



SNS COLLEGE OF ENGINEERING

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Department of Computer Science and Technology

QUESTION BANK



SUBJECT : 23ITB202-PYTHON PROGRAMMING

SEM/YEAR: III Sem/II Year

Unit 1			
INTRODUCTION			
Overview of Python and its applications in engineering-Basic Syntax and Data Type: Variables, data types, and basic operations- Conditional statements and loop.			
Part A			
Q.No.	Questions	Competence	BT Level
1.	List the various control flow structures	Remember	BTL1
2.	Define algorithm.	Understand	BTL2
3.	Distinguish between pseudocode and flowchart.	Analyze	BTL4
4.	Write the building blocks of algorithms.	Remember	BTL1
5.	Discuss different modes of operation in python.	Understand	BTL2
6.	Write a simple python program to perform addition of two values.	Apply	BTL3
7.	Distinguish between string and list data types.	Analyze	BTL4
8.	Infer how does python interpreter work?	Evaluate	BTL5
9.	Write an algorithm for basic arithmetic operations.	Create	BTL6
10.	Evaluate the order of precedence of operators in python.	Evaluate	BTL5
11.	State Tuple Assignment.	Remember	BTL1
12.	Develop an algorithm to convert Temperature in Celsius to Fahrenheit.	Create	BTL6
13.	Define Variable.	Remember	BTL1
14.	Show how Comment is used in python.	Remember	BTL1
15.	Examine a simple pseudocode to print integers.	Apply	BTL3
16.	What is data type in python? List the various data types.	Understand	BTL2
17.	Draw the flowchart for calculating simple interest.	Evaluate	BTL5
18.	Write the Pseudocode for greatest among two numbers.	Apply	BTL3
19.	Mention the features of Python.	Analyze	BTL4
20.	Discuss the problem solving techniques.	Understand	BTL2
21.	Classify expressions by applying different operators.	Apply	BTL3
22.	List the basic symbols used in drawing the flowchart for sequence control structure.	Remember	BTL1
23.	Classify different types of statements in python.	Analyze	BTL4
24.	List the types of operators available in python.	Understand	BTL2
Part B			
1.	Analyze the model of interpreter and explain how python works in different modes. (13)	Analyze	BTL4
2.	Evaluate the different values (data types) and types of values that can be used in Python. (13)	Evaluate	BTL5

3.	(i) Summarize the advantages and disadvantages of flowchart.(6) (ii) Summarizethesymbolsusedinflowchart.(7)	Understand	BTL2
4.	List the different operators in python and estimate the precedence of execution. (13)	Remember	BTL1
6.	List the types of operators in python and thus explain the different expressions involved in python. (13)	Apply	BTL3
7.	With neat sketch explain the following building blocks of algorithm: (i) Statements(5) (ii) Control flow(8)	Remember	BTL1
8.	Analyze the need for functions and explain with an example. (13)	Analyze	BTL4
9.	(i) Develop a flowchart to check whether the given number is a prime number or not.(7) (ii) Develop a pseudocode to perform arithmetic operations. (6)	Apply	BTL3
10.	(i) What is an algorithm? List the characteristics of a good algorithm.(6) (ii) Write an algorithm to find the square root of a number.(7)	Remember	BTL1
11.	Design the flowchart and write that calculates salary of an employee. Prompt the user to enter the Basic salary, HRA, TA and DA. Add these components to calculate the Gross salary. Also, deduce 10% salary from the Gross salary to be paid as tax. (13)	Create	BTL6
12.	Write an algorithm and Pseudocode for the following: (i). Calculating area and circumference of a circle. (7) (ii). Check given year is leap year or not. (6)	Understand	BTL2
13.	Explain the sequence data types in python with examples. (13)	Evaluate	BTL5
14.	Discuss the various modes of Python Interpreter and explain with example.(13)	Apply	BTL3
15.	Summarize the difference between an algorithm, flowchart and pseudocode.(13)	Understand	BTL2
16.	Explain the following. (i) Tuple assignment(4) (ii) Comments(4) (iii) Statements in python(5)	Understand	BTL2
17.	Using a simple python snippet, analyze different values, types and expression and explain them.(13)	Analyze	BTL4
PART-C			
1.	Write an algorithm, pseudocode and draw the flowchart to find the factorial of a number n.(14)	Create	BTL6
2.	Design a calculator with python code by defining its algorithm using different notations.(14)	Create	BTL6
3.	Write a program to explain the various operators involved in python and how an expression is evaluated using precedence of operators. (14)	Create	BTL6
4.	Write an algorithm, pseudocode and draw the flowchart to check whether the given number is a palindrome or not.(14)	Evaluate	BTL5

5.	Ratetheorderofexecutionofdifferentexpressionsby evaluating them through python program.(14)	Evaluate	BTL5
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Unit2			
FUNCTIONANDSTRING			
Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module;Lists as arrays. Illustrative programs: square root, gcd, exponentiation, sum an array of numbers, linear search, binary search.			
PartA			
Q.No.	Questions	Competence	BT Level
1.	Definefunctionand stateitsuse.	Remember	BTL1
2.	Whatdoesrecursivefunctionimplies?	Remember	BTL1
3.	Analyzethedifferentkindsofarguments.	Analyze	BTL4
4.	Evaluatetheimportanceoffruitfulfunctions.	Evaluate	BTL5
5.	Analyzetheneed todivideaprogramintofunctions.	Analyze	BTL4
6.	Write aprogramtoprintnnumbersiterativelyusing function.	Create	BTL6
7.	Usingtheconceptoffunctions,calculatetheareaof a circle.	Apply	BTL3
8.	Usingtheconceptoftupleassignment,howwillyou swap two values?	Apply	BTL3
9.	Whatdoyoumeanbyfruitfulfunction?	Understand	BTL2
10.	Outlinethe scopeofvariables.	Understand	BTL2
11.	Writethesyntaxofif-elsestatements.	Remember	BTL1
12.	Differentiateforloopandwhileloop.	Analyze	BTL4
13.	Listanythreebuilt-infunctionsanditsusage.	Understand	BTL2
14.	Writeafunctionwithout argumentandwithreturntype.	Analyze	BTL4
15.	Differentiatelocalandglobalvariables.	Apply	BTL3
16.	Write aprogramtofindthe sumofthedigitsofanumber	Evaluate	BTL5
17.	Illustratetheflowchartofif-elif-elsestatements.	Apply	BTL3
18.	Howwould youtestthe significanceofforloopwithelse in an example.	Evaluate	BTL5
19.	Presenttheflowofexecutionfor awhile statement.	Remember	BTL1
20.	Writethesyntaxforfunctiondefinition.	Remember	BTL1
21.	NamethetypeofBooleanoperators.	Remember	BTL1
22.	Describepreakstatementwithanexample.	Understand	BTL2
23.	Writea programtofindsquare rootofagivennumber.	Create	BTL6
24.	Givethesyntax for passandcontinuestatements.	Understand	BTL2
PartB			
1.	Using theconceptofcontrolstructuredeterminethe prime numbers in given range using Python.(13)	Apply	BTL3
2.	Writeaprogramtodeterminethefactorialofagiven number with and without the use of recursion.(13)	Evaluate	BTL5
3.	What doesfruitfulfunctionrefersto?Howitcanbe used? Explain with an example.(13)	Understand	BTL2
4.	Writethesyntaxandexplaintheconceptof (i) Recursivefunctionwithanexample. (7) (ii) tosearchelementusinglinear search (6)	Remember	BTL1

5.	List the different types of arguments / parameters used in function with suitable examples.(13)	Remember	BTL1
6.	Using a python program, analyze the different logic behind swapping the values between variables.(13)	Analyze	BTL4
7.	Write a program to find the square root of a number by Iterative newton's method. (13)	Create	BTL6
8.	Explain the looping statements (while and for loops) with an example. (13)	Understand	BTL2
9.	List the different types of conditional control statements and explain them with suitable example.(13)	Understand	BTL2
10.	Describe the concept of binary search with suitable example and write python code to implement.	Evaluate	BTL5
11.	(i) Write a Python program to find the GCD of given two numbers.(6) (ii) Write a Python program to find the exponent of a number using recursion.(7)	Apply	BTL3
12.	(i). Write a python program to find the greatest among three numbers.(6) (ii). Write a program to check the given number is Armstrong number or not.(7)	Understand	BTL2
13.	Explain with an example break and continue statements using while loop.(13)	Analyze	BTL4
14.	Write a python code to print all numbers in a range (a,b) divisible by a given number (n).(13)	Apply	BTL3
15.	What is function? How a function is defined and called in python? Explain with a simple program.(13)	Remember	BTL1
16.	(i) Write a Python program to find the sum of N natural numbers.(9) (ii) What is the use of pass statement? Illustrate with an example.(4)	Remember	BTL1
17.	(i). Write a Python program using function to find the sum of first 'n' even numbers and print the result. (7) (ii). Write a python program to find the roots of the quadratic equation. (6)	Analyze	BTL4
PART-C			
1.	Create a user-defined fruitful function to test if a given year is a leap year.(14)	Create	BTL6
2.	Write a function to determine whether a given natural number is a perfect number. A natural number is said to be a perfect number if it is the sum of its divisors.(14)	Create	BTL6

3.	(i). Write a python program to implement student mark system using chained conditional if control structure. (7) (ii). Write a python program to find the given number is positive, negative or zero using Nested if conditional control structure. (7)	Evaluate	BTL5
4.	Write a function to read two numbers and evaluate whether they are co-prime or not. Two numbers are said to be co-prime if they do not have any common divisor other than one. (15)	Evaluate	BTL5
5.	Write a function to multiply two non-negative numbers by repeated addition and evaluate the result by normal procedure. (15)	Evaluate	BTL5

Unit 3

LIST, TUPLES & DICTIONARIES

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing - list comprehension; Illustrative programs: simple sorting, histogram, Students marks statement, Retail bill preparation..

Part A

Q.No.	Questions	Competence	BT Level
1.	Define Python list.	Remember	BTL1
2.	Mention the list operations.	Remember	BTL1
3.	What are the different ways to create a list?	Remember	BTL1
4.	Illustrate negative indexing in list with an example.	Apply	BTL3
5.	How to slice a list in Python?	Understand	BTL2
6.	Point out the methods that are available with list object.	Analyze	BTL4
7.	Show the membership operators used in list.	Apply	BTL3
8.	Define Python Tuple.	Remember	BTL1
9.	Write a program to add two lists.	Create	BTL6
10.	Classify the Python accessing elements in a Tuple.	Apply	BTL3
11.	Point out the methods used in Tuples	Analyze	BTL4
12.	How to use tuple as arguments to a function? Give example.	Evaluate	BTL5
13.	Write the syntax and purpose of insert() method in list.	Understand	BTL2
14.	How for loop is used in sequence objects? Give example.	Apply	BTL3
15.	Point out the advantages of tuple.	Analyze	BTL4
16.	Evaluate the difference between lists and tuples.	Evaluate	BTL5
17.	Show how Tuples are used as return values?	Evaluate	BTL5
18.	What does sorting refer to?	Remember	BTL1
19.	What does the term mutability refer to?	Understand	BTL2
20.	Write a program to create a list of even numbers in a given range.	Create	BTL6
21.	Write the syntax for concatenating two lists in python.	Understand	BTL2
22.	Show how Tuples are immutable?	Understand	BTL2
23.	List the different sorting algorithms.	Remember	BTL1
24.	With the help of a program, list the different methods in list.	Analyze	BTL4

Part B

1.	Discover an algorithm and write a python program to sort the numbers in ascending order using insertion sort. (13)	Analyze	BTL4
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2.	Describe the following (i) Creating the list (4) (ii) Accessing values in the lists (3) (iii) Updating the list (3) (iv) Deleting the list elements (3)	Remember	BTL1
3.	(i) Analyze the basic list operations in detail with necessary programs. (7) (ii) Write a Python program to add two matrices. (6)	Analyze	BTL4
4.	(i) Mention the Python list methods with examples. (8) (ii) Why it is necessary to have both the functions append() and extend()? What is the result of the following expression that uses append() where it probably intended to use extend()? <pre>>>>lst=[1,2,3] >>>lst.append([4,5,6])</pre> (5)	Remember	BTL1
5.	Demonstrate the working of +, * and slice operators in python lists and tuples. (13)	Apply	BTL3
6.	(i) What is a Python Tuple? What are the advantages of Tuple over list? (5) (ii) "Tuples are immutable". Explain with example. (8)	Remember	BTL1
7.	Illustrate the ways of creating the Tuple and the Tuple assignment with suitable programs. (13)	Apply	BTL3
8.	(i) What are the accessing elements in a Tuple? Explain with suitable programs. (7) (ii) Explain how to return more than one value from a function with the help of a program. (6)	Remember	BTL1
9.	(i). Explain the basic Tuple operations with examples. (6) (ii). Illustrate a program to check whether an element 'y' and 'a' belongs to the tuple mytuple = ('p', 'y', 't', 'h', 'o', 'n') and after printing the result, delete the Tuple. (7)	Understand	BTL2
10.	Write a program to perform the following matrix operations. (i). Addition of two matrices (ii). Transpose of a matrix.	Apply	BTL3
11.	How list is used in loops? Give an example each for while loop and for loop used in lists.	Understand	BTL2
12.	Given a tuple test_tup=(4,5,4,5,6,6,5). Write a program to find the frequency of each element. [Output like as {4:2,5:3,6:2}]	Evaluate	BTL5
13.	Describe the built-in functions with Tuples and write a program to use Max(), Min() and sorted() methods in Tuple. (13)	Understand	BTL2
14.	(i). Discuss a) Tuples as return values b) Variable Length Argument Tuples (6) (ii) Write a program to illustrate the comparison operators in Tuple. (7)	Understand	BTL2
15.	Write a Python program to store 'n' numbers in a list and sort the list using selection sort. (13)	Evaluate	BTL5

16.	Using the functions and methods, analyze the differences and similarities of lists and tuples with examples for each.(13)	Analyze	BTL4
17.	Write a program to perform the logic of quicksort algorithm.(13)	Create	BTL6
Part C			
1.	Write a function that takes a list of numbers as input from the user and produces the corresponding cumulative list(14)	Create	BTL6
2.	Write a function to perform sorting of given numbers and present a list of odd and even numbers separately.(14)	Create	BTL6
3.	Write a python program to add tuple to list and vice-versa.(14)	Create	BTL6
4.	Write a function 'leftCirculate' that takes a list as an input and left circulates the values in the list so that in the final list, each value is left shifted by one position and leftmost value in the original list now appears as the rightmost value.(14)	Evaluate	BTL5
5.	Write a program to delete all the duplicate elements in a list.(14)	Evaluate	BTL5

Unit 4			
FILES, MODULES, PACKAGES			
Files and exceptions: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: wordcount, copyfile, Voter's age validation, Marks range validation(0-100).			
Part A			
Q.No.	Questions	Competence	BT Level
1.	Define dictionary.	Remember	BTL1
2.	Examine different set functions.	Analyze	BTL4
3.	Write a program to perform union, intersection and difference operation using set	Create	BTL6
4.	Using the built-in function update, how key value pair can be inserted?	Apply	BTL3
5.	What does key value pair refer to?	Remember	BTL1
6.	What is set?	Remember	BTL1
7.	List the dictionary operations.	Remember	BTL1
8.	List the mutable data types and immutable data types	Remember	BTL1
9.	How to create and delete a dictionary?	Understand	BTL2
10.	Write a python program to manipulate strings.	Create	BTL6
11.	What will be the output of <code>print(str[2:5])</code> if <code>str='hello world!'</code> ?	Evaluate	BTL5
12.	How to add and remove data in set?	Understand	BTL2
13.	Describe any 4 methods used on a string.	Apply	BTL3
14.	What does <code>D.item()</code> return? Give an example.	Apply	BTL3
15.	Does set support indexing. Justify the answer.	Analyze	BTL4
16.	Are dictionary and set different. Justify your answer.	Evaluate	BTL5
17.	Write an example for string traversal.	Understand	BTL2
18.	Describe string module.	Understand	BTL2
19.	Write the usage of <code>capitalize()</code> and <code>title()</code> methods in string.	Apply	BTL3

20.	How does make a copy of dictionary using copy() method?	Analyze	BTL4
21.	How can you insert values into a dictionary?	Evaluate	BTL5
22.	What is the use of fromkeys() in dictionary?	Understand	BTL2
23.	What does the module mean?	Remember	BTL1
24.	What does the function join() in a string used for?	Analyze	BTL4

Part B

1.	(i) Define methods in a string with an example program using at least 5 methods.(10) (ii) How to access characters of a string?(3)	Remember	BTL1
2.	Write a program to count the number of common characters in a pair of strings.(13)	Apply	BTL3
3.	Describe the methods and operations of Dictionaries.(13)	Remember	BTL1
4.	Write a Python program to count the number of vowels in a string provided by the user.(13)	Understand	BTL2
5.	Write a program that takes a sentence as input from the user and computes the frequency of each letter. Use a variable of dictionary type to maintain the count.(13)	Apply	BTL3
6.	Python strings are immutable. Justify with an example program. (13)	Analyze	BTL4
7.	(i) Analyze string slicing. Illustrate how it is done in python with an example.(6) (ii) Write a python code to search a string in the given list. (7)	Analyze	BTL4
8.	Using the concept of dictionary, Show a dictionary of frequency of words for a given text.(13)	Remember	BTL1
9.	Compare and contrast different functions and methods used in dictionaries and set.(13)	Analyze	BTL4
10.	Describe set and explain its operations with suitable examples.(13)	Understand	BTL2
11.	Describe different functions associated with sets.(13)	Understand	BTL2
12.	Write a function that takes a string as a parameter and replaces the first letter of every word with the corresponding uppercase letter.(13)	Evaluate	BTL5
13.	Write a Python program for adding elements to a dictionary.	Evaluate	BTL5
14.	What are the methods used to copy dictionaries? Write a program to copy the dictionary using those methods.	Apply	BTL3
15.	How to remove items from set? Explain the methods used for it with example.	Understand	BTL2
16.	Recollect the various dictionary operations and explain them with an example.(13)	Remember	BTL1
17.	Create a program to determine whether a string is a palindrome or not.(13)	Create	BTL6
Part C			
1.	(i) Write a function to find the number of common characters in two strings.(7) (ii) Write a program to reverse a string.(7)	Create	BTL6

2.	Write a function that takes a number as an input parameter and returns the corresponding text in words, for example, on input 452, the function should return 'FourFiveTwo'. Use a dictionary for mapping digits to their string representation. (14)	Create	BTL6
3.	Using a dictionary variable, estimate the frequency of each character in a sentence obtained from the user. (14)	Evaluate	BTL5
4.	(i). Write a Python program to check if two given sets have no elements in common. (7) (ii). Write a Python program to remove the intersection of a 2nd set from the 1st set. (7)	Create	BTL6
5.	Evaluate the different operations like union, intersection and differences of list using Set and functions. (14)	Evaluate	BTL5

Unit5

ADVANCED PYTHON CONCEPTS

NumPy: Introduction to NumPy arrays and operations- Data manipulation with Pandas-Data visualization using Matplotlib.-Data Import and Export: Handling CSV, Excel, and other data formats.

Part A

Q.No.	Questions	Competence	BT Level
1.	Point out different modes of file opening.	Analyze	BTL4
2.	Define the access modes	Remember	BTL1
3.	Distinguish between files and modules.	Understand	BTL2
4.	Define read and write file	Remember	BTL1
5.	Describe renaming and deleting a file in python.	Understand	BTL2
6.	Discover the format operator available in files.	Apply	BTL3
7.	Examine the need for exceptions using an example	Analyze	BTL4
8.	Explain Built-in exceptions.	Evaluate	BTL5
9.	Difference between built-in exceptions and handling exception	Remember	BTL1
10.	Write a program to write a data in a file for both write and append modes.	Evaluate	BTL5
11.	How to import statements?	Remember	BTL1
12.	Find the error in the code given: while True print('Hello world')	Create	BTL6
13.	Define package.	Remember	BTL1
14.	What are packages in Python?	Remember	BTL1
15.	Write the difference between read() and read(n) functions?	Evaluate	BTL5
16.	Accept five names from the user and write in a file "name.txt".	Analyze	BTL4
17.	What is 'value error' in python?	Apply	BTL3
18.	What is base exception?	Understand	BTL2
19.	Examine buffering.	Apply	BTL3
20.	What do you mean by file isatty() method	Understand	BTL2
21.	Discover except Clause with Multiple exception	Apply	BTL3
22.	Create a Python script to display the current date and time.	Create	BTL6

23.	Analyzetheobjectasreturnvalues.	Analyze	BTL4
24.	Discussa modular design	Understand	BTL2
PartB			
1.	Write aPythonprogramtodemonstratethefileI/Ooperations.(13)	Analyze	BTL4
2.	Discussdifferentmodesforopeningafileand closing a file.(13)	Understand	BTL2
3.	(i) Discoveraprogram tocatchadivideby zero exception. Add a finally block too.(7) (ii) Write a functionto print the hashofanygiven file in Python.(6)	Analyze	BTL4
4.	(i) Describetheuseoftryblockandexcept blockin python with syntax.(8) (ii) Describe withanexample exceptionswitharguments in python.(5)	Remember	BTL1
5.	(i) Explainwithexampleofwriting afile(7) (ii) Discoversyntaxforreadingfromafile(6)	Apply	BTL3
6.	(i) StructureRenaming afile(7) (ii) Explainaboutthefilesrelatedmethods(6)	Analyze	BTL4
7.	(i) Describepythonmodules(6) (ii) Describepythonpackages(7)	Remember	BTL1
8.	Writeaprogramthat willprompttheuser forastringand a file name, and thenprint alllines inthe file thatcontain the string. Also interpret the obtained result.(13)	Evaluate	BTL5
9.	Identify the various methods used to delete the elements from the dictionary(13)	Remember	BTL1
10.	Describeindetailexceptionhandlingwithsample program(13)	Remember	BTL1
11.	Illustrate aprogramtofindtheone'scomplementof binary number using file.(13)	Understand	BTL2
12.	Writeaprogramtodisplayapyramid.(13)	Create	BTL6
13.	Explain the terminology of raising an exception concept with sample program.	Evaluate	BTL5
14.	Write a program to count the total number of uppercase characters in a file in Python.	Apply	BTL3
15.	Explainthefollowing: (i). PredefinedModules (ii). Userdefined Modules.	Understand	BTL2
16.	Write aprogramtofindthenumberofinstancesofdifferents digits in a given number. (13)	Apply	BTL3
17.	Explain with anexample to copythe contents ofone file to another.(13)	Understand	BTL2
PartC			
1.	Create a programto compute price per unit weight ofan itemusing try – except – else block.(14)	Create	BTL6
2.	Write a programthat readsthe contentsofthe file text.txt and counts the number of alphabets, blank spaces, lowercaselettersanduppercaseletters,thenumberof words starting with a vowel, and the number of occurrences of the word 'is' in the file. (14)	Create	BTL6

3.	<p>Examinethefollowingfunctionpercentage:</p> <pre>defpercentage(marks,total): try: percent=(marks/total)*100 except ValueError: print('ValueError') except TypeError: print('TypeError') exceptZeroDivisionError: print('ZeroDivisionError') except: print('anyothererror') else: print(percent) finally: print('Functionpercentagecompleted</pre> <p>Determinetheoutputforthefollowingfunctioncalls:</p> <ul style="list-style-type: none"> a) percentage(150.0,200.0) b) percentage(150.0,0.0) c) percentage('150.0','200.0')(15) 	Evaluate	BTL5
4.	Write a function that reads a file file1 and evaluates and displays number ofwords and vowels in the file.(14)	Evaluate	BTL5
5.	Write a program to count a total number of lines and countthetotalnumber oflinesstarting with 'A', 'B', and 'C'.	Evaluate	BTL5

