U.S.N.										

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

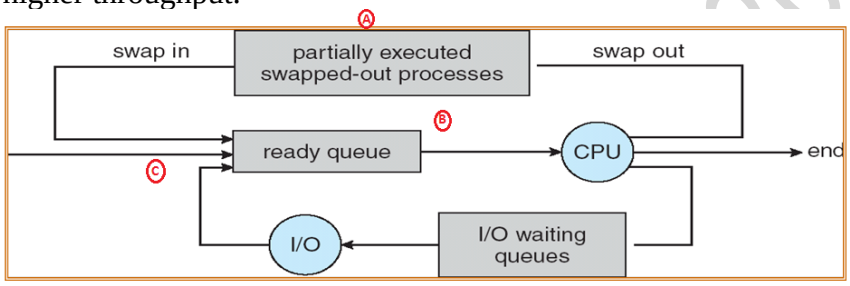
Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Biotechnology **Duration: 3 hrs.**
Course Code: 23BT4PCBCA **Max Marks: 100**
Course: Basics of computer applications

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.

			CO	PO	Marks
		UNIT - I			
1	a)	Analyze the diagram and suggest the type of scheduler is used in conditions labeled as A, B and C to increase CPU utilization and higher throughput. 	CO1	PO	06
	b)	What is a process? Describe the different states of a process with a diagram of the process state.	CO1	PO	06
	c)	Illustrate any eight Linux commands with a suitable example.	CO1	PO	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.	CO3	PO2	10

			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. i) Design an ER model that captures the above information.			
	b)	Create a University database with the entity Student and Course having the following attibutes: Student (S_ID, name, DOB, sem, academic_year) Course (C_ID, S_ID, name, marks, CGPA, credit_points) Construct an SQL query for the following: i. Display the list of all the students whose academic year is 2018_19 and CGPA more than 8, or academic year is 2011_20 and CGPA more than 8. ii. Find the names, DOB and sem for all students who registered for course 'BCA' and belongs to IV sem. iii. Add a constraint default credit_points as 4. iv. Modify the marks for the course into 85 whose name is 'BBM'. v. Display the lowest CGPA of the student. vi. Display the unique values of DOB from the student table. vii. Remove the details of students whose academic year is before 2016_17.	***CO2***	***PO1***	**10**
		OR			
3	a)	Create a Shopping database with the entities Persons and orders having the following attributes: Persons (P_ID, name, DOB, city, contact) Orders (O_ID, P_ID, Order_item, Price) Construct a SQL query for each of the following. a. Insert 4 records into both the tables. b. Modify table add constraint primary key P_ID for Persons table and O_ID for Orders table. c. Add a constraint check to check the Price greater than 5000. d. Create a view for Orders table with O_ID, Price. e. Display the details of all Persons who are having an item order. f. Display the details of all the customers whose city in Kolkata, Bangalore, and Chennai and Price between 8000 to 20000 g. Modify the table to include the email Id of person into the Persons table. h. Remove the details of DOB of persons from the Persons table. i. Insert values into new table having P_ID and name as attributes from Persons table. j. Modify the contact of the person to '8970025417' whose name is 'Ram'. k. Create a new table order_details and insert the values from orders where price is between 40000-80000.	***CO2***	***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 a given name, a surname, and a unique email address. f. A passenger can book a seat on a flight.	***CO3***	***PO2***	**06**
			UNIT - III			
	4	a)	Describe the various metacharacters used with regular expressions in Perl.	***CO2***	***PO1***	**04**
		b)	Describe the various datatypes in Perl with suitable examples.	***CO2***	***PO1***	**06**
		c)	Write a Perl script and output for the following: i. Initialize an array of numbers 65,51,74,82, 56, 43. ii. Add an element '25', '97' after the fourth element of the array and print the numbers. iii. Remove the element at the beginning of the array and insert at the end and print the numbers. iv. Remove the element at the end of array and insert in the beginning and print the numbers. v. Remove two elements after 3rd element of array, then print the array in reverse and find the remaining length of the array.	***CO2***	***PO1***	**10**
			OR			
	5	a)	Write a Perl script to calculate the reverse complementary of a sequence	***CO2***	***PO1***	**05**
		b)	Write a Perl script to read protein sequence in files and print sequence.	***CO2***	***PO1***	**05**
		c)	Translate a DNA sequence to a PROTEIN Sequence using a Perl script.	***CO2***	***PO1***	**10**
			UNIT - IV			
	6	a)	Write a Python script to calculate N_{Re} and suggest whether the flow is laminar or turbulent.	***CO3***	***PO2***	**05**
		b)	Write a Python program for the following to create a model to predict the outcome of the events for a random data set. a. Generate a random data set. b. Split the date into train and test and display them. c. Create a model with the training data by fitting in a polynomial regression. d. Test the model accuracy with the testing data. e. Predict the future value for an unknown sampling data.	***CO3***	***PO2***	**10**

		c)	Write a Python program to generate a linear regression plot for the following data set. x = [5,7,8,7,2,17,2,9,4,11,12,9,6] y = [99,86,87,88,111,86,103,87,94,78,77,85,86]	***CO3***	***PO2***	**05**
			UNIT - V			
	7	a)	Using Matlab Simbiology toolbox; i. Construct a simple model with two species (A and B) ii. Add a reaction that involves two species, A and B, where A is converted to B. iii. Add species A and B to the model. iv. Set the initial amount of the first species (A) to 50. v. Add a kinetic law object to the reaction. vi. Set the parameter variable names property of the kinetic law. vii. Define the kinetic law of the reaction to follow mass action kinetics. viii. Add a rate constant parameter to the mass action kinetic law. ix. Simulate the model. x. Plot the simulation results.	***CO3***	***PO2***	**10**
		b)	Create a matrix with the following values using Matlab and extract a sub matrix for the following. a. Last two rows and 2nd column b. 3rd row with all columns c. 1st two rows with 2nd and 3rd column. $\begin{bmatrix} 1 & 8 & -10 \\ -4 & 2 & 4 \\ -5 & 2 & 8 \end{bmatrix}$	***CO3***	***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.	***CO3***	***PO2***	**05**

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