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

**Autonomous Institute Affiliated to VTU**

## August 2024 Supplementary Examinations

**Programme: B.E.** **Semester: III**
**Branch: Biotechnology** **Duration: 3 hrs.**
**Course Code: 19BT3DCBCA** **Max Marks: 100**
**Course: Basics Of Computer Application**

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





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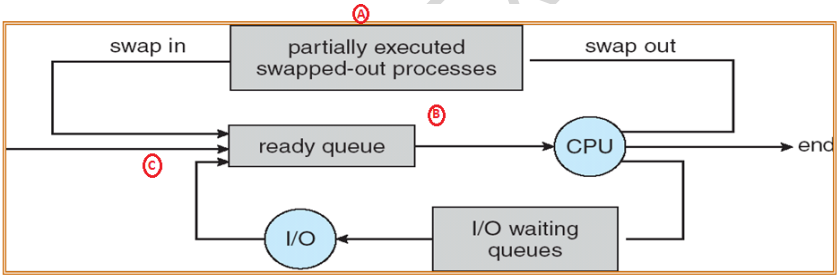
| | | | **UNIT -I** | |
| | 1 | a) | Analyze the diagram and suggest the type of scheduler is used in conditions labeled as A, B and C to increase CPU utilization and higher throughput.<br>  | **06** |
| | | b) | What is a process? Describe the different states of a process with a diagram of process state. | **06** |
| | | c) | Describe with suitable example any eight Linux commands. | **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:<br>a) Patients are identified by P_Id, and their names, addresses, and ages must be recorded.<br>b) Doctors are identified by D_Id. For each doctor, the name, specialty, and years of experience must be recorded. | **10** |

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| | | | c) Each pharmaceutical company is identified by name, address and has a phone number.<br>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.<br>e) Each pharmacy has a name, address, and phone number.<br>f) Every patient has a primary physician. Every doctor has at least one patient.<br>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.<br>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.<br>Design an ER model that captures the above information. | |
| | | b) | Create a University database with the entity Student and Course having the following attibutes:<br>Student (S_ID, name, DOB, sem, academic_year)<br>Course (C_ID, S_ID, name, marks, CGPA, credit_points)<br>a. 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.<br>b. Find the names, DOB and sem for all students who registered for course 'BCA' and belongs to IV sem.<br>c. Add a constraint default credit_points as 4.<br>d. Modify the marks for the course into 85 whose name is 'BBM'.<br>e. Display the lowest CGPA of the student.<br>f. Display the unique values of DOB from student table.<br>g. Remove the details of student whose academic year is before 2016-17. | **10** |
| | | | **OR** | |

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| | 3 | a) | Create a Shoppishop database with the entities Persons and orders having the following attributes:<br>Persons ( P_ID, name, DOB, city, contact)<br>Orders (O_ID, P_ID, Order_item, Price)<br>Construct a SQL query for each of the following.<br>a. Insert 4 records into both the tables.<br>b. Modify table add constraint primary key P_ID for Persons table and O_ID for Orders table.<br>c. Add a constraint check to check the Price greater than 5000.<br>d. Create a view for Orders table with O_ID, Price.<br>e. Display the details of all Persons who are having an item order.<br>f. Display the details of all the customers whose city in Kolkata, Bangalore, and Chennai and Price between 8000 to 20000<br>g. Modify the table to include the email Id of person into the Persons table.<br>h. Remove the details of DOB of persons from the Persons table.<br>i. Insert values into new table having P_ID and name as attributes from Persons table.<br>j. Modify the contact of the person to '8970025417' whose name is 'Ram'.<br>Create a new table order_details and insert the values from orders where price between 40000-80000. | **14** |
| | | b) | A flight database stores details about an airline's fleet, flights, and seat bookings. Deduce an ER model for a flight database.<br>Consider the following requirements list:<br>a. The airline has one or more airplanes.<br>b. An airplane has a model number, a unique registration number, and the capacity to take one or more passengers.<br>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.<br>d. Each flight is carried out by a single airplane.<br>e. A passenger has given names, a surname, and a unique email address.<br><br>A passenger can book a seat on a flight. | **06** |
| | | | **UNIT -III** | |
| | 4 | a) | Describe the various metacharacters used with regular expressions in Perl. | **04** |
| | | b) | Describe the various datatypes in Perl with suitable examples. | **06** |
| | | c) | Write a Perl script and output for the following:<br>i. Initialize an array of numbers 65,51,74,82, 56, 43.<br>ii. Add an element '25', '97' after fourth element of the array and print the numbers.<br>iii. Remove the element at the beginning of array and insert at the end and print the numbers. | **10** |

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| | | | iv. Remove the element at the end of array and insert in the beginning and print the numbers.<br>Remove two elements after 3rd element of array then print the array in reverse and find the remaining length of the array. | |
| | | | **OR** | |
| | 5 | a) | Write a Perl script to calculate the reverse complementary of a sequence | **05** |
| | | b) | Write a Perl script to read protein sequence in files and print sequence. | **05** |
| | | c) | Translate a DNA sequence to PROTEIN Sequence using Perl script. | **10** |
| | | | **UNIT -IV** | |
| | 6 | a) | Write a Python script to calculate $N_{Re}$ and suggest whether the flow is laminar or turbulent. | **05** |
| | | b) | Create a simple calculator using python program. | **10** |
| | | c) | Write a Python program to generate a linear regression plot for the following data set.<br>x = [5,7,8,7,2,17,2,9,4,11,12,9,6]<br>y = [99,86,87,88,111,86,103,87,94,78,77,85,86] | **05** |
| | | | **UNIT -V** | |
| | 7 | a) | Using Matlab Simbiology toolbox;<br>i. Construct a simple model with two species (A and B)<br>ii. Add a reaction that involves two species A and B, where A is converted to B.<br>iii. Add species A and B to the model.<br>iv. Set the initial amount of the first species (A) to 50.<br>v. Add a kinetic law object to the reaction.<br>vi. Set the parameter variable names property of the kinetic law.<br>vii. Define the kinetic law of the reaction to follow mass action kinetics.<br>viii. Add a rate constant parameter to the mass action kinetic law.<br>ix. Simulate the model.<br>x. Plot the simulation results. | **10** |
| | | b) | Create a matrix with the following values using Matlab and extract a sub matrix for the following.<br>a. Last two rows and 2nd column<br>b. 3rd row with all columns<br>c. 1st two rows with 2nd and 3rd column.<br>$\begin{bmatrix} 1 & 8 & -10 \\ -4 & 2 & 4 \\ -5 & 2 & 8 \end{bmatrix}$ | **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. | **05** |

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