KONERU LAKSHMAIAH EDUCATION FOUNDATION

(Deemed to be University, Estd. u/s. 3 of UGC Act 1956)

B.Tech - Even Sem : Semester in Exam-I

Academic Year:2021-2022

21EC1202 - Computer Organization & Architecture

Set No: 2

Time: **Max.Marks: 50**

S.NO	Answer All Questions	Choice	Options	Marks	CO	CO BTL	COI BTL
1.	Define Bus and Explain different types of Buses.	choice Q-2		4.5Marks	CO1	2	1
2.	Provide the assembly language zero-address instructions for the give expression: (A+B+C+D) / 4.			4.5Marks	CO1	2	2
3.	Emphasize the significance of Program Counter in Subroutine and demonstrate the Subroutine process with an example.	choice Q-4		8Marks	CO1	2	1
4.	Design an ALU (with any 4 operations) using the suitable combinational logic circuit/s.			8Marks	CO1	2	2
5.	List out different addressing modes and explain at least two of them in detail. List out the different instruction set of a processor.	choice Q-6		12.5Marks	CO1	2	1
6.	Illustrate different types of operations in instruction set.			12.5Marks	CO1	2	2
7.	List out the common Micro-operations with one example each.	choice Q-8		4.5Marks	CO2	2	1
8.	Explain the four essential registers required for instruction execution.			4.5Marks	CO2	2	2
9.	Illustrate in detail about Microprogrammed control unit	choice Q-10		8Marks	CO2	2	1
10.	Interpret the significance of CPU Registers in Program Execution.			8Marks	CO2	2	2
11.	Illustrate Instruction Cycle with neat sketch. Briefly report the significance of the internal structure of CPU with the suitable block diagram.	choice Q-12		12.5Marks	CO2	2	1
12.	Explain the each function of Hardwired control unit with neat block diagram			12.5Marks	CO2	2	2

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B.Tech - Even Sem : Semester in Exam-1

Academic Year:2021-2022

21SC1202 - DATA STRUCTURES

Set No: 1

Time: **Max.Marks: 50**

S.NO	Answer All Questions	Choice	Options	Marks	CO	CO BTL	COI BTL
1.	Arrange the given order of magnitudes by its growth rate. N, N^2, N(logN), N(log (logN), N(log^2N), 2^{N+1}, 307, N^2(logN), N^3, 2^N. Indicate the functions grows at the same rate.	choice Q-2		4.5Marks	CO1	4	4
2.	Arrange the following sequence of records in ascending order using external sorting (2-way merge sort) 17, 3, 29, 56, 24, 18, 4, 9, 10, 23			4.5Marks	CO1	4	4
3.	Given an array of integers 45, -33, 28, 19, 11, -77, 20, -52, arrange them in ascending order using shell sort and display the order of elements and number of comparisons after every iteration?	choice Q-4		8Marks	CO1	4	4
4.	Neha is interested in playing card game. She wants to arrange the cards in ascending order with minimum number of comparisons and swaps. Help her by implementing a c program with insertion sorting technique?			8Marks	CO1	4	4
5.	Mr. Darvin is working as a full-time scholar in IIT Bombay. He is doing research on quick sort with given numbers and completed the first iteration successfully by placing first pivot element in correct position. Suddenly, he went for shopping along with his wife and left the sequence as it is [212, -25, 221, 122, 512, 978, 521, 876, 768]. His daughter Alexa seen the sequence and she is trying to arrange them in sorted order. Help Alexa to find the first pivot element which is placed by Darwin and trace the sequence to arrange the numbers in ascending order accordingly.	choice Q-6		12.5Marks	CO1	4	4
6.	In Indian Army batch number 32567IN captain Mahesh wants to arrange his corps in ascending order according to the corps height. Initially he divided all the soldiers into team Alpha and team Beta. After dividing into two teams, he realized that team Beta corps are stood in height wise. So, help the captain Mahesh to arrange the team Alpha corps in height wise by implementing merge sort and show the time taken to arrange them in ascending order?			12.5Marks	CO1	4	4
7.	write a function to dequeue an element from the priority queue?	choice Q-8		4.5Marks	CO2	4	4
8.	Write a function to insert an element into circular queue?			4.5Marks	CO2	4	4
9.	Display the final popped out element in given scenario, If the seven elements A, B, C, D, E, F and G are pushed into a stack in reverse order, i.e., starting from G. The stack is popped five times and each element is inserted into a queue. Then two elements are dequeued from the queue and pushed back into the stack. Now, one element is popped from the stack.	choice Q-10		8Marks	CO2	4	4
10.	Write a C program to implement the following operations on doubly linked list? a. Give the node structure b. Delete an element at the given position c. Insert an element at the given position			8Marks	CO2	4	4
11.	Wrote a C program to convert the given infix expression into postfix expression. And trace that program by converting the given infix expression (a + b) * (c – ((d ^ e) ^ f)) into postfix expression. Assume that the operators +, -, × are left associative and ^ is right associative. The order of precedence (from highest to lowest) is ^, x, +, -.	choice Q-12		12.5Marks	CO2	4	4
12.	Mr. Rajesh is CEO of an organization 'Software Solutions'. He wants to maintain the personal information of his employee's like Ename (Employee Name), Eno (Employee Number), and salary using singly linked list. So, help him to store and organize the data with following operations. a. Write a function to read and maintain employee data b. Write a function that reads Eno (Employee Number) and then increase 10% salary. c. Write a function that reads Ename (Employee Name), search and display the employee details.			12.5Marks	CO2	4	4

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B.Tech - Even Sem : Semester in Exam-1
Academic Year:2021-2022

21MT2102 - MATHEMATICS FOR ENGINEERS

Set No: 2

Time: | Max.Marks: 50

Answer All Questions

S.NO		Choice	Options	Marks	CO	CO BTL	C B
1.	Change the order of integration and hence evaluate $\int_0^a \int_x^a (x^2+y^2)dydx$	choice Q-2		4.5Marks	CO1	3	1
2.	Evaluate $div\ \vec{f}$ where $\vec{f} = grad\ (x^3+y^3+z^3-3xyz)$			4.5Marks	CO1	3	1
3.	Apply Taylor's series to expand $f(x,y) = x^3+2xy+y^3$ in powers of $(x+1)$ and $(y+2)$ up to terms of second degree.	choice Q-4		8Marks	CO1	3	2
4.	A container with an open top is to have 108 ni^3 capacity and be made of thin sheet metal. Calculate the dimensions of the box if it is to use the minimum possible amount of metal.			8Marks	CO1	3	2
5.	Ramesh, Suresh and Naresh went to a restaurant and ordered three different items. Ramesh ordered 2 plates of burger, 3 plates of sandwich and 1 plate of hotdogs, Suresh ordered 1 plate of burger, 2 plates of sandwich and 3 plates of hotdogs. Naresh ordered 3 plates of burger, 1 plate of sandwich and 2 plates of hotdogs. Ramesh bill cost was $9, Suresh bill cost was $6, and Naresh bill cost was $8. Determine the plate cost of each item, by using LU decomposition method.	choice Q-6		12.5Marks	CO1	3	3
6.	Apply Green's theorem, evaluate $\int_C [(y-\sin x)dx+\cos x dy]$ where C is the plane triangle enclosed by the lines $y=0, x=\pi/2$ and $y=\frac{2}{\pi}x$.			12.5Marks	CO1	3	3
7.	Determine the charge on the capacitor in an LRC series circuit at t when inductance 1H, capacitance 1F, $E(t)=0$ V.	choice Q-8		4.5Marks	CO2	3	1
8.	Evaluate the Laplace Transform of $f(t) = 3e^{5t}+5cost.$			4.5Marks	CO2	3	1
9.	A cup of coffee is made with boiling water at a temperature of 100°C, in a room at temperature 20°C. After two minutes it has cooled to 80°C. Interpreting Newton's law of cooling determine its temperature after five minutes. When will the coffee drop below 40°C?	choice Q-10		8Marks	CO2	3	2
10.	Apply the convolution theorem to evaluate $L^{-1}\left[\frac{s}{(s^2+a^2)^2}\right]$.			8Marks	CO2	3	2
11.	If x is the distance of the mass from the equilibrium position, downward being taken as positive direction the motion of a mass spring system is described by the ordinary differential equation $\frac{d^2x}{dt^2}-7\frac{dx}{dt}+12x=e^{2t}, x(0)=0, x'(0)=1$,then determine the displacement of the motion.	choice Q-12		12.5Marks	CO2	3	3
12.	Apply Laplace transform method to solve the initial value problem $y''-2y'+y=e^t$ given hat $y(0)=2, y'(0)=-1$.			12.5Marks	CO2	3	3

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B.Tech - Even Sem : Semester in Exam-I

Academic Year:2021-2022

20AD1202 - Object Oriented Programming System

Set No: 3

Time:		Max.Marks: 50					
S.NO	Answer All Questions	Choice	Options	Marks	CO	CO BTL	COI BTL
1.	Write a Python Program to print all integers that aren't divisible by either 2 or 3 and lies between 1 and 50.	choice Q-2		4.5Marks	CO1	3	3
2.	What are the properties of a tuple and explain count(), index(), membership operators with an example			4.5Marks	CO1	3	3
3.	Write a function that counts the number of letters in a string using the following header: def countLetters(s): Write a test program that prompts the user to enter a string and displays the number of letters in the string.	choice Q-4		8Marks	CO1	3	3
4.	Write an if statement that asks for the user's name via input() function. If the name is "Bond" make it print "Welcome on board 007." Otherwise make it print "Good morning NAME". (Replace Name with user's name). if the name is bond with lower case b it still prints "Welcome on board 007."			8Marks	CO1	3	3
5.	Answer both A and B	choice Q-6		12.5Marks	CO1	3	3
5.A.	Write a Python Program to remove the characters of odd index values in a string.			6.5Marks	CO1	3	3
5.B.	Write a program takes a string and calculates the number of digits and letters in a string.			6Marks	CO1	3	3
6.	Answer both A and B			12.5Marks	CO1	3	3
6.A.	Given a list iterate it and display numbers which are divisible by 5 and if you find number greater than 150 stop the loop iteration list1 = [12, 15, 32, 42, 55, 75, 122, 132, 150, 180, 200] Expected output: 15 55 75 150			6.5Marks	CO1	3	3
6.B.	Take integer inputs from user until he/she presses q (Ask to press q to quit after every integer input). Print average and product of all numbers.			6Marks	CO1	3	3
7.	Suppose a dictionary named students is {"john":3, "peter":2}. What do the following statements do? (a) print(len(students)) (b) print(students.keys()) (c) print(students.values()) (d) print(students.items())	choice Q-8		4.5Marks	CO2	3	3
8.	Explain about set functions 1.issuperset() 2.issubset() 3. union() 4.symmetricdifference			4.5Marks	CO2	3	3
9.	Write a Python function named numVowels that is passed a string containing letters, each of which may be in either uppercase or lowercase, and returns a tuple containing the number of vowels and the number of consonants the string contains.	choice Q-10		8Marks	CO2	3	3
10.	Write statements to do the following: (a) Create a list with 100 Boolean False values. (b) Assign the value 5.5 to the last element in the list. (c) Display the sum of the first two elements. (d) Compute the sum of the first five elements in the list. (e) Find the minimum element in the list.			8Marks	CO2	3	3
11.	Define a class called Bike that accepts a string and a float as input, and assigns those inputs respectively to two instance variables, color and price. Assign to the variable testOne an instance of Bike whose color is blue and whose price is 89.99. Assign to the variable testTwo an instance of Bike whose color is purple and whose price is 25.0.Bike price should not be greater than 100.00 .Use setters and getters. Include __str__() method to print price of a bike and color	choice Q-12		12.5Marks	CO2	3	3
12.	1.Create a Python class called BankAccount which represents a bank account, having as attributes: accountNumber (numeric type), name (name of the account owner as string type), balance. 2.Create a constructor with parameters: accountNumber, name, balance. 3.Create a Deposit() method which manages the deposit actions. 4.Create a Withdrawal() method which manages withdrawals actions. 5.Create an bankFees() method to apply the bank fees with a percentage of 5% of the balance account. 6.Create a display() method to display account details. 7.Give the complete code for the BankAccount class.			12.5Marks	CO2	3	3

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