

Ref No:

Sri Krishna Institute of Technology,
Bangalore



COURSE PLAN

Academic Year 2019-2020

Program:	B E – INFORMATION SCIENCE & ENGINEERING
Semester :	6
Course Code:	17CS664
Course Title:	PYTHON APPLICATION PROGRAMMING
Credit / L-T-P:	3 / 3-0-0
Total Contact Hours:	40
Course Plan Author:	SANDHYA B R

Academic Evaluation and Monitoring Cell

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A. COURSE INFORMATION

1. Course Overview

Degree:	B.E	Program:	IS
Semester:	VI	Academic Year:	2019-20
Course Title:	PYTHON APPLICATION PROGRAMMING	Course Code:	15CS664
Credit / L-T-P:	3/3-0-0	SEE Duration:	180 Minutes
Total Contact Hours:	40	SEE Marks:	80 Marks
CIA Marks:	20	Assignment	1 / Module
Course Plan Author:	Sandhya B R	Sign ..	Dt:
Checked By:		Sign ..	Dt:
CO Targets	CIA Target : 65%	SEE Target:	65 %

Note: Define CIA and SEE % targets based on previous performance.

2. Course Content

Content / Syllabus of the course as prescribed by University or designed by institute.

Module	Content	Teaching Hours	Blooms Learning Levels
1	Why should you learn to write programs, Variables, expressions and statements, Conditional execution, Function	8	L4
2	Iteration, Strings, Files	8	L3
3	Lists, Dictionaries, Tuples, Regular Expressions	8	L3
4	Classes and objects, Classes and functions, Classes and methods	8	L6
5	Networked programs Using Web Services, Networked programs Using databases and SQL	8	L6
-	Total	40	L3-L6

3. Course Material

Books & other material as recommended by university (A, B) and additional resources used by course teacher (C).

1. Understanding: Concept simulation / video ; one per concept ; to understand the concepts ; 15 – 30 minutes
2. Design: Simulation and design tools used – software tools used ; Free / open source
3. Research: Recent developments on the concepts – publications in journals; conferences etc.

Modules	Details	Chapters in book	Availability
A	Text books (Title, Authors, Edition, Publisher, Year.)	-	-
1,2,3,5	1. Charles R. Severance, "Python for Everybody: Exploring Data Using Python 3", 1 st Edition, Create Space Independent Publishing Platform, 2016. (Chapters 1 – 13, 15)	1,2,3,4,5, 6,7,8,9,10 ,11,12,13	In Dept/ in library
4	2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", Green Tea Press, 2015. 2nd Edition, (Chapters 15, 16, 17)(Download pdf files from the above links)	15,16,17	In Dept/ in library
B	Reference books (Title, Authors, Edition, Publisher, Year.)	-	-
1,2,3,4, 5	1. Charles Dierbach, "Introduction to Computer Science Using Python", 1 st Edition, Wiley India Pvt Ltd. ISBN-13: 978-8126556014	-	In Lib
1,2,3,4, 5	2. Mark Lutz, "Programming Python", 4 th Edition, O'Reilly Media, 2011. ISBN-13: 978-9350232873	-	Not Available
1,2,3,4, 5	3. Wesley J Chun, "Core Python Applications Programming", 3 rd Edition, Pearson Education India, 2015. ISBN-13: 978-9332555365	-	In lib
1,2,3,4, 5	4. Roberto Tamassia, Michael H Goldwasser, Michael T Goodrich, "Data Structures and Algorithms in Python", 1 st Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978- 8126562176	-	In lib

C	Concept Videos or Simulation for Understanding	-	-
C1	http://www.py4e.com/code3/words.py , http://www.py4e.com/code3/fahren.py , http://www.py4e.com/code3/fahren2.py , http://www.py4e.com/code3/lyrics.py , http://www.py4e.com/code3/addtwo.py		
C2	http://www.py4e.com/code3/copytildone1.y http://www.py4e.com/code3/copytildone2.y http://www.py4e.com/code3/copytildone3.y http://www.py4e.com/code3/open.py http://www.py4e.com/code3/search1.py http://www.py4e.com/code3/search2.py http://www.py4e.com/code3/search3.py http://www.py4e.com/code3/search4.py http://www.py4e.com/code3/search6.py http://www.py4e.com/code3/search7.py		
C3	http://www.py4e.com/code3/avenum.py http://www.py4e.com/code3/avelist.py http://www.py4e.com/code3/search5.py http://www.py4e.com/code3/count1.py http://www.py4e.com/code3/count2.py http://www.py4e.com/code3/soft.py http://www.py4e.com/code3/count3.py http://www.py4e.com/code3/re01.py http://www.py4e.com/code3/re02.py http://www.py4e.com/code3/re03.py http://www.py4e.com/code3/re04.py http://www.py4e.com/code3/re05.py http://www.py4e.com/code3/re06.py http://www.py4e.com/code3/re07.py http://www.py4e.com/code3/re08.py http://www.py4e.com/code3/re09.py http://www.py4e.com/code3/re10.py http://www.py4e.com/code3/re11.py		
C4	http://www.py4e.com/code3/part1.py http://www.py4e.com/code3/part2.py http://www.py4e.com/code3/part3.py http://www.py4e.com/code3/part4.py http://www.py4e.com/code3/part5.py http://www.py4e.com/code3/part2.py http://www.py4e.com/code3/part6.py		
C5	http://www.py4e.com/code3/socket1.py http://www.py4e.com/code3/urljpeg.py http://www.py4e.com/code3/urlib1.py http://www.py4e.com/code3/urlwords.py http://www.py4e.com/code3/urlregex.py http://www.py4e.com/code3/urllinks.py http://www.py4e.com/code3/xm12.py http://www.py4e.com/code3/json2.py http://www.py4e.com/code3/geojson.py http://www.py4e.com/code3/hidden.py http://www.py4e.com/code3/twitter.py http://www.py4e.com/code3/twitter2.py http://www.py4e.com/code3/db1.py		
D	Software Tools for Design	-	-
	Anaconda software with spider editor		
E	Recent Developments for Research	-	-

1	https://ieeexplore.ieee.org/document/6057428		
2	https://ieeexplore.ieee.org/document/7062611		
F	Others (Web, Video, Simulation, Notes etc.)	-	-
1	1. http://do1.dr-chuck.com/pythonlearn/EN_us/pythonlearn.pdf		
2	2. http://greenteapress.com/thinkpython2/thinkpython2.pdf		

4. Course Prerequisites

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

Students must have learnt the following Courses / Topics with described Content . . .

Modules	Course Code	Course Name	Topic / Description	Sem	Remarks	Blooms Level
1	17PCD23	C programming for problem solving	1/variables,operators,expressions	1	-	L3
2	17PCD23	C programming for problem solving	2,3/strings,looping,conditional statements	1	-	L3
3	17CS33	Data structures with C	1,2/arrays,stacks,queues	3	-	L3
4	15CS42	Object orientated programming using Java	1,3/Introduction to Object Oriented Concepts, Inheritance,Exceptions, Packages and Interfaces	4	-	L3
5	15CS53	DBMS	2/SQL commands	5	-	L3

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.

Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Modules	Topic / Description	Area	Remarks	Blooms Level
2	Recursive functions	placement	Gap seminar	L3
2	File locking mechanism	placement	Gap presentation	L3
4	Object oriented features	placement	Gap seminar	L3
4	Method overloading & overriding	placement	Gap seminar	L3
5	HTML,XML basics	placement	Gap presentation	L3
5	SQL commands	placement	Gap presentation	L3

B. OBE PARAMETERS

1. Course Outcomes

Expected learning outcomes of the course, which will be mapped to POs.

Modules	Course Code.#	Course Outcome At the end of the course, student	Teach. Hours	Instr Method	Assessment	Blooms' Level
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		should be able to . . .			Method	
1	17CS664.1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.	8	Demonstrate programs	Student presentation of programs	L4 Analyze
2	17CS664.2	Demonstrate proficiency in handling Strings and File Systems.	8	Demonstrate programs	Student presentation of programs	L3 Apply
3	17CS664.3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.	8	Reading, discussion Hands on sessions	Question & answers on Quiz	L3 Apply
4	17CS664.4	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.	8	Reading, discussion Hands on sessions	Student presentation of programs	L6 Create
5	17CS664.5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.	8	Presentation Hands on sessions	Question and answers assignment	L6 Create
-	-	Total	40	-	-	L3-L6

2. Course Applications

Write 1 or 2 applications per CO.

Students should be able to employ / apply the course learnings to . . .

Modules	Application Area Compiled from Module Applications.	CO	Level
1	Desktop and web applications.	CO1	L4
1	complex scientific and numeric applications	CO1	L4
2	pattern matching	CO2	L3
2	machine learning	CO2	L3
3	data validation, data scraping	CO3	L3
3	data wrangling, simple parsing	CO3	L3
4	Real-Time System Design, Office Automation Systems (Email, Word processing)	CO4	L6
4	Robotics	CO4	L6
5	Python has been used to create a variety of web-frameworks including CherryPy, Django, TurboGears, Bottle, Flask	CO5	L6
5	web services	CO5	L6

3. Articulation Matrix

CO – PO Mapping with mapping level for each CO-PO pair, with course average attainment.

- Mod ules	- CO.#	Course Outcomes At the end of the course student should be able to . . .	Program Outcomes															- Lev el	
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3		
1	CO1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.	2.5	2.5	2.5		2.5								2.5	1	3	2	L4
2	CO2	Demonstrate proficiency in	2.5	2.5	2.5		2.5								2.5	1	3	2	L3

		handling Strings and File Systems.																		
3	CO3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.	2.5	2.5	2.5	2.5	2.5									2.5	1	3	2	L3
4	CO4	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.	2.5	2.5	2.5	2.5	2.5									2.5	1	3	2	L6
5	CO5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.	2.5	2.5	2.5	2.5	2.5									2.5	1	3	2	L6
-	15EE662.	Average	2.5	2.5	2.5	2.5	2.5									2.5	1	3	2	L3-L6
-	PO, PSO	1.Engineering Knowledge; 2.Problem Analysis; 3.Design / Development of Solutions; 4.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and Society; 7.Environment and Sustainability; 8.Ethics; 9.Individual and Teamwork; 10.Communication; 11.Project Management and Finance; 12.Life-long Learning; S1.Software Engineering; S2.Data Base Management; S3.Web Design																		

4. Curricular Gap and Content

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs.

Mod ules	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1	4	Object oriented features	Extra classes		Concerned faculty
2	5	HTML,XML,SQL	Extra classes		Concerned faculty

C. COURSE ASSESSMENT

1. Course Coverage

Assessment of learning outcomes for Internal and end semester evaluation.

Mod ules	Title	Teach. Hours	No. of question in Exam						CO	Levels
			CIA-1	CIA-2	CIA-3	Asg	Extra Asg	SEE		
1	Why should you learn to write programs, Variables, expressions and statements, Conditional execution, Functions	08	2	-	-	1	1	2	CO1	L4
2	Iteration, Strings, Files	08	2	-	-	1	1	2	CO2	L3
3	Lists, Dictionaries, Tuples, Regular Expressions	08	-	2	-	1	1	2	CO3	L3
4	Classes and objects, Classes and functions, Classes and method	08	-	2	-	1	1	2	CO4	L6
5	Networked programs, Using Web Services, Using databases and SQL	08	-	-	4	1	1	2	CO5	L6
-	Total	40	4	4	4	5	5	10	-	-

2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Mod	Evaluation	Weightage in	CO	Levels
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ules		Marks		
1, 2	CIA Exam - 1	15	CO1, CO2	L4,L4,L3,L3
3, 4	CIA Exam - 2	15	CO3,CO4	L3,L3,L6,L6
5	CIA Exam - 3	15	CO5	L6,L6
1, 2	Assignment - 1	05	CO1, CO2	L4,L4,L3,L3
3, 4	Assignment - 2	05	CO3,CO4	L3,L3,L6,L6
5	Assignment - 3	05	CO5	L6,L6
1, 2	Seminar - 1		-	-
3, 4	Seminar - 2		-	-
5	Seminar - 3		-	-
1, 2	Quiz - 1		-	-
3, 4	Quiz - 2		-	-
5	Quiz - 3		-	-
1 - 5	Other Activities - UNIT TEST	-	CO1- CO5	L3-L4
	Final CIA Marks	30	-	-

D1. TEACHING PLAN - 1

Module - 1

Title:	Introduction	Appr Time:	8 Hrs
a	Course Outcomes	CO	Blooms Level
-	At the end of the topic the student should be able to . . .	-	Level
1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.	CO1	L4
b	Course Schedule	-	-
Class No	Portion covered per hour	-	-
1	Why should you learn to write programs	CO1	L2
2	Variables, expressions and statements,	CO1	L2
3	Conditional execution	CO1	L3
4	Conditional execution	CO1	L3
5	Functions	CO1	L4
6	Functions	CO1	L4
7	Programming Examples	CO1	L4
8	Programming Examples	CO1	L4
c	Application Areas	CO	Level
1	Desktop and web applications.	CO1	L4
2	complex scientific and numeric applications	CO1	L4
d	Review Questions	-	-
-	The attainment of the module learning assessed through following questions	-	-
1	Define algorithm. explain three general types of errors.	CO1	L2
2	Explain about the need for learning python programming and its importance.	CO1	L2
3	What is the use of comments?	CO1	L2
4	Define associativity.	CO1	L2
5	Write the rules for choosing names of variables.	CO1	L2
6	Define scope of the variable.	CO1	L2
7	How the reverse an item from the list in Python?	CO1	L2
8	Write in brief about any 5 keywords in Python.	CO1	L2

9	List some features of Python.	CO1	L2
10	What are assertions in Python?	CO1	L2
11	Write in brief about the applications of Python.	CO1	L2
12	Write a program that uses input to prompt a user for their name & then welcome them.	CO1	L3
13	List & explain different conditional statements with flow chart.	CO1	L2
14	What is function. Explain different types of functions with examples.	CO1	L3
15	What are fruitful functions & void functions	CO1	L3
e	Experiences	-	-
1			
2			
3			
4			
5			

Module – 2

Title:	Iteration, Strings & Files	Appr Time:	8 Hrs
a	Course Outcomes	CO	Blooms Level
-	At the end of the topic the student should be able to . . .	-	Level
2	Demonstrate proficiency in handling Strings and File Systems.	CO2	L3
b	Course Schedule	-	-
Class No	Portion covered per hour	-	-
09	Iteration,	CO2	L3
10	Iteration,	CO2	L3
11	Strings	CO2	L3
12	Strings	CO2	L3
13	Strings	CO2	L3
14	Files	CO2	L3
15	Files	CO2	L3
16	Programming Examples	CO2	L3
c	Application Areas	CO	Level
3	machine learning	CO2	L3
4	data validation, data scraping	CO2	L3
d	Review Questions	-	-
16	What is iteration?	CO2	L3
17	List different looping statements with examples	CO2	L3
13	Explain while statement with example program.	CO2	L3
18	Explain break & continue statement in python with examples	CO2	L3
19	Explain for loop with example program.	CO2	L3
20	Define string. Write a python program to read a string & find its length.	CO2	L3
21	What is slice. explain with examples.	CO2	L3
22	Strings are immutable. Justify the statement with examples	CO2	L3
23	List & explain different string handling function with examples.	CO2	L3
24	Write a program to read through a file & print the contents of the file line by line in upper case.	CO2	L3
25	Describe in detail about exception handling with necessary examples.	CO2	L3
e	Experiences	-	-
1			
2			

3			
4			
5			

E1. CIA EXAM – 1

a. Model Question Paper - 1

Crs Code:	17CS664	Sem:	VI	Marks:	30	Time:	75 minutes	
Course:	PYTHON APPLICATION PROGRAMMING							
-	-	Note: Answer any 2 questions, each carry equal marks.				Marks	CO	Level
1	a	Mention the three types of errors encountered in python program. Explain the basic building block of python with an example program.				5	CO1	L3
	b	Briefly discuss about the types of decision making statement.				6	CO1	L3
	c	Write a python program to take the temperature in Celsius and convert it to Fahrenheit.				4	CO1	L3
		OR						
2	a	List the rules to declare a variable in python. Demonstrate at least three different types of variable uses with an example program.				5	CO1	L3
	b	Explain the rules of precedence used by python to evaluate an expression with examples.				6	CO1	L3
	c	How python handles the exceptions? Explain with an example program.				4	CO1	L3
3	a	Write a Python program to read the file and count and print the lines that start with the word "From" . Prompt the user for the file name. Also use try/except to handle bad file names.				6	CO2	L3
	b	Explain the following String methods in detail a) startswith() and b) find()				4	CO2	L3
	c	"Strings in Python are immutable" . Explain this statement with example. Write Pythonic code to find the factorial of any number entered through the keyboard.				5	CO2	L3
		OR						
4	a	Briefly discuss about the looping techniques in Python with suitable examples				6	CO2	L3
	b	Write a function called is_palindrome that takes a string argument and returns True if it is a palindrome and False otherwise. Use built-in function to check the length of a string. Prompt the user for input.				4	CO2	L3
	c	Write a python program to display presence of given substring in main string.Explain format operator with examples in Python.				5	CO2	L3

b. Assignment -1

Model Assignment Questions								
Crs Code:	17CS664	Sem:	VI	Marks:	5 / 5	Time:	90 – 120 minutes	
Course:	Python application programming			Module:1,2				
SNo	Assignment Description					Marks	CO	Level
1	Explain Computer Hardware Architecture with neat diagram.					5	CO1	L2
2	Define high level language and machine language. List out the differences between Compiler and Interpreter.					5	CO1	L2
3	Write a function called is_palindrome that takes a string argument and returns True if it is a palindrome and False otherwise. Use built-in function to check the length of a string. Prompt the user for input.					4	CO1	L3
4	Explain break and continue statements with examples in Python. Write Pythonic code that iteratively prompts the user for input. It should continue until the user enters 'done' and then return the average value.					6	CO2	L3

5	Explain the different types of operators with example	6	CO1	L2
6	Briefly discuss about the types of decision making statement.	9	CO1	L2
7	Write a Python program to multiply two matrices.	5	CO2	L3
8	Briefly explain the input and output functions used in python.	6	CO1	L2
9	Write a pseudo code to calculate the sum of n numbers.	4	CO1	L3
10	Write a python program to take the temperature in Celsius and convert it to Fahrenheit.	4	CO1	L3
11	List the various data types in python.	5	CO1	L2
12	Write the syntax of if and if-else statement.	4	CO1	L2
13	Develop a program to find the largest among three numbers..	4	CO1	L3
14	Briefly discuss about the looping techniques in Python with suitable examples	9	CO2	L3
15	Write Python program to swap two numbers using functions. (Write without using intermediate/temporary variables). Prompt the user for input.	6	CO2	L3
	Find the area and perimeter of a circle using functions. Prompt the user for input.	4	CO2	L3
16	Write a Python Program to check whether a number is prime or not using while loop and print appropriate messages.	4	CO2	L3
17	"Strings in Python are immutable" . Explain this statement with example. Write Pythonic code to find the factorial of any number entered through the keyboard.	6	CO2	L3
18	A number with more than one digit is input through the keyboard. Write Pythonic code to reverse the digits in the number and find the sum of all the digits in the reversed number.	5	CO2	L3
19	Explain the following String methods in detail a) upper() and b) find().	6	CO2	L3
20	Write a Python program to read the file and count and print the lines that start with the word "From" . Prompt the user for the file name. Also use try/except to handle bad file names. Explain format operator with examples in Python.	6	CO2	L3
21	Write Pythonic code to Count and Print the occurrence of each of the word in the file using dictionaries. Prompt the user for the file name. Also use try/except to handle bad file names.	6	CO2	L3

D2. TEACHING PLAN - 2

Module – 3

Title:	Lists tuples & Dictionaries	Appr Time:	8 Hrs
a	Course Outcomes	CO	Blooms Level
-	At the end of the topic the student should be able to ...	-	
3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.	CO3	L3
b	Course Schedule		
Class No	Portion covered per hour	-	-
17	Lists	CO3	L3
18	Lists	CO3	L3
19	Dictionaries	CO3	L3
20	Dictionaries	CO3	L3
21	Tuples	CO3	L3
22	Tuples	CO3	L3
23	Regular Expressions	CO3	L3
24	Regular Expressions	CO3	L3

c	Application Areas	-	-
-	Students should be able employ / apply the Module learnings to ...	-	-
5	data validation, data scraping	CO3	L3
6	data wrangling, simple parsing	CO3	L3
d	Review Questions	-	-
-	What is list. list are mutable,justify	CO3	L3
22	Explain different list operations with examples	CO3	L3
23	Write a program to open the file & read it line by line. For each line,split the line into a list of word using split function	CO3	L3
24	Write Pythonic code that implements and returns the functionality of histogram using dictionaries. Also, write the function print_hist to print the keys and their values in alphabetical order from the values returned by the histogram function.	CO3	L3
25	Explain join(), split() and append() methods in a List with examples. Write Pythonic code to input information about 20 students as given below: 1) Roll number 2) Name 3) Total Marks Get the input from the user for a student name. The program should display the Roll number and total marks for the given student name. Also, find the average marks of all the students. Use dictionaries.	CO3	L3
26	How are dictionaries and tuples used together? Demonstrate the use of tuple assignment with dictionaries to traverse the keys and values of dictionary.	CO3	L2
27	Define Tuple. Explain DSU pattern. How are dictionaries and tuples used together? Write Pythonic code to demonstrate tuples by sorting a list of words from longest to shortest using loops.	CO3	L3
28	Why do you need regular expressions in Python? Consider a line " From stephen.marquard@uct.ac.za Sat Jan 5 09:14:16 2008 " in the file email.txt. Write Pythonic code to read the file and extract email address from the lines starting from the word " From ". Use regular expressions to match email address.	CO3	L3
29	Write Pythonic code to create a function called most_frequent that takes a string and prints the letters in decreasing order of frequency. Use dictionaries.	CO3	L3
30	Consider the string ' brontosaurus '. Write Pythonic code that implements and returns the functionality of histogram using dictionaries for the given string. Also, write the function print_hist to print the keys and their values in alphabetical order from the values returned by the histogram function.	CO3	L3
31	Explain join() , split() and append() methods in a List with examples. Write a program which repeatedly reads numbers until the user enters ' done '. Once ' done ' is entered, print out the total, count, and average of the numbers. If the user enters anything other than a number, detect their mistake using try and except and print an error message and skip to the next number.	CO3	L3
e	Experiences	-	-
1			
2			

Module – 4

Title:	Classes & objects	Appr	8 Hrs
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e	Experiences	-	-
1		CO7	L2
2			

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs Code:	17CS664	Sem:	VI	Marks:	20	Time:	75 minutes	
Course:	Python application programming							
-	-	Note: Answer any 2 questions, each carry equal marks.				Marks	CO	Level
1	a	<p>Explain join(), split() and append() methods in a List with examples. Write Pythonic code to input information about 20 students as given below:</p> <p>1) Roll number 2) Name 3) Total Marks</p> <p>Get the input from the user for a student name. The program should display the Roll number and total marks for the given student name. Also, find the average marks of all the students. Use dictionaries.</p>				6	CO3	L4
	b	How are dictionaries and tuples used together? Demonstrate the use of tuple assignment with dictionaries to traverse the keys and values of dictionary.				5	CO3	L4
	c	Write Pythonic code to create a function called most_frequent that takes a string and prints the letters in decreasing order of frequency. Use dictionaries.				4	CO3	L3
		OR						
2	a	Consider the string 'brontosaurus' . Write Pythonic code that implements and returns the functionality of histogram using dictionaries for the given string. Also, write the function print_hist to print the keys and their values in alphabetical order from the values returned by the histogram function.				5	CO3	L4
	b	<p>Why do you need regular expressions in Python? Consider a file "ait.txt". Write a Python program to read the file and look for lines of the form</p> <p>X-DSPAM-Confidence: 0.8475 X-DSPAM-Probability: 0.458</p> <p>Extract the number from each of the lines using a regular expression. Compute the average of the numbers and print out the average.</p>				5	CO3	L4
	c	What are lists? lists are mutable. justify the statement with examples.				5	CO3	L3
		OR						
3	a	Consider a user defined class called Time that records the time of the day. Create a new Time object and assign attributes for hours, minutes and seconds. Write a function called print_time that takes a Time object and prints it in the form hour:minute:second. Write a boolean function called is_after that takes two Time objects, t1 and t2, and returns True if t1 follows t2 chronologically and False otherwise. Write a function called increment which adds a given number of seconds to a Time object.				5	CO4	L4
	b	Consider a user defined class called Point. Write a function called distance that takes two Points as arguments and returns the distance between them.				5	CO4	L4
	c	What are polymorphic functions? Explain with a snippet code.				5	CO4	L3
		OR						
4	a	What does the keyword self in Python mean? Explain with an example.				05	CO4	L3
	b	Show using a Python code how _init_method is invoked when an object is initiated. Explain its working.				06	CO4	L4
	c	Explain _str_method with a Python program.				05	CO4	L3

b. Assignment – 2

Model Assignment Questions							
Crs Code:	17CS664	Sem:	VI	Marks:	5 / 5	Time:	90 – 120 minutes
Course:	PYTHON APPLICATION PROGRAMMING			Module:	3,4		
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							
SNo	Assignment Description				Marks	CO	Level
1	Write Pythonic code that implements and returns the functionality of histogram using dictionaries. Also, write the function print_hist to print the keys and their values in alphabetical order from the values returned by the histogram function.				6	CO3	L3
2	Explain join(), split() and append() methods in a List with examples. Write Pythonic code to input information about 20 students as given below: 1) Roll number 2) Name 3) Total Marks Get the input from the user for a student name. The program should display the Roll number and total marks for the given student name. Also, find the average marks of all the students. Use dictionaries.				5	CO3	L2
3	Define tuple. Explain DSU pattern. Write Pythonic code to demonstrate tuples by sorting a list of words from longest to shortest using loops.				6	CO3	L3
4	Why do you need regular expressions in Python? Consider a line "From stephen.marquard@uct.ac.za Sat Jan 5 09:14:16 2008" in the file email.txt. Write Pythonic code to read the file and extract email address from the lines starting from the word "From" . Use regular expressions to match email address.				8	CO4	L3
5	Explain Polymorphism in Python in detail with examples.				5	CO4	L4
6	Objects are immutable. Justify with example program.				5	CO4	L4
7	What are pure functions explain with examples.				4	CO4	L4
8	Write a definition for a class named circle with attributes center and radius where center is a Point object and radius is a number.				5	CO4	L4
9	Write a function named point_in_circle that takes circle and a Point and returns True if the Point lies in or on the boundary of the circle				6	CO4	L4
10	Use the datetime module to write a program that gets the current date and prints the day of the week.				5	CO4	L4
11	Write a program that takes a birthday as input and prints the user's age and the number of days, hours, minutes and seconds until their next birthday.				6	CO4	L4
12	For two people born on different days, there is a day when one is twice as old as the other. That's their Double Day. Write a program that takes two birthdays and computes their Double Day.				6	CO7	L4
13	Explain __init__ method with example program.				5	CO4	L4
14	Explain __str__ method with example program.				5	CO4	
15	What is Operator Overloading? Write Pythonic code to overload "+", "-" and "*" operators by providing the methods __add__, __sub__ and __mul__.				6	CO4	L4
16	What is list. list are mutable.justify				5	CO3	L3
17	Explain different list operations with examples				6	CO3	L3
18	Write a program to open the file & read it line by line. For each line.split the line into a list of word using split function				6	CO3	L4

19	Write Pythonic code that implements and returns the functionality of histogram using dictionaries. Also, write the function print_hist to print the keys and their values in alphabetical order from the values returned by the histogram function.	6	CO3	L4
20	Explain join(), split() and append() methods in a List with examples. Write Pythonic code to input information about 20 students as given below: 1) Roll number 2) Name 3) Total Marks Get the input from the user for a student name. The program should display the Roll number and total marks for the given student name. Also, find the average marks of all the students. Use dictionaries.	8	CO3	L4
21	How are dictionaries and tuples used together? Demonstrate the use of tuple assignment with dictionaries to traverse the keys and values of dictionary.	6	CO3	L4

D3. TEACHING PLAN - 3

Module – 5

Title:	Networked programs	Appr Time:	8 Hrs
a	Course Outcomes	CO	Blooms Level
-	At the end of the topic the student should be able to . . .	-	-
9	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.	CO5	L6
b	Course Schedule	-	-
Class No	Portion covered per hour	-	-
33	Networked programs,	CO5	L6
34	Networked programs	CO5	L6
35	Using Web Services	CO5	L6
36	Using Web Services	CO5	L6
37	Using Web Services	CO5	L6
38	Using databases and SQL	CO5	L6
39	Using databases and SQL	CO5	L6
40	Using databases and SQL	CO5	L6
c	Application Areas	-	-
-	Students should be able employ / apply the Module learnings to . . .	-	-
9	Python has been used to create a variety of web-frameworks including CherryPy, Django, TurboGears, Bottle, Flask	CO5	L6
10	web services	CO5	L6
d	Review Questions	-	-
-	The attainment of the module learning assessed through following questions	-	-
46	What is a socket? Explain how socket connection can be established to the internet using python code over the TCP/IP connection and the http protocol to get the web document.	CO5	L2
47	Explain the significance of XML over the web development. Illustrate with an example.	CO5	L2
48	Write a note on Google Geo coding web service. Using Python supported	CO5	L2

	b	Explain the significance of XML over the web development. Illustrate with an example	7	CO5	L2
		OR			
2	a	Write a note on Google Geo coding web service. Using Python supported libraries demonstrate with a Snippet code.	7	CO5	L2
	b	What is embedded SQL? Explain the importance of SQLite database. Write a Python code to establish a database connection to 'EmpDb' and display the total gross salary paid to the employees working in the 'Quality Control department. Assume the employee table has been already created and exist in the 'EmpDb'.The fields of Employee table are:(EmpID, DeptName, GrossSalary).	8	CO5	L3
3	a	Define JSON. Construct a simple JSON document. Bring out the differences between XML and JSON. Write Pythonic code to parse JSON document.	7	CO5	L2
	b	State the need for urllib in Python. Write Pythonic code to retrieve the file "ait.txt" by using the URL http://dr-ait.org/code/ait.txt . Also compute the frequency of each of the word in the retrieved file.	8	CO5	L6
		OR			
4	a	Write Pythonic code to retrieve a user's Twitter friends, parse the returned JSON, and extract some of the information about the friends.	8	CO5	L6
	b	Give an example to construct a simple web page using HTML. Write Pythonic code to match and extract the various links found in a webpage using urllib.	7	CO5	L6

b. Assignment – 3

Model Assignment Questions							
Crs Code:	17CS664	Sem:	VI	Marks:	5 / 5	Time:	90 – 120 minutes
Course:	PYTHON APPLICATION PROGRAMMING			Module:	5		
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							
SNo	Assignment Description			Marks	CO	Level	
1	Define socket. Write a Python program to retrieve an image over HTTP.			10	CO5	L2	
2	Write a Python program that makes a connection to a web server requesting for a document and display what the server sends back. Your Python program should follow the rules of the HTTP protocol. List the common headers which the webserver sends to describe the document.			10	CO5	L3	
3	State the need for urllib in Python. Write Pythonic code to retrieve the file "ait.txt" by using the URL http://dr-ait.org/code/ait.txt . Also compute the frequency of each of the word in the retrieved file.			7	CO5	L6	
4	Give an example to construct a simple web page using HTML. Write Pythonic code to match and extract the various links found in a webpage using urllib.			10	CO5	L6	
5	Define XML. Construct a simple XML document and represent it with a diagram. Write Pythonic code to loop through XML nodes in the document.			10	CO5	L6	
6	Define JSON. Construct a simple JSON document. Bring out the differences between XML and JSON. Write Pythonic code to parse JSON document.			6	CO5	L2	
7	State the need for urllib in Python. Explain why data is retrieved in blocks. Write Pythonic code to read any sized binary file using urllib without using up all of the memory you have in your computer.			5	CO5	L6	

8	Give an example to construct a simple web page using HTML. State the need for BeautifulSoup library in Python. Write Pythonic code to read a web page using urllib and then use BeautifulSoup library to extract the href attributes from the anchor (a) tags.	5	CO5	L6
9	Develop a simple application in Python to prompt the user for a search string, call the Google geocoding API, and extract information from the returned JSON.	4	CO5	L6
10	Consider a Photo directory with various Photos and a description for each Photo. The format would be ./2006/03/24-03-06_2018002.jpg ./2006/03/24-03-06_2018002.txt Assume that over the years this Photo directory has accumulated bad text files that doesn't contain a description for the image. Write Pythonic code to clean up a Photo Directory by recognizing and removing bad files.	6	CO5	L6
11	Write Pythonic code to retrieve a user's Twitter friends, parse the returned JSON, and extract some of the information about the friends.	8	CO5	L6
12	Define socket. Write a Python socket program to prompt the user for the URL so it can read any web page. You can use split('/') to break the URL into its component parts so you can extract the host name for the socket connect call. Add error checking using try and except to handle the condition where the user enters an improperly formatted or non-existent URL.	8	CO5	L6

F. EXAM PREPARATION

1. University Model Question Paper

Course:	PYTHON APPLICATION PROGRAMMING				Month / Year	Dec /2020		
Crs Code:	17CS664	Sem:	VI	Marks:	80	Time:	180 minutes	
-	Note	Answer all FIVE full questions. All questions carry equal marks.				Marks	CO	Level
1	a	List the rules to declare a variable in python. Demonstrate at least three different types of variable uses with an example program.				5	CO1	L3
	b	Explain the rules of precedence used by python to evaluate an expression				5	CO1	L3
	c	Write a python program to find the best of two average marks out of three test's marks accepted from the user.				6	CO1	L2
		OR						
2	a	How python handles the exceptions? Explain with an example program.				5	CO1	L2
	b	Write a single user defined function named "solve" that returns the remainder & quotient on division of two numbers accepted from the user. Print the remainder & quotient separately on the console.				6	CO1	L3
	c	Predict the output & justify your answer: i)-11%9 ii)7.7//7 iii)(200-70)*10/5 iv)not "false" v) 5*1**2				5	CO1	L2
3	a	Demonstrate the use of break & continue keywords in looping structures using a snippet code.				6	CO2	L2

	b	Explain string slicing in python. Show with examples.	4	CO2	L2
	c	Write a python program to accept a sentence from the user & display the long word of that sentence along with its length.	6	CO2	L3
		OR			
4	a	List & explain any four built in string manipulation functions supported by python	6	CO2	L3
	b	Write the python code to display the last six character of the string "make hay while the sun shines" to the console	3	CO2	L2
	c	Write a python program to accept a file name from the user: 1. display the first N lines of the file 2. find the frequency of occurrence of the word accepted from the user in the file	7	CO2	L3
5	a	What are lists? Lists are mutable.justify the statements with examples.	05	CO3	L4
	b	How tuples are created in python? Explain different ways of accessing & creating them.	05	CO3	L2
	c	Write a python program to read all the lines in a file accepted from the user & print all email addresses contained in it. Assume the email addresses contain only non-white space.	06	CO3	L3
		OR			
6	a	Implement a Python program using Lists to store and display the average of N integers accepted from the user.	05	CO3	L3
	b	Explain dictionaries. Demonstrate with a Python program.	05	CO3	L3
	c	Design a Python program to search for lines that start with the word 'From' and a character followed by a two digit number between 00 and 99 followed by ':'Print the number if it is greater than zero. Assume any input file.	06	CO3	L4
7	a	Construct a student class and initialize it with name and roll number. Design methods to: (i) Display_ to display all information of the student. (ii) setAge_ to assign age to student. (iii) setMarks_ to assign marks to the student.	07	CO4	L4
	b	Using date time module write a program that gets the current date and prints the day of the week.	04	CO4	L3
	c	What are polymorphic functions? Explain with a snippet code.	05	CO4	L2
		OR			
8	a	What does the keyword self in Python mean? Explain with an example.	05	CO4	L3
	b	Show using a Python code how _init_ method is invoked when an object is initiated. Explain its working.	06	CO4	L4
	c	Explain _str_ method with a Python program.	05	CO4	L3
9	a	What is a socket? Explain how socket connection can be established to the internet using python code over the TCP/IP connection and the http protocol to get the web document.	08	CO5	L3
	b	Explain the significance of XML over the web development. Illustrate with an example.	08	CO5	L3
		OR			
10	a	Write a note on Google Geo coding web service. Using Python supported libraries.demonstrate with a Snippet code.	08	CO5	L6
	b	What is embedded SQL? Explain the importance of SQLite database. Write a Python code to establish a database connection to 'EmpDb" and display the total gross salary paid to the employees working in the 'Quality Control department.	08	CO5	L2

	Assume the employee table has been already created and exist in the 'EmpDb'.The fields of Employee table are:(EmpID, DeptName, GrossSalary).			
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2. SEE Important Questions

Course:	PYTHON APPLICATION PROGRAMMING			Month / Year	Dec /2020		
Crs Code:	17CS664	Sem:	VI	Marks:	80	Time:	180 minutes
	Note	Answer all FIVE full questions. All questions carry equal marks.				-	-
Mod ule	Qno.	Important Question			Marks	CO	Year
1	1	List the rules to declare a variable in python. Demonstrate at least three different types of variable uses with an example program.			5	CO1	2018
	2	Explain the rules of precedence used by python to evaluate an expression			5	CO1	2018
	3	Write a python program ti find the best of two average marks out of three test's marks accepted from the user.			6	CO1	2018
	4	How python handles the exceptions? Explain with an example program.			5	CO2	2018
	5	Write a single user defined function named "solve" that returns the remainder & quotient on division of two numbers accepted from the user. Print the remainder & quotient separately on the console.			6	CO2	2018
	6	Predict the output & justify your answer: i)-11%9 ii)7.7//7 iii)(200-70)*10/5 iv)not "false" v) 5*1**2			5	CO1	2018
2	1	Demonstrate the use of break & continue keywords in looping structures using a snippet code.			6	CO2	2018
	2	Explain string slicing in python. Show with examples.			4	CO2	2018
	3	Write a python program to accept a sentence from the user & display the long word of that sentence along with its length.			6	CO2	2018
	4	List & explain any four built in string manipulation functions supported by python			6	CO2	2018
	5	Write the python code to display the last six character of the string "make hay while the sun shines" to the console			3	CO2	2018
	6	Write a python program to accept a file name from the user: 3. display the first N lines of the file 4. find the frequency of occurrence of the word accepted from the user in the file			7	CO2	2018
3	1	What are lists? Lists are mutable.justify the statements with examples.			05	CO3	2018
	2	How tuples are created in python? Explain different ways of accessing & creating them.			05	CO3	2018
	3	Write a python program to read all the lines in a file accepted from the user & print all email addresses contained in it. Assume the email addresses contain only non-white space.			06	CO3	2018
	4	Implement a Python program using Lists to store and display the average of N integers accepted from the user.			05	CO3	2018
	5	Explain dictionaries. Demonstrate with a Python program.			05	CO3	2018
	6	Design a Python program to search for lines that start with the word 'From' and a character followed by a two digit number between 00 and 99 followed by ':'Print the number if it is greater than zero. Assume any input file.			06	CO3	2018
4	1	Construct a student class and initialize it with name and roll number. Design methods to: (i) Display_to display all information of the student. (ii) setAge_to assign age to student.			07	CO4	2018

		(iii) setMarks_to assign marks to the student.			
	2	Using date time module write a program that gets the current date and prints the day of the week.	04	CO4	2018
	3	What are polymorphic functions? Explain with a snippet code.	05	CO4	2018
	4	What does the keyword self in Python mean? Explain with an example.	05	CO4	2018
	5	Show using a Python code how _init_method is invoked when an object is initiated. Explain its working.	06	CO4	2018
	6	Explain _str_method with a Python program.	05	CO4	2018
5	1	What is a socket? Explain how socket connection can be established to the internet using python code over the TCP/IP connection and the http protocol to get the web document.	08	CO5	2018
	2	Explain the significance of XML over the web development. Illustrate with an example.	08	CO5	2018
	3	Write a note on Google Geo coding web service. Using Python supported libraries.demonstrate with a Snippet code.	08	CO5	2018
	4	What is embedded SQL? Explain the importance of SQLite database. Write a Python code to establish a database connection to 'EmpDb" and display the total gross salary paid to the employees working in the 'Quality Control department. Assume the employee table has been already created and exist in the 'EmpDb'.The fields of Employee table are:(EmpID, DeptName, GrossSalary).	08	CO5	2018

