SRMINSTITUTE OF SCIENCE AND TECHNOLOGY

Ramapuram Campus, BharathiSalai, Ramapuram, Chennai - 600089

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OFCOMPUTERSCIENCEANDENGINEERING

QUESTIONBANK

DEGREE / BRANCH: B.Tech/CSE with Specializations AIML, BDA,CS and IOT

IV SEMESTER

SUB CODE – SUBJECT NAME: 18CSC207J/ADVANCED PROGRAMMING PRACTICE

Regulation– 2018

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DEPARTMENTOFCOMPUTERSCIENCEANDENGINEERING

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SUBJECT : 18CSC207J -ADVANCED PROGRAMMING PRACTICE

SEM/YEAR:IV/II

Course Outcomes

CO1:Create Programs using structured, procedural and object oriented programming paradigms
CO2:Create Programs using event driven, declarative and imperative programming paradigms
CO3:Create Programs using parallel, concurrent and functional programming paradigms
CO4:Create Programs using logic, dependent type and network programming paradigms
CO5:Create Programs using symbolic, automata based and graphical user interface programming paradigms
CO6:Create Programs using different programming paradigms using python language

UNITI			
Structured Programming Paradigm- Programming Language Theory- Bohm-Jacopini structured program theorem- Sequence, selection, decision, iteration, recursion- Other languages: C, C++, Java, C#, Ruby - Demo: Structured Programing in Python- Procedural Programming Paradigm- Routines, Subroutines, functions- Using Functions in Python- logical view, control flow of procedural programming in various aspects- Other languages: Bliss, ChucK, Matlab- Demo: creating routines and subroutines using functions in Python- Object Oriented Programming Paradigm- Class, Objects, Instances, Methods- Encapsulation, Data Abstraction- Polymorphism, Inheritance- Constructor, Destructor- Example Languages: BETA, Cecil, Lava Demo: OOP in Python			
PART-A (Multiple Choice Questions)			
Q. No	**Questions**	**Course Outcome**	**Competence BT Level**
1	In Python which parameter passing mechanism is used with function call. a) Pass by value b) Pass by Reference c) Both Pass by value and Pass by reference d) None	CO1	L1
2	Which one is correct about variable names in Python. a) All variable names must begin with an underscore. b) Unlimited length c) The variable name length is a maximum of 2. d) All of the above	CO1	L1
3	Which of the following is not the type of function argument? a) Positional argument b) Keyword argument c) Initial argument d) Default argument	CO1	L1
4	What will be the output of the following Python code? **x = 50**	CO1	L2

	def func(x): **print('x is', x)** **x = 2** **print('Changed local x to', x)** **func(x)** **print('x is now', x)** a) x is 50 Changed local x to 2 x is now 50 b) x is 50 Changed local x to 2 x is now 2 c) x is 50 Changed local x to 2 x is now 100 a) None		
5	What will be the output of the following Python code? **values = [[3, 4, 5, 1], [33, 6, 1, 2]]** **v = values[0][0]** **for row in range(0, len(values)):** **for column in range(0, len(values[row])):** **if v < values[row][column]:** **v = values[row][column]** **print(v)** a) 3 b) 5 c) 6 d) 33	CO1	L3
6	What will be the output of the following piece of code. [CLO-1,L3] **def greet(name,msg='Good Day'):** **print("Hello",name + ', ' + msg)** **greet("AAA")** **greet("BBB","Good Morning")** a) Hello AAA Good Morning, Hello BBB Good Morning b) Hello AAA Good Morning, Hello BBB Good Day c) Hello AAA Good Day, Hello BBB Good Day d) Hello AAA Good Day, Hello BBB Good Morning	CO1	L2
7	What is the correct syntax to create a class named Student that will inherit properties and methods from a class named Person in Python? a) class Student from Person: b) class Student(Person): c) Student(Person): d) class Student : Person	CO1	L1
8	What value will be printed by the print statement given in the following code? **odd=lambda x: bool(x%2)** **numbers=[n for n in range(10)]** **print(numbers)** **n=list()** **for i in numbers:** **if odd(i):** **continue** **else:** **break**	CO1	L3

	a) [0, 2, 4, 6, 8, 10] b) [0, 1, 2, 3, 4, 5, 6, 7, 8, 9] c) [1, 3, 5, 7, 9] d) Error		
9	The number of arguments taken by lambda function a) 1 b) 2 c) Any number d) None	CO1	L1
10	Which of the following is true regarding Generic/meta programming? a) generates semantic associations b) Programs about programs c) generates higher-order programs d) is used for assembly level manipulations	CO1	L1
11	If a is a dictionary with some key-value pairs, what does a.pop('key') do? a) Removes an arbitrary element b) Removes all the key-value pairs c) Removes the key-value pair for the key given as an argument d) Invalid method for dictionary	CO1	L2
12	According to Bohm-Jacopini, a function is possible by combining subprograms in which three manners? a) Jump, Sequence and Loop b) Sequence, Function Calls and Subroutines c) Sequence, Iteration and Selection d) Iteration, Macros and Branching	CO1	L1
13	What are the values printed by the two print statements given below? **a=10** **b=20** **def change():** **global b** **a=45** **b=56** **change()** **print(a)** **print(b)** a) 10 56 b) 45 56 c) 10 20 d) Syntax Error	CO1	L3
14	Which of the following is the use of id() function in Python? a) Every object doesn't have a unique id b) id returns the identity of the object c) All of the mentioned d) None of the mentioned	CO1	L1
15	What will be the value printed by the last print statement in the following Python code? **d={"id":101, "name":"AAA", "dept":"QA"}** **print(d)** **print("Emp ID=",d['id'])**	CO1	L3

	print(“Emp Name=”,d[‘name’]) **print(“EmpDept=”,d[‘dept’])** **d[‘dept’]=”RA”** **print(d)** **d.pop(‘dept’)** **print(d[‘dept’])** a) QA b) RA c) KeyError: ‘dept’ d) None		
16	Which of the following is correct way to add all classes, methods or other datatypes(list, tuple, dictionary) etc.. of a module in Python? a) import * from module_name b) from module_name import * c) from module_name import all d) import module_name as m	CO1	L2
17	---------- refers to the spaces at the beginning of a code line which is considered as the special important feature of Python. a) Indentation b) Input c) Inherit d) Identification	CO1	L1
18	_____ is a graphical representation of structured programming using Top down analysis. a) Programming Paradigm b) Structogram c) Flowchart d) Proess block	CO1	L1
19	Which of the following statements is incorrect about the following code? **class People():** **def __init__(self, name):** **self.name = name** **def namePrint(self):** **print(self.name)** **person1 = People("John")** **person2 = People("Sai")** **person1.namePrint()** a) person1 and person2 are two different instances of the People class b) The __init__ method is used to set initial values for attributes c) 'self' is not needed in def namePrint(self): d) person2 has a different value for 'name' than person1	CO1	L3
20	_____ is not a keyword, but by convention it is used to refer to the current instance (object) of a class. a) class b) def c) self d) init	CO1	L2
21	Which of the following is the correct way to define an initializer method?	CO1	L2

	a) def __init__(title, author): b) def __init__(self, title, author): c) def __init__(): d) __init__(self, title, author):		
22	How the constructors and destructors can be differentiated? a) Destructor have a return type but constructor doesn't b) Destructors can't be defined by the programmer, but constructors can be defined c) Destructors are preceded with a tilde symbol, and constructor doesn't d) Destructors are same as constructors in syntax	CO1	L2
23	What is the output of the function complex()? a) 0j b) 0+0j c) 0 d) Error	CO1	L2
24	What does ~~~5 evaluate to? a) +5 b) -11 c) +11 d) -5	CO1	L2
25	Which specifier should be used for member functions of a class to avoid inheritance? a) Private b) Default c) Protected d) Public	CO1	L2
PART B (4 Marks)			
1	What is Structured programming? How does it minimize the complexity?	CO1	L1
2	Write a python program with an add() function to return the sum of two integers.	CO1	L3
3	List on Python Variables and its types.	CO1	L1
4	Compare structured programming and Procedural programming.	CO1	L2
5	Write a program to implement recursion.	CO1	L3
6	What is Data abstraction and explain its types.	CO1	L1
7	Define Inheritance.	CO1	L1
8	Write a program to create a list and print the values.	CO1	L3
PART C (12 Marks)			
1	There are 50 computers available in computer programming lab where each computers are used six hours per day. Write a Python program using classes and objects that contain getDetail() for getting input from user,calculatesecondperDay() for calculating the usage of each computer in seconds per day, calculateminutesperWeek() for calculating the usage of each computer in minutes per week	CO1	L3

	,calculatehourperMonth() for calculating usage of each computer in hour per month and calculatedayperYear() for calculating usage of each computer in day per yearList all the Components of structured programming language		
2	Discuss the features of Procedural programming.	CO1	L2
3	Define Function and recursion and explain them in detail	CO1	L2
4	List out the Features of object oriented programming	CO1	L2
5	Write a python program to get square and cube of a number using Inheritance concept.	CO1	L3

UNITII			
	PART-A (Multiple Choice Questions)		
Q. No	**Questions**	**Course Outcome**	**Competence BT Level**
1	In event driven programming, flow of the program is determined by ____ a. Sensors only b. Exceptions and Errors only c. **User actions and sensors** d. Peripherals only	CO2	BT2
2	Which of the following languages does not support Event-driven programming paradigm? a. ALGOL b. Python c. Javascript d. **Prolog**	CO2	BT2
3	Which of the following is not an Event? a. User actions b. System messages	CO2	BT2

	c. Interrupts d. **Compiler Errors**		
4	What does the scheduler do when an event occurs? a. Throw an Exception b. **Call the appropriate event handler** c. Terminate the program d. Wait for the event to be handled	CO2	BT1
5	Which of the following is not true about an event handler? a. Block of code that deals with an event b. Triggered by an event c. **One event can have only one handler** d. Executes only when it is called	CO2	BT3
6	Swing uses _____ to represent an event a. Class b. Functions c. **Object** d. Subroutine	CO2	BT1
7	Event handler is also known as _____ a. Event Procedure **b. Event Listener** c. Event Dispatcher d. Event Scheduler	CO2	BT2
8	In Tkinter , the main window is known as a. Master	CO2	BT1

	b. **Root** c. Primary d. JWindow		
9	What is not true about Declarative programming? a. focus is on what needs to be done rather how it should be done b. style of building programs that expresses logic of computation without talking about its control flow c. declare the result we want rather how it has be produced d. **builds programs using implementation logic**	CO2	BT3
10	Identify examples of declarative statements? a. **Literals, variables, constants** b. Data types, functions, Macros c. Variables, functions, constants d. Constants, data types, methods	CO2	BT2
11	Which type of the declarative statements does the following code represent? class MyClass: x = 5 y='John' p1 = MyClass() print(p1.x) a. **Homogenous Declarative** b. Hybrid declarative c. Heterogeneous declarative d. Multiple Declarative	CO2	BT3

12	Object attributes are defined within the _____ constructor a. **_init_** b. _initialize_ c. _attr_ d. _obj_	CO2	BT1
13	What does a descriptor protocol hold? a. methods that overload attribute access of descriptors b. **methods that override attribute access of descriptors** c. methods that define the attribute and variable access of descriptors d. methods that declare the attributes of descriptors	CO2	BT2
14	How we import a tkinter in python program ? a.import tkinter b.import tkinter as t c.from tkinter import * **d.All of the above**	CO2	BT2
15	Which function is used to delete any widget from the screen ? a.stop() b.delete() **c.destroy()** d.break()	CO2	BT2
16	What is false regarding imperative languages? a. work by modifying program state b. code executes too slowly for optimal results on complex	CO2	BT3

	data science applications c. **focus on *what* and not *how*** d. executes step by step commands		
17	Which among the following is not a primitive data structure? a. Pointers b. **Files** c. Boolean d. Integer	CO2	BT2
18	Identify the methods of Iterator class in Python? a. **__iter__ and __next__** b. __repeat __ and __ iter__ c. __iter__ and __move__ d. __prev__ and __next__	CO2	BT3
19	Which of the following is the advantage of declarative languages over imperative languages? (a) Can use abstract data type (b**) Easy to verify the properties of the program** (c) Is more efficient (d) Can be implemented by an interpreter or compiler;	CO2	BT2
20	Which of the following language is a declarative language? a. Algol b. Java c. C++ d. **Prolog**	CO2	BT1

21	Which is the right syntax to join two lists in Python? a. Listoflist = {listA},{listB} b. listoflist = [listA, listB] c. listoflist = [listA+listB] d. listoflist = [listA]+[listB]	CO2	BT3
22	States in Python are represented as a. Class b. Variables c. **Objects** d. Static variables	CO2	BT1
23	Which of the following will modify a state? a. pass the name(s) of the state(s) to the Machine initializer b. directly initialize each new State object c. **modify() method that belongs to the State object** d. pass a dictionary with initialization arguments	CO2	BT3
24	Which transition will never leave the state? a. Internal transition b. **Reflexive transition** c. Iterative transition d. Casted Transition	CO2	BT1
25	Which of the following is not a part of an INFO-level logging in Python? a. state changes b. transition triggers	CO2	BT1

	c. **callbacks** d. conditional checks		
PART B (4 Marks)			
1	How is KeyListener used to handle keypress event?	CO2	BT2
2	List and define the three participants in an event	CO2	BT1
3	List the declarative statements in declarative programming with examples.	CO2	BT1
4	Write a Python program that creates a Timer that will explode in 2 seconds using TURTLE module.	CO2	BT2
5	Illustrate the invoking of a descriptor using _ _getattribute()_ _ method.	CO2	BT3
6	Bring out the differences between Lists and Tuples in Python using examples.	CO2	BT1
7	Using Turtle, Write a Python program to demonstrate Keypress Events. the turtle on the screen must move according to the arrow keys (Up,Left,Right and Back) pressed.	CO2	BT3
8	Compare and contrast imperative programming and declarative programming.	CO2	BT2
PART C (12 Marks)			
1	Discuss about an Event object and steps to handle an event	CO2	BT1
2	Design the Students information system with student details, qualification details and mark details and add insert, delete and update button. Write an event handler to send the marks to their parents, immediately after the mark has been updated.	CO2	BT3
3	Elaborate on the features of declarative programming and list the set of declarative statements.	CO2	BT2
4	Write a Python program to create three states Solid, Liquid and Gas. Create transitions Melt, Evaporate, Sublimate and Ionize with an	CO2	BT3

	exit callback printing the transition name.		
5	Compare imperative programming with declarative programming.	CO2	BT1

UNITIII			
	PART-A (Multiple Choice Questions)		
Q. No	**Questions**	**Course Outcome**	**Competence BT Level**
1	Parallelism representation is critical to the success of ---------- **a)High-performance computing**. b)Low-performance computing c)Scaling d)Vectorization	CO4	BT1
2	Parallel programming through a combination of ----------and ---------- **a.Patterns, examples** b.Algorithms , flowcharts c.Models , methods d.Classes ,objects	CO4	BT1
3	What is multithreaded programming? a) It's a process in which two different processes run simultaneously b) **It's a process in which two or more parts of same process run simultaneously** c) It's a process in which many different process are able to access same information d) It's a process in which a single process can access information from many sources	C04	BT1
4	Which of these are types of multitasking? a) Process based b) Thread based c) **Process and Thread based** d) Task Based	CO4	BT2
5	What will happen if two threads of the same priority are called to be processed simultaneously?	CO4	BT2

	a) Anyone will be executed first lexographically b) Both of them will be executed simultaneously c) None of them will be executed d) **It is dependent on the operating system**		
6	Which of these statements is incorrect? a) By multithreading CPU idle time is minimized, and we can take maximum use of it b) By multitasking CPU idle time is minimized, and we can take maximum use of it c) Two thread in Java can have the same priority d) **A thread can exist only in two states, running and blocked**	CO4	BT2
7	Identify the technique that allows more than one program to be ready for execution and provides the ability to switch from one process to another. a) multitasking b) multiprocessing c) multitasking d) **multiprogramming**	CO4	L2
8	The technique that increases the system's productivity. a) multiprogramming b) multitasking c) multiprocessing d) single-programming	CO4	L1
9	_____is a property in which more than one operation can be run simultaneously but it doesn't mean it will be. a. Concurrency b.Semaphore	CO4	L1

	c.Mutual exclusion d.parallel process		
10	_____ is a light-weight cooperatively-scheduled execution unit. a. gevent.Greenlet b. gevent.spawn() c.gevent.spawn_later() d.gevent.spawn_raw()	CO4	L3
11	Which keyword is used to define methods in Python? (a) function (b) def (c) method (d) All of these	CO4	L2
12	_____is a builtin python module where all possible types are defined a) overload b)typing c)function d)literal	CO4	L2
13	_____type represents a specific value of the specific type a) overload b) typing c) literal	CO4	L1

	d) None of the above		
14	_____ is required to define multiple function declarations with different input types and results. a) overload b) typing c) literal d) None of the above	CO4	L1
15	Which among the following is not the blocking objects for task Synchronization. a) Events b) Mutexes and semaphores c) waitable timers d) stack		
16	Which among the following is not the Synchronization primitives in python. a) Lock b) M-Lock c) Semaphores d) R-lock		
17	Which is/are the Method for Programming Parallel: a) Message Passing b) Shared Memory c) Data Parallel d) all the above		
18	Which among the following is not the Parallel programming model. a) Phase Parallel		

	b) Divide and Conquer c) Pipe line d) Backtracking		
19	Multi Threading can be achieved by importing which library in python a) threading b) threaded c) thead d) Multi thread		
20	Process and Pool class models follows _____ policy for scheduling and execution. a) LIFO-last in first out b) FIFO-first in first out c) LRU-least recently used d) LFU- least frequently used		
21	Which among the following is not Pure Function. a) strlen() b) pow() c) sqrt() d) printf()		
22	Which among the following is not Impure Function. a) strcpy() b) printf() c) rand() d) time()		
23	Which among the following is not an mutable data type? a) List b) bool c) dictionary d) set		
24	Which among the following is not an immutable data type?		

	a) List b) bool c) string d) tuple		
25	Which of the following is/are function programming tool: a) filter(function, sequence) b) map(function, sequence) c) reduce(function, sequence) d) all the above		
PART B (4 Marks)			
1	Differentiate parallel programming with functional programming	CO4	L2
2	Explain about Multithreading	CO4	L1
3	Explain about Multiprocessing.	CO4	L1
4	Demonstrate Multiprocessing module in Python	CO4	L3
5	Describe about Process class.	CO4	L2
6	Design a Pool class in Python	CO4	L3
7	State Concurrent programming paradigm.	CO4	L1
8	Compare multiprocessing and multitasking.	CO4	L2
PART C (12 Marks)			
1	Write a python program to implement the producer consumer problem.	CO4	L3
2	Implement the concept “Pool class” by importing a package pool	CO4	L3
3	Write a python program to implement the dining philosopher problem.	CO4	L3
4	Explain the differences between multithreading and multiprocessing with an example?	CO4	L1

5	Compare Concurrent programming paradigm and functional programming paradigm with example program.	CO4	L2

UNITIV			
FunctionalUnitsandBasicOperationalConcepts-LanguageofaComputerOperationsandOperands-InstructionRepresentation-LogicalOperationsanddecisionmaking-MIPSAddressing-BusStructure-Bus Operation			
PART-A (Multiple Choice Questions)			
Q. No	**Questions**	**Course Outcome**	**Competence BT Level**
1	Parallelism representation is critical to the success of ---------- a)High-performance computing b)Low-performance computing c)Scaling d)Vectorization	CLO4	BT1
2	Parallel programming through a combination of ----------and ----------(,L1) a.Patterns, examples b.Algorithms , flowcharts c.Models , methods d.Classes ,objects	CLO4	BT1
3	What is multithreaded programming? (CLO-4,L1) a) It's a process in which two different processes run simultaneously b) It's a process in which two or more parts of same process run simultaneously c) It's a process in which many different process are able to access same information d) It's a process in which a single process can access information from many sources	CLO-4	BT1
4	Which of these are types of multitasking? (CLO-4,L2) a) Process based b) Thread based **c) Process and Thread based** d) Task based	CLO-4	BT2
5	What will happen if two thread of the same priority are called to be processed simultaneously? (CLO-4,L2) a) Anyone will be executed first lexographically b) Both of them will be executed simultaneously c) None of them will be executed **d) It is dependent on the operating system**	CLO-4	BT2

6	Which of these statements is incorrect? a) By multithreading CPU idle time is minimized, and we can take maximum use of it b) By multitasking CPU idle time is minimized, and we can take maximum use of it c) Two thread in Java can have the same priority d) A thread can exist only in two states, running and blocked	CLO-4	BT2
7	Identify the technique that allows more than one program to be ready for execution and provides the ability to switch from one process to another. a) multitasking b) multiprocessing c) multitasking d) multiprogramming	CLO-4	BT2
8	The technique that increases the system's productivity. a) multiprogramming b) multitasking c) multiprocessing d) single-programming	CLO-4	BT1
9	_____is a property which more than one operation can be run simultaneously but it doesn't mean it will be. (a. Concurrency b.Semaphore c.Mutual exclusion d.parallel process	CLO-4	BT1
10	_____ is a light-weight cooperatively-scheduled execution unit. a. gevent.Greenlet b. gevent.spawn() c.gevent.spawn_later() d.gevent.spawn_raw()	CLO-4	BT3
11	Which keyword is used to define methods in Python? (a) function (b) def (c) method (d) class	CLO-4	BT2
12	Which one of the following options is CORRECT given three positive integers x, y and z, and a predicate? $P(x) = \neg(x=1) \wedge \forall y(\exists z(x=y*z) \Rightarrow (y=x) \vee (y=1))$ **a) P(x) being true means that x is a prime number**	CLO-4	BT3

	b) P(x) being true means that x is a number other than 1 c) P(x) is always true irrespective of the value of x d) P(x) being true means that x has exactly two factors other than 1 and x		
13	Suppose the predicate F(x, y, t) is used to represent the statement that person x can fool person y at time t. which one of the statements below expresses best the meaning of the formula $\forall x \exists y \exists t(\neg F(x, y, t))$? (a) Everyone can fool some person at some time (b) No one can fool everyone all the time (c) Everyone cannot fool some person all the time (d) No one can fool some person at some time	CLO-4	BT3
14	Which one of the following is the most appropriate logical formula to represent the statement? "Gold and silver ornaments are precious". The following notations are used: G(x): x is a gold ornament S(x): x is a silver ornament P(x): x is precious (a) $\forall x(P(x) \rightarrow (G(x) \wedge S(x)))$ (b) $\forall x((G(x) \wedge S(x)) \rightarrow P(x))$ (c) $\exists x((G(x) \wedge S(x)) \rightarrow P(x)$ (d) $\forall x((G(x) \vee S(x)) \rightarrow P(x))$	CLO-4	BT3
15	Which one of the first order predicate calculus statements given below correctly express the following English statement? Tigers and lions attack if they are hungry or threatened. (A) $\forall x\left[(\text{tiger}(x) \wedge \text{lion}(x)) \rightarrow \{(\text{hungry}(x) \vee \text{threatened}(x)) \rightarrow \text{attacks}(x)\}\right]$ (B) $\forall x\left[(\text{tiger}(x) \vee \text{lion}(x)) \rightarrow \{(\text{hungry}(x) \vee \text{threatened}(x)) \wedge \text{attacks}(x)\}\right]$ (C) $\forall x\left[(\text{tiger}(x) \vee \text{lion}(x)) \rightarrow \{\text{attacks}(x) \rightarrow (\text{hungry}(x) \vee \text{threatened}(x))\}\right]$ (D) $\forall x\left[(\text{tiger}(x) \vee \text{lion}(x)) \rightarrow \{(\text{hungry}(x) \vee \text{threatened}(x)) \rightarrow \text{attacks}(x)\}\right]$	CLO-4	BT3
16	What is the correct translation of the following statement into mathematical logic? "Some real numbers are rational" (A) $\exists x$ (real(x) $\vee$ rational(x)) (B) $\forall x$ (real(x) $\rightarrow$ rational(x)) (C) $\exists x$ (real(x) $\wedge$ rational(x)) (D) $\exists x$ (rational(x) $\rightarrow$ real(x))	CLO-4	BT3
17	What is the first order predicate calculus statement equivalent to the following? Every teacher is liked by some student (A) $\forall$(x) [teacher (x) $\rightarrow$ $\exists$ (y) [student (y) $\rightarrow$ likes (y, x)]] (B) $\forall$ (x) [teacher (x) $\rightarrow$ $\exists$ (y) [student (y) ^ likes (y, x)]] (C) $\exists$ (y) $\forall$ (x) [teacher (x) $\rightarrow$ [student (y) ^ likes (y, x)]]	CLO-4	BT3

	(D) ∀ (x) [teacher (x) ^ ∃ (y) [student (y) → likes (y, x)]]		
18	Which of the above two are equivalent? (A) I and III (B) I and IV (C) II and III (D) II and IV	CLO-4	BT3
19	_____is a builtin python module where all possible types are defined. .((a) overload b)typing c)function d)literal Ans: b	CLO-4	BT2
20	_____type represents a specific value of the specific type. a) overload b) typing c) literal d) override Ans: c	CLO-4	BT1
21	_____ is required to define multiple function declarations with different input types and results. a) overload b) typing c) literal d) multiple	CLO-4	BT1
22	Which among the following is not Pure Function. a) strlen() b) pow() c) sqrt() d) printf()	CLO-4	BT1
23	Which among the following is not Impure Function. a) strcpy() b) printf() c) rand() d) time()	CLO-4	BT1
24	Which among the following is not an mutable data type? a) List b) bool c) dictionary d) set	CLO-4	BT2
25	Which among the following is not an immutable data type? a) List b) bool c) string d) tuple	CLO-4	BT2

PART B (4 Marks)			
1	State parallel programming paradigm.	CLO-4	BT1
2	Differentiate parallel programming with functional programming.	CLO-4	BT2
3	Explain about Multithreading.	CLO-4	BT1
4	Compare multiprocessing and multitasking.	CLO-4	BT2
5	Relate Serial processing concepts in Python.	CLO-4	BT3
6	Differentiate Serial Processing and Parallel Processing.	CLO-4	BT3
7	Demonstrate Multiprocessing module in Python.	CLO-4	BT3
8	Describe briefly about Process class.	CLO-4	BT2
PART C (12 Marks)			
1	Write a python program to implement producer consumer problems.	CLO-4	BT3
2	Implement the concept "Pool class" by importing a package pool.	CLO-4	BT3
3	Explain the differences between multithreading and multiprocessing with an example?	CLO-4	BT1
4	Write a python program to check every **key:value** pair in a dictionary and check if they match the **name:email** format using typing module.	CLO-4	BT3
5	Compare Concurrent programming paradigm and functional programming paradigm with example program.	CLO-4	BT2

UNITV

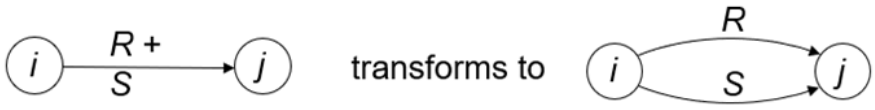
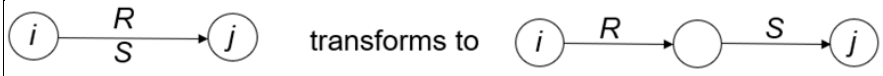
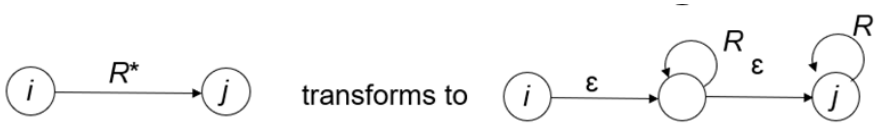
Symbolic Programming Paradigm, Symbolic Maths, algebraic manipulations, limits, differentiation, integration, series
SymPy usage for symbolic maths, Equation Solving, Matrices
Other languages: Aurora, LISP, Wolfram, Demo: Symbolic Programming in Python
Automata Based Programming Paradigm, Finite State Machine, deterministic finite automation (dfa).
NFA State transitions using python-automaton, Initial state, destination state, event (transition)
Other languages: Forth, Ragel, SCXML, Demo: Automata Based Programming in Python
GUI Programming Paradigm, Graphical User Interface (GUI)
Tkinter, WxPython, JPython, WxWidgets, PyQT5
Other languages: GTK, java-gnome, Demo: GUI Programming in Python

PART-A (Multiple Choice Questions)

Q. No	Questions	Course Outcome	Competence BT Level
1	Which of the following is false about sympy? a. Sympy is a python library for symbolic mathematics b. It requires external libraries for execution c. It is an alternative to the systems like mathematica or maple Ans: B	CO5	BT1

2	Limit the Sympy Expression using the syntax a. limit (var,func,point) b. limit(func,var,point) c. limit(func,var) d. limit(var,point) Ans: B	CO5	BT1
3	Finite state machines are used for____ a. Pseudo random test patterns b. Deterministic test patterns c. Random test patterns d. Algorithmic test patterns Ans:D	CO5	BT1
4	_____ is a class attribute defined by its source state and destination state. a. LGPL b. Scipy c. Transition d. State Ans : C	CO5	BT1
5	What kind of abstract machine can recognize strings in a regular set? a. DFA b. NFA c. PDA d. DFA,NFA Ans: A	CO5	BT1
6	Identify the latest version of wxPython that supports both Python 2 and Python 3 a. wxPython b. Phoenix c. wxJython d. Sphinx Ans: A	CO5	BT1
7	In regular expressions, the operator '*' stands for------ a. Concatenation b. Addition c. Selection d. Iteration Ans: D	CO5	BT1

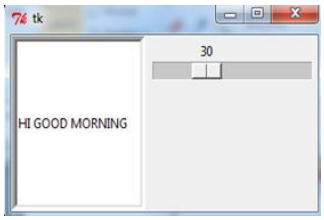
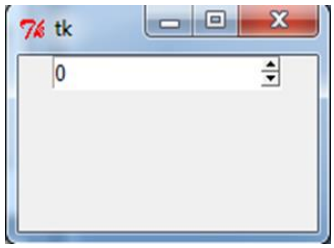
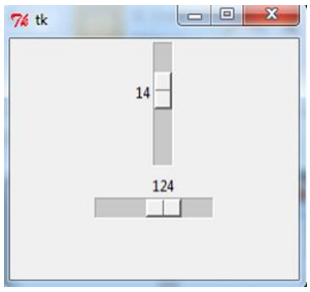
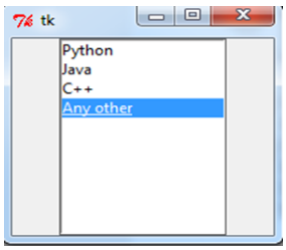
8	_____ is used for grouping and organizing the widgets a. Menu b. Window c. Frame d. ListBox Ans: C	CO5	BT1
9	Essential thing to create a window screen using tkinter python? a. Call tk() function b. Create a button c. To define a geometry d. Create a Window Ans: A	CO5	BT1
10	Differentiate the Sympy Expression using the syntax a. diff (var,func) b. diff(func,var) c. diff(expr,var) d. diff(var,point) Ans: B	CO5	BT1
11	Choose the correct output for the following code? Import sympy as sym a= sym.Rational(4,6) print a a. 6/4 b. 0.66 c. 4/6 d. 1.5 Ans: C	CO5	BT2
12	Choose the output for the following code? Limit (sin(x), x,0) a. 0 b. 1 c. Infinite d. Error Ans: B	CO5	BT2
13	evalf() function evaluates a given numerical expression upto a given floating point precision upto _____ digits. a. 1 b. 10 c. 100 d. 1000	CO5	BT2

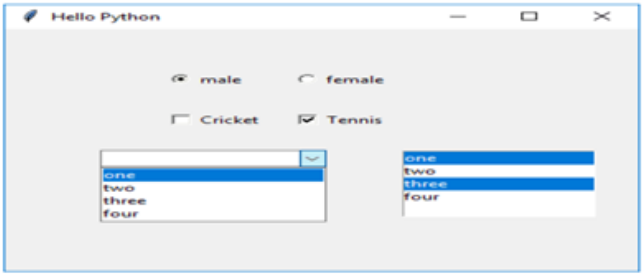
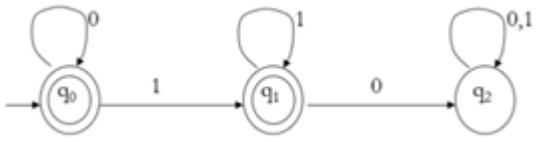
	Ans: C		
14	Which of the following is the correct output for the below given code? x,y=sym.symbols('x,y') A=sym.Matrix([[1,x],[y,1]]) print A a. Matrix ([[1,x], [y,1]]) b. Matrix ([[x,1],[1,y]]) c. Matrix ([[0,x], [y,0]]) d. Matrix ([[x,0],[0,y]]) Ans: A	CO5	BT2
15	Which of the following is correct among the following expressions? i.  ii.  iii.  a. i,ii b. ii,iii c. i,iii d. i,ii,iiii Ans: A	CO5	BT2
16	wxPython API contains wx.Slider class. a. Yes b. No c. Can be yes or no d. Can not say Ans: A		

17	Which of the following statements is correct in jpython code?
	class Name:
	def __init__(javatpoint):
	javajavatpoint = java
	name1=Name("ABC")
	name2=name1
	a. It will throw the error as multiple references to the same object
		CO5	BT2

	is not possible b. id(name1) and id(name2) will have same value c. Both name1 and name2 will have reference to two different objects of class Name d. id(name1) and id(name2) will have different value Ans: B		
18	(a+b)* is equivalent to------- a. b*a* b. (a*b*)* c. a*b* d. (a*b*) Ans: B	CO5	BT2
19	Choose the following correct output from sympy import sqrt, pprint, mul x=sqrt(2) y=sqrt(2) pprint(mul(x,y,evaluate=false)) print('equals to') print (x*y) a. 4 b. 2 c. Sqrt(2) d. Error Ans: B	CO5	BT2
20	How does the grid function put the widget on the screen? a. According to x,y coordinate b. According to row and column wise c. According to left, right d. According to up, down Ans: B	CO5	BT2
21	According to the given transitions, which among the following are the epsilon closures of q1 for the given NFA? Δ (q1, ε) = {q2, q3, q4} Δ (q4, 1) =q1 Δ (q1, ε) =q1 a. q4 b. q2 c. q1 d. q1, q2, q3, q4 Ans: D	CO5	BT3

22	Choose the right steps for creating the GUI a. Import the module Tkinter, Add the widgets, Build a GUI application (as a window), Enter the main event's loop for taking action when the user triggered the event b. Import the module Tkinter, Build a GUI application (as a window), Add the widgets, Enter the main event's loop for taking action when the user triggered the event c. Add the widgets, Build a GUI application (as a window), Enter the main event's loop for taking action when the user triggered the event d. Build a GUI application (as a window), Add the widgets, Enter the main event's loop for taking action when the user triggered the event Ans: B	CO5	BT3
23	Choose the correct output for the following code? from sympy import * mat = Matrix([[1, 2], [2, 1]]) new_mat = mat.col_insert(1, Matrix([[3], [4]])) print(new_mat) a. [1,2,3], [2,3,4] b. [1,3,2],[2,4,3] c. [1,2,3],[2,4,1] d. [1,3,2],[2,4,1] Ans: D	CO5	BT3

24	Choose the correct output for the following code. from tkinter import * m1 = PanedWindow() m1.pack(fill = BOTH, expand = 1) left = Entry(m1, bd = 5) m1.add(left) m2 = PanedWindow(m1, orient = VERTICAL) m1.add(m2) top = Scale(m2, orient = HORIZONTAL) m2.add(top) mainloop() a.  b.  c.  d.  Ans: A	CO5	BT3

25	What is the output of the following Python code for the given statements? import sympy as sym x = Symbol('x') y = Symbol('y') ans1 = expand((x + y) ** 3) print("expand: ", ans1) ans2=simplify((x + x * y) / x) print("simplify:",ans2) 1. If the expression is sin(x)/cos(x), what will be the output using simplify method a. Sin (x) b. Cos (x) c. Tan (x) d. Cos $^{-1}$(x) Ans: C 2. What is the output of (x+y)**2? a. x**2+2*x*y+y**2 b. x**2-2*x*y+y**2 c. x**2+2*x*y-y**2 d. x**2-2*x*y-y**2 Ans: A	CO5	BT3
	PART B (4 Marks)		
1	Write a program to factorize the following expression x**3 + 3*x**2*y + 3*x*y**2 + y**3	CO5	BT3
2	Write a Program to Create the following Layout using Python: 	CO5	BT2
3	Let Σ = {0, 1}. Give DFAs for {}, {ε}, Σ*, and Σ+ 	CO5	BT3
4	Find an NFA to recognize the language $(a + ba)^*bb(a + ab$	CO5	BT2
5	Design and implement a GUI program that consist of "Subject" , " Faculty" List box and "SUBMIT" button .Subject and faculty for the corresponding subject should be selected by the student and it should be submitted with the help of submit button	CO5	BT3
6	Write the commands to perform the operations on substitutions and	CO5	BT1

	expressions		
7	Write a DFA automata code for L(M)={$(ab)^n$ | n Î N}	CO5	BT2
8	Write a DFA automata code for L(M) ={ w | w has an even number of 1s}	CO5	BT2
PART C (12 Marks)			
1	Consider the following series: X+(X2/2) + (X3/3) + (X4/4) +……+(Xn/N) Write a python program that will ask a user to input a number, n, and print this series for that number. In the series, x is a symbol and n are an integer input by the program's user. The nth term in this series is given as (Xn/N).	CO5	BT3
2	Design a student information system which consists of name, register number, email-id, department, five subject names and marks for each subject and calculate Average marks. Requirements: (i) Add check button to select subjects and department and add entry buttons for getting name, registration number, email-id from the user. (ii)Make use of Grid to arrange all the widgets and display Average marks in label box.	CO5	BT2
3	a. Write NFA automata code for the Language that accepts all end with 01 b. Write a automata code for L(M)= $a + aa^*b + a^*b$. c Write a automata code for Let Σ = {0, 1}. Given NFAs for {}, {ε}, {$(ab)^n$ | n Î N}, which has regular expression $(ab)^*$	CO5	BT3
4	Design an alarm tool that should allow users to create, edit, and delete alarms. It should also have an interface that lists all the alarms, provided they have not being deleted by the user	CO5	BT3
5	Find an DFA for each of the following languages over the alphabet {a, b} (a) {(ab)n | n Î N}, which has regular expression (ab)*. b) Find a DFA for the language of a + aa*b.	CO5	BT3

Note:

1. **BT Level –** Blooms Taxonomy Level
2. **CO – Course Outcomes**

BT1 –RememberBT2 – Understand BT3 – Apply BT4 – Analyze BT5 – Evaluate BT6 – Create