U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Biotechnology **Duration: 3 hrs.**
Course Code: 22BT4PCBCA **Max Marks: 100**
Course: BASIC OF COMPUTER APPLICATIONS **Date: 22.09.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Define process scheduling. Explain different types of schedulers with a neat diagram.	CO1		**06**
	b)	What is a process? Describe the different states of a process with a diagram of process state.	CO 1		**06**
	c)	Describe with suitable example any eight Linux commands.	CO 1		**08**
		UNIT - II			
2	a)	The Prescriptions-R-X chain of pharmacies has offered to give you a free lifetime supply of medicines if you design its database. Here's the information that you gather: a) Patients are identified by P_Id, and their names, addresses, and ages must be recorded. b) Doctors are identified by D_Id. For each doctor, the name, specialty, and years of experience must be recorded. c) Each pharmaceutical company is identified by name, address and has a phone number. d) For each drug, the trade name and formula must be recorded. Each drug is sold by a given pharmaceutical company and the trade name identifies a drug uniquely from among the products of that company. e) Each pharmacy has a name, address, and phone number. f) Every patient has a primary physician. Every doctor has at least one patient. g) Each pharmacy sells several drugs and has a price for each. A drug could be sold at several pharmacies, and the price could vary from one pharmacy to another. h) Doctors prescribe drugs for patients. A doctor could prescribe one or more drugs for several patients, and a patient could obtain prescriptions from several doctors. Each prescription has a date and a quantity associated with it. Design an ER model that captures the above information.	CO 3	PO2	**10**

		b)	Design a Star bazaar database with the entities Customers and Orders having the following attributes: Customers (C_ID, name, DOB, city, contact) Orders (O_ID, C_ID, Order Item, Price, date) Construct a SQL query for each of the following. a. Insert 4 records into both the tables. b. Modify table add constraint primary key C_ID for customer table and O_ID for Order table. c. Add a constraint check to check the Price greater than 2000. d. Display the details of all customers who are having an order. e. List the details of all the Customers whose city name ends with 're'. f. Display the O_Id's for all orders where the Price is less than 5000.	*CO2*	*PO1*	**10**
			OR			
	3	a)	Create a Company database with the entity Employee and Company having the following attibutes: Employee(E_Id, Name, Salary, Joining date,designation,city) Company (E_Id, company-name, salary) Construct a SQL query for each of the following. a. Add Not null constraint to E_Id b. Insert 4 records into both the tables. c. Add a constraint check to check the salary greater than 20000. d. Display the list of all the employees whose designation is manager and salary more than 50000, or designation is officer and salary more than 50000 e. Find the names, designation and cities for all employees who work for 'TCS' and earn more than 1, 00,000. f. Add a constraint default city is 'Mumbai' g. Modify the salary of employee into 50000 whose name is 'Anish'. h. Display the lowest salary of the employee. i. Display the unique values of designation from Employee table. j. Remove the details of employee whose joining date is before 31st July 1959.	*CO 2*	*PO1*	**14**
		b)	A flight database stores details about an airline's fleet, flights, and seat bookings. Deduce an ER model for a flight database. Consider the following requirements list: a. The airline has one or more airplanes. b. An airplane has a model number, a unique registration number, and the capacity to take one or more passengers. c. An airplane flight has a unique flight number, a departure airport, a destination airport, a departure date and time, and an arrival date and time. d. Each flight is carried out by a single airplane. e. A passenger has given names, a surname, and a unique email address. f. A passenger can book a seat on a flight.	*CO 3*	*2*	**06**

			UNIT - III			
	4	a)	Describe the various metacharacters used with regular expressions in Perl.	*CO1*		**04**
		b)	Describe the various datatypes in Perl with suitable examples.	*CO1*		**06**
		c)	Write a Perl script and output for the following: i. Declare a hash variable with minimum 4 key-value pairs. ii. Add an element to it. iii. Check for the presence of a key in it. iv. Delete an entry from it. v. Access an individual element from it.	*CO2*	*PO1*	**10**
			OR			
	5	a)	Write a Perl script to calculate the reverse complementary of a sequence	*CO 2*	*PO1*	**05**
		b)	Write a Perl script to read protein sequence in files and print sequence.	*CO 2*	*PO1*	**05**
		c)	Write a Perl script to translate a DNA sequence to Protein.	*CO 2*	*PO1*	**10**
			UNIT - IV			
	6	a)	Write a Python script to calculate N_{Re} and suggest whether the flow is laminar or turbulent.	*CO 3*	*PO2*	**05**
		b)	Create a simple calculator using python program.	*CO 3*	*PO2*	**10**
		c)	Write a python program to check whether the string is palindrome or not.	*CO 3*	*PO2*	**05**
			UNIT - V			
	7	a)	Find the addition subtraction and multiplication of matrix. Also find the transpose and inverse of matrix A using Matlab. $A=\begin{bmatrix}1 & 2 & 3\\4 & 5 & 6\\7 & 8 & 9\end{bmatrix}$, $B=\begin{bmatrix}1 & 2 & -9\\2 & -1 & 2\\3 & -4 & 3\end{bmatrix}$	*CO 3*	*PO2*	**05**
		b)	For $f(x)= 7x^8 – 6\ x^7 -5x^6+ 4x^5 – 3x^4 +2x^3-x^2+2x+5$, Compute f(x) if $f \rightarrow 2$ roots of f(x) and plot for $0 \leq x \leq 20$ using Matlab.	*CO 3*	*PO2*	**05**
		c)	Create data points on a sine curve with x ranges from o to 4π with a differential of 0.1 and plot the data for sin(x) function against radians.	*CO 3*	*PO2*	**05**
		d)	Plot for the function sin(x) and Cos(x) in the same graph where x ranges from 0 to 1 with a differential of 0.01 and mark the legends for both functions.	*CO 3*	*PO2*	**05**

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