# DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
## LONERE – RAIGAD – 402 103
## Semester Examination – December – 2017

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**Branch: B. Tech.** **Semester: I**

**Subject with Subject Code: Basic Computer Programming [ICT106]** **Marks: 60**

**Date: 22 / 12 / 2017** **Time: 3 Hrs.**

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**Instructions:** 1] Attempt **any 5 Questions**.
2] Figures / structures to the right indicate full marks.
3] Each Question Carry **12 Mark**s.
4] Assume suitable data, if necessary.
5] Neat diagrams must be drawn wherever necessary.

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**Q. No. 1**

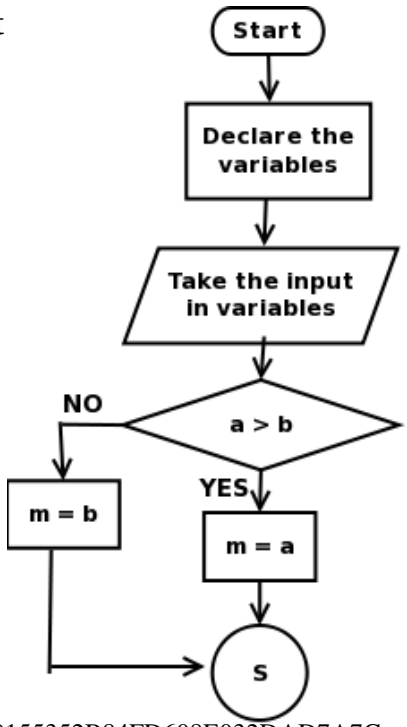
**A)** i. What do curly braces denote in C? Why does it make sense to use curly braces to surround the body of function? **[2]**

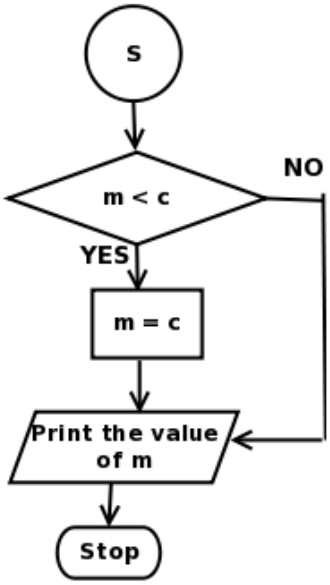
ii. Consider the statement: `double ans = 10.0 + 2.0 / 3.0 – 2.0 * 2.0;` **[1]**
Rewrite this statement, inserting parenthesis to ensure that ans = 11.0 upon evaluation of this Statement. **[1]**

iii. Explain why given statement is not correct, and fix it.
```
#include"stdio.h".
```

**B)** Explain the various phases of process of programming in details. **[4]**

**C)** Convert the following Flowchart into C Program. A single flowchart divided into two part where S is branching to show continuous flow of a program.



**Q. No. 2**

**A)** Write logical expressions that tests whether a given character variable in C is **[4]**

i. lower case letter
ii. upper case letter
iii. digit
iv. whitespce (includes tab, space, newline)

**B)** Evaluate the expression: `1 && 0 % 10 >= 0 && 30 % 10 <= 3.` Show the steps of your expression evaluation. **[4]**

Write the values of the following expressions.

i. `'F' – 'C'`
ii. `2.0 + (float)(5/3)`

**OR**

**B)** With proper example explain following Bitwise Operators: **[4]**

i. Left Shift Operator
ii. Bitwise AND
iii. Right Shift Operator
iv. Bitwise Complement Operator

**C)** Define the variable in C. What are the rules programmer has to follow for declaration of any variable. Give an example of variable declaration and variable initialization. **[4]**

**Q. No. 3**

**A)** Telephone company charges its domestic consumers as follows: **[4]**

| No. of phone Calls | Rate of Charge |
|---|---|
| 0 – 200 | Rs. 0.50 per unit |
| 201 – 400 | Rs. 100 plus Rs.0.65 per unit excess of 200 |
| 401 and above | Rs. 230 plus Rs.0.80 per unit excess of 400 |

Write a program that reads the customer telephone number and number of phone calls and prints the amount to be paid by the customer.

**OR**

**A)** The digital root of a number is single digit number obtained by an iterative process of summing digits. Digital sum of 65536 is 7, because 6+5+5+3+6=25 and 2+5 = 7. Write a program that takes an integer as input and prints its digital root. **[4]**

**B)** Differentiate between: **[4]**

i. While Loop and do.....while Loop.
ii. break and continue statement.

**C)** i. Write the syntax of switch statement. **[1]**

ii. What will be the output of the following program? **[3]**

```
#include <stdio.h>
int main(){
      int i, j, k;
      for(i=1;i<10;i++){
            printf("\n %d: ", i);
      for(j=1;j<10;j++){
            if(i%3 == 0) break;
            if(i > j) continue;
            k=i*10+j;
            printf(" %d", k);
      }
   }
}
```

**Q. No. 4**

**A)** What will be printed by the following program? **[3]**

```
int f(int a){
      printf("%d,", a);
      a++;
      return a;
}
int main(){
      int a = 5, b;
      b = f(a);
      printf("%d,%d\n", a, b);
      return 0;
}
```

**B)** Write a program in C which take an integer number `x` from user. Write a function which find given number is Armstrong or not i.e. `void armstrong(int n)` which not return any value. Take input value `x` in `main()` function and use function call `armstrong(x)`. In function, `void armstrong(int n)` display message as "Enter number is _____ is an armstrong number" OR "Enter number is _____ is not an armstrong number" **[3]**

**C)** i. What do you mean by recursion? **[1]**

ii. With proper example give the syntax of function call, and function definition. when programmer has to use function prototype in program. Give syntax of function prototype. **[3]**

iii. Explain any one Static Storage Class with a proper C code. **[2]**

**Q. No. 5**

**A)** A teacher has to enter mark of 5 subjects of a student and has to find the average of that marks. Which data type would you suggest to programmer and write C program to take the input from programmer and find the average of entered marks. Also Display data entered by programmer and average find through program on Screen. **[4]**

**B)** **[3]**

```
#include<stdio.h>
void sortins(int f[],int p){
int temp, i, j;
for(j = 1; j < p; j++){
      temp = f[j];
      i=j-1;
      while(i >= 0 && f[i] > temp){
            f[i+1] = f[i];
            i--;
      }
f[i+1] = temp;
}
}

void main(){
 int A[8] = {27,25,73,65,30,68,39,77};
 sortins(A,8);
}
```

Write the **values of `f[i]`** in each iteration when it is inside while loop.

**C)** Define Array. **[1]**

Initialize two dimension array and show matrix representation of initialized two dimension array. **[2]**

Write C statements for one dimension array to do the following: **[2]**

i. Set the value of the $5^{th}$ component of the alpha array to 35.

ii. Set the value of the $9^{th}$ component of the alpha array to the sum of the $6^{th}$ and $13^{th}$ components of the alpha array.

**Q. No. 6**

**A)** Define a structure in C named 'Student' which contains four fields as {name, age, gender, department}. Declare a variable as your name of 'struct Student'. Assign the values for your structure as xyz, 23, Male, Computer respectively. **[3]**

**B)** Write a program in C to create a structure having named as Employee consists of empCode, name, department, address and salary as its members. Use array of structure to read the details for five employees from user and then display the data entered by the user on Screen. **[6]**

**C)** Date is an entity which consists of hours, minutes and seconds. Account is a second entity which consists of acct_no, acct_type('S' for saving and 'C' for current), name_of_account_holder, balance in respective acct_no, date_of_lastpayment which is already defined using Date entity. Write a syntax in C from given data and also initialize the value to every elements using dot operator. **[3]**

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