# INSTITUTE OF AERONAUTICAL ENGINEERING
## (Autonomous)
### Dundigal, Hyderabad - 500 043

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## MODEL QUESTION PAPER - I

B.Tech III Semester End Examinations, November - 2019
### Regulations: R18
## OBJECT ORIENTED PROGRAMMING THROUGH PYTHON
(Common to CSE & IT)

**Time: 3 hours**                                                                                         **Max. Marks: 70**

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Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

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### MODULE – I

1.  a)  Explain about features of Object Oriented Programming compared with the procedure oriented programming. **[7M]**

    b)  Write code snippets in Python to perform the following **[7M]**
        a. Accessing elements of a tuple
        b. Modifying elements of a tuple
        c. Deleting elements of a tuple

2.  a)  What is an operator and explain about the arithmetic operators and assignment operators in Python with example. **[7M]**

    b)  Explain about identity operators and operator precedence and associativity with example. **[7M]**

### MODULE – II

3.  a)  Defining the following with examples. **[7M]**
        i. Creating a class
        ii. Constructor
        iii. The self variable

    b)  What is a class? What is the relation between an object and a class? Write a program which shows how to define a class, how to access member functions and how to create and access objects in Python. **[7M]**

4.  a)  Explain the following with examples. **[7M]**
        i.   Polymorphism
        ii.  Inheritance
        iii. Abstract class

    b)  What is a namespace? How do you resolve the name conflicts using namespaces? Explain with an example. **[7M]**

## MODULE – III

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| 5. | a) | Discuss the following operations on strings<br>i)Length of string<br>ii)Indexing in strings<br>iii)counting substrings in a string | **[7M]** |
| | b) | Discuss about the following methods that are used to remove spaces from a string.<br>i)rstrip()<br>ii)lstrip()<br>iii)strip() | **[7M]** |
| 6. | a) | Describe the role of Python interpreter in functions. Explain possible ways of assigning a function. | **[7M]** |
| | b) | Explain the following<br>i)Defining a function<br>ii)Calling a function | **[7M]** |

## MODULE – IV

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| 7. | a) | How the exceptions are handled in Python?  Explain exception handling mechanism in Python? | **[7M]** |
| | b) | What are the rules in Python we need to follow when overriding a method that throws an exception? | **[7M]** |
| 8. | a) | Justify that we can either define an "**except**" or a "**finally**" clause with every try block. You can't club these together. Also, you shouldn't use the "**else**" clause along with a "**finally**" clause. | **[7M]** |
| | b) | What are the legal combinations of try, catch and finally blocks? Explain? | **[7M]** |

## MODULE – V

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|---|---|---|---|
| 9. | a) | Write the working procedure of containers. | **[7M]** |
| | b) | How to create message widget by using Python? | **[7M]** |
| 10. | a) | Consider a Python GUI program that produces a window with the following widgets<br>1.  A text box to display the value of one element of a given list<br>2.  A button to retrieve the previous value in that list(if there is one).This button is displayed if there is no previous value in the list | **[7M]** |
| | b) | What is Python widget? Explain interactive linear and non linear regression model | **[7M]** |

## COURSE OBJECTIVES:

**The course should enable the students to:**

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|---|---|
| I | Understand the fundamentals of Python programming concepts and its applications. |
| II | Understand the object-oriented concepts using Python in problem solving. |
| III | Apply string handling and function basics to solve real-time problems. |
| IV | Illustrate the method of solving errors using exception handling. |
| V | Design and implement programs using multi threading concepts |

## COURSE OUTCOMES (COs):

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|---|---|
| CO 1 | Describe Features of Python, Data types, Operators, Input and output, Control Statements, Features of Object oriented programming system (OOPS).Classes and Objects, Encapsulation, Abstraction, Inheritance, Polymorphism. |
| CO 2 | Determine Creating a class, The Self variable, Constructor, Types of Variable, Namespaces, Types of Methods, Inheritance and Polymorphism Constructors in inheritance, The super() method, Types of inheritance, Polymorphism, Abstract classes and Interfaces. |
| CO 3 | Understand Creating strings and basic operations on strings, String testing methods, Defining a function, Calling a function, Returning multiple values from a function, Functions are first class objects, Formal and actual arguments, Positional arguments, Recursive functions. |
| CO 4 | Explore the concept of Errors in a Python program, Exceptions, Exception handling, Types of exceptions, The Except block, The assert statement, user-defined exceptions |
| CO 5 | Knowledge The Root window, Fonts and colors, Working with containers, Canvas, Frames, Widgets ,Button widget, Label Widget, Message widget, Text widget, Radio button Widget, Entry widget. |

## COURSE LEARNING OUTCOMES (CLOs):

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|---|---|
| AITB01.01 | Describe the Features of Python, Data types. |
| AITB01.02 | Summarize the concept of Operators, Input and output, Control Statements. |
| AITB01.03 | Identify the features of Object Oriented Programming System (OOPS). |
| AITB01.04 | Use the concept of Classes and Objects, Encapsulation. |
| AITB01.05 | Describe Abstraction, Inheritance, and Polymorphism. |
| AITB01.06 | Determine Creating a class, The Self variable. |
| AITB01.07 | Understand types of variable, Namespaces. |
| AITB01.08 | Determine types of Methods, Inheritance and Polymorphism. |
| AITB01.09 | Use Constructors in inheritance, the super() method. |
| AITB01.10 | Illustrate types of inheritance, Polymorphism, Abstract classes and Interfaces. |
| AITB01.11 | Understand Creating strings and basic operations on strings. |

| AITB01.12 | Analyze the concept of String testing methods, Defining a function. |
|-----------|------------------------------------------------------------------|
| AITB01.13 | Illustrate Calling a function, Returning multiple values from a function. |
| AITB01.14 | Contrast the Usage of Functions are first class objects, Formal and actual arguments. |
| AITB01.15 | Define Positional arguments, Recursive functions. |
| AITB01.16 | Discuss the concept of Errors in a Python program. |
| AITB01.17 | Understand Exceptions, Exception handling. |
| AITB01.18 | Summarize the concept of types of exceptions. |
| AITB01.19 | Discuss the Except block, the assert statement. |
| AITB01.20 | Understand the concept of user-defined exceptions. |
| AITB01.21 | Knowledge about the Root window, Fonts and colors. |
| AITB01.22 | Apply Working with containers, Canvas. |
| AITB01.23 | Understand Widgets, Button widget, Label Widget. |
| AITB01.24 | Implement Message widget, Text widget. |
| AITB01.25 | Illustrate Radio button Widget, Entry widget. |

## MAPPING OF SEMESTER END EXAMINATION - COURSE OUTCOMES

| SEE Question No | | | Course Learning Outcomes | Course Outcomes | Blooms Taxonomy Level |
|---|---|---|---|---|---|
| 1 | a | AITB01.03 | Identify the features of Object Oriented Programming System (OOPS). | CO 1 | Understand |
| | b | AITB01.01 | Describe the Features of Python, Data types. | CO 1 | Understand |
| 2 | a | AITB01.02 | Summarize the concept of Operators, Input and output, Control Statements. | CO 1 | Remember |
| | b | AITB01.02 | Summarize the concept of Operators, Input and output, Control Statements. | CO 1 | Understand |
| 3 | a | AITB01.06 | Determine Creating a class, The Self variable. | CO 2 | Understand |
| | b | AITB01.06 | Determine Creating a class, The Self variable. | CO 2 | Remember |
| 4 | a | AITB01.08 | Determine types of Methods, Inheritance and Polymorphism. | CO 2 | Understand |
| | b | AITB01.07 | Understand types of variable, Namespaces. | CO 2 | Understand |
| 5 | a | AITB01.11 | Understand Creating strings and basic operations on strings. | CO 3 | Understand |
| | b | AITB01.12 | Analyze the concept of String testing methods, Defining a function. | CO 3 | Understand |
| 6 | a | AITB01.13 | Illustrate Calling a function, Returning multiple values from a function. | CO 3 | Understand |
| | b | AITB01.14 | Contrast the Usage of Functions are first class objects, Formal and actual arguments, | CO 3 | Understand |
| 7 | a | AITB01.17 | Understand Exceptions, Exception handling. | CO 4 | Understand |

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|---|---|---|---|---|---|
| | b | AITB01.18 | Summarize the concept of types of exceptions. | CO 4 | Understand |
| 8 | a | AITB01.18 | Summarize the concept of types of exceptions. | CO 4 | Understand |
| | b | AITB01.19 | Discuss the Except block, the assert statement. | CO 4 | Understand |
| 9 | a | AITB01.22 | Apply Working with containers, Canvas. | CO 5 | Understand |
| | b | AITB01.24 | Implement Message widget, Text widget. | CO 5 | Understand |
| 10 | a | AITB01.25 | Illustrate Radio button Widget, Entry widget. | CO 5 | Understand |
| | b | AITB01.24 | Implement Message widget, Text widget. | CO 5 | Understand |

**Signature of Course Coordinator**                                    **HOD, IT**