**UNIVERSITY COLLEGE OF ENGINEERING (BIT CAMPUS),**

**TIRUCHIRAPPALLI-620 024**

**First Internal Assessment Test**

**Department of CSE / IT**

**Subject Code :GE8151 Subject Name : Problem Solving and Python Programming**

**Date&Duration :**13.10.2018& 11am - 12.30 pm**Marks:50**

**Degree/Branch:** B.E/B.Tech - Mechanical – Sec’**I**’**Year/Semester:** I / I

**PART-A**

**Answer *All* Questions 7 x 2 = 14**

1. What are the features of python?

**Python Features**

* 1) **Easy** to Learn and Use. Python is **easy** to learn and use. ...
* 2) Expressive Language. Python language is more expressive means that it is more understandable and readable.
* 3) Interpreted Language. ...
* 4) Cross-**platform** Language. ...
* 5) Free and Open Source. ...
* 6) **Object-Oriented** Language. ...
* 7) Extensible. ...
* 8) Large Standard Library.

1. What is an algorithm?

a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

1. Write an algorithm for a given number is odd or even.

The algorithm is a step by step representation of program.

1. If the number is **divisible**by 2,

2. means the remainder is 0 then the number is even.

3. Otherwise number is odd.

4. Step 3- if n%2==0 then number is even.

1. Draw the flowchart to find the area of the circle.
2. Write a pseudo code for greatest of two numbers.

read a,b

if a>b

display a is greater

else

display b is greater

1. Define sequence, selection and iteration.

**Sequencing:** This means that the computer will run your code in order, one line at a time from the top to the bottom of your program. It will start at line 1, then execute line 2 then line 3 and so on till it reaches the last line of your program.

**Selection:** Sometimes you only want some lines of code to be run only if a condition is met, otherwise you want the computer to ignore these lines and jump over them. This is achieved using IF statements. e.g. If a condition is met then lines 4, 5, 6 are executed otherwise the computer jumps to line 7 without even looking at line 4,5 and 6.

**Iteration:** Sometimes you want the computer to execute the same lines of code several times. This is done using a loop. There are three types of loops: For loops, while loops and repeat until loops. That’s handy as it enables you not to have to copy the same lines of code many times.

1. Define Variable. Point Out the rules to be followed for naming any identifier.

In programming, a variable is a **value** that can **change**, depending on conditions or on information passed to the program. Typically, a program consists of instruction s that tell the computer what to do and data that the program **uses** when it is running.

**PART-B**

**Answer any *two*Questions 2 x 12 = 24**

1. Explain Building blocks of an algorithm in brief?

An algorithm is detailed sequence of actions which, when followed exactly, will accomplish some task. Algorithms can be created using three basic building blocks :

* ***Sequence*** : A sequence is series of steps that are followed one after another. A sequence always occurs in the same order, without decisions or repetition.
* ***Decision*** : A decision is a form of questions. Usually decisions are YES/NO or TRUE/FALSE type questions (like "Is the traffic light red?").However, some decisions can have more than two options (like "What colour is the traffic light?")
* ***Repetition*** : A repetition is something that happens over and over again, or something that you do "Until" something happens. An example could be winding up a clockwork toy ("Turn key UNTIL it toy wound up".

1. Explain algorithmic problem solving techniques in detail.

**Basic Strategy for Algorithmic Problem Solving**

1. Read and comprehend the **problem** statement.
2. Select theoretical concepts that may be applied.
3. Qualitative description of the **problem**.
4. Formalization of a solution strategy.
5. Test and description of the solution.
6. Write an algorithm for insert a card in a list of sorted cards.

Mycards=[15,7,11,19,12,16,14]

**PART-C 1x 12 = 12**

1. Describe the algorithm of Towers of Hanoi problem with sketch.
2. Move a tower of height-1 to an intermediate pole, using the final pole.
3. Move the remaining disk to the final pole.
4. Move the tower of height-1 from the intermediate pole to the final pole using the original pole.