# RAJATRATA UNIVERSITY OF SRI LANKA
## FACULTY OF APPLIED SCIENCES, MIHINTALE
### B.Sc.(General) Degree Examination
### First Year Semester I – May/June 2016
### COM 1201 Introduction to Program Design

**Answer All Questions**

**Time Allocated 2 Hours**

### Use given space to answer the following questions

1. What is a computer Program?

(3 Marks)

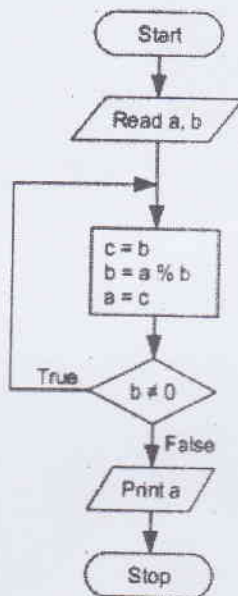2. Briefly describe the first three generations of Programming Languages

(5 Marks)

3. What are the three control structures used in Pseudocodes. Give example for each.

(5 Marks)

4. What is an Algorithm?Select your favorite recipe and write an algorithmfor cooking it.
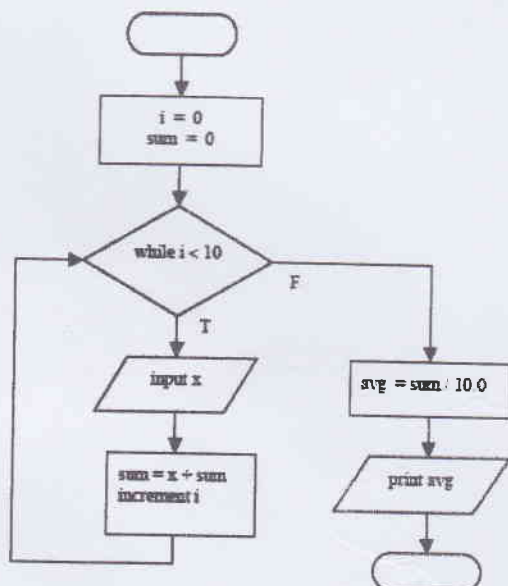
(7 Marks)

5. What would be the output of the following pseudocode: (10 Marks)

```
begin
for hours=0 to 5
    for mins=0 to 9
        display hours, mins
    endfor
endfor
end.
```

6. What is the output of the algorithm described in the flowchart below when a=8, b=3 and when a=12, b=10?

(10 Marks)

```
        Start
          │
          ▼
      Read a, b
          │
          ▼
    ┌──────────┐
    │ c = b    │
    │ b = a % b│◄──────┐
    │ a = c    │       │
    └──────────┘       │
          │            │
          ▼      True  │
        b ≠ 0 ─────────┘
          │
          │ False
          ▼
       Print a
          │
          ▼
        Stop
```

12. Write a pseudocode to represent the following Flowchart:

(10 Marks)

```
         ( )
          │
          ▼
    ┌──────────┐
    │ i = 0    │
    │ sum = 0  │
    └──────────┘
          │
          ▼
      while i < 10 ────────F──────┐
          │                       │
          │ T                     ▼
          ▼                  avg = sum / 10.0
       input x                    │
          │                       ▼
          ▼                    print avg
    ┌────────────┐                │
    │ sum = x + sum│              ▼
    │ increment i │             ( )
    └────────────┘
          │
          └──────────────►
```

7. Draw a Flow chart to represent the following pseudocode                (10 Marks)

```
begin
sum=0
count=1
input number
    while (count<=100)and(number>=0)
        sum=sum+number
        count=count+1
        input number
    endwhile
display sum
end.
```

8. What will be the output of the following pseudocode: (10 Marks)

```
begin
for i := 1 to 5 do
        a[i] := i;
for i := 1 to 5 do
        a[i] := i * a[i ];
for i := 1 to 6 do
        print (a[i]);
end.
```

9. What is meant by Programing paradigm. Give names of languages come under any two paradigms. (2 Marks)

10. Compare imperative and declarative paradigms (2 Marks)

11. In a program design describe Top Down Design approach using a real life example. (6 Marks)

12. Input 2 values into the variables: start and finish, then print the integers from start to finish inclusive. BUT, if start is bigger than finish, don't print the numbers, but give an error message instead! Develop a pseudocode to solve this problem. (10 Marks)

13. Briefly describe the software development method.
   Apply above first three steps mention in the above method to solve the following problem.

   Assume that you work for a hardware company that manufactures flat washers. To estimate costs, your company needs a program that computes the weight of a specified quantity of flat washers.
   
   (10 Marks)