex-NOR Gate	B	A	Q= A ⊕ B
	0	0	1
	0	1	0
	1	0	0
	1	1	1

2-input "Ex-OR" gate plus a "NOT" gate

b. Define Karnaugh Map(K-Map) also write the simplification rules for three variable Karnaugh Map. (4)

Ans. **KarnaughMap(K-Map)**

The K-map method of solving the logical expressions is referred to as the graphical technique of simplifying Boolean expressions. K-maps basically insert the values of the output variable in cells The number of cells in the K-map is determined by the number of input variables as two raised to the power of the number of input variables

Simplification rules for three variableKarnaugh Map:

- K-Map has total of 2 rows and 4 columns which corresponds to 8 cells in 3-variable.
- Fill the K-map by entering 1 to each product-term into the K-map cell and fill the remaining cells with zeros.
- Form the groups by considering each one in the K-map start making groups of 2, 4, and 8.
- Groups may be horizontal or vertical, but not diagonal.
- Grouping of 1s includes neighboring cells, corners and sides even though they overlap each other.
- If possible, include each 1 in at least one group.
- Make larger groups if possible.
- Once all 1s are covered then you can stop.
- Find the Boolean term for each group. By looking at the common variables in cell-labeling
- Write the simplified function in the form of sum of terms.

NOTE: This is suggested (proposed) solution to the questions given in SECTION-B and C. Students can write any valid alternate answers.

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