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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

IV SEMESTER B.TECH. (CSE) DEGREE
MAKEUP EXAMINATION- MAY/JUNE-2019
SUBJECT: ESSENTIALS OF IT [CSE 3282] – OPEN ELECTIVE
REVISED CREDIT SYSTEM
(21 / 06 /2019)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

1 A) With neat a diagram, explain the various layers of a computer system. (3M)

1 B) Justify how a simple paged allocation is a solution to fragmentation with the neat sketch. Mention the advantages and disadvantages of simple paged allocation. (3M)

1 C) Explain the Least Frequently Used (LFU) page replacement scheme. Deduce the number of page faults for page request sequence {3 1 3 4 2 4 1 2 3 1 2 4 2 3 1 3} using LFU scheme assuming there exist only three frames and all frames are empty initially. (4M)

2 A) Differentiate between pre-emptive and non-pre-emptive scheduling policies. Deduce the average waiting time and average turnaround time for the following processes given in Table 2A. using non pre-emptive priority process scheduling. (3M)

Table. 2A

Process	Execution Time (ms)	Priority	Arrival Time (ms)
P1	10	2	0
P2	4	1	2
P3	6	3	0

2 B) Write notes on (3M)

a) Multi level queue scheduling
b) Multi level feedback queue

2 C) Differentiate between the critical section and mutual exclusion. How critical section implementation is performed? What are the significance of wait ( ) and signal ( ) operations of semaphore? (4M)

3 A) List salient features of SSTF disk scheduling algorithm. Calculate the total seek time (arm motion) using SSTF algorithm for disk queue { 30, 90, 115, 45, 130, 175} considering the total number of cylinders are 200 and the initial position of disk head is at cylinder number 100. (3M)

3 B) What is a dead-lock process? State and define necessary conditions forthe processes to be in a deadlock. (3M)

3 C) List and explain the advantages of DBMS. Explain the various data models in DBMS. (4M)

4 A) Given a relationship trainee {empno, first_name, last_name, email, phoneno} designate candidate key, primary key and alternate key taking into the following assumptions (3M)

a) empono for each trainee is different
b) email for each trainee is different
c) phoneno for each trainee is different
d) combination of first_name and last_name for each trainee is different

4 B) What is Normalization? What is the need for normalization? (3M)

4 C) State the rules for a relation to be in 2NF and 3NF. Mention atleast two merits and demerits of Normalization. (4M)

5 A) List various types of statements in SQL. Briefly explain the function of CREATE, ALTER, DROP and TRUNCATE keywords. (5M)

5 B) For the below mentioned database table 5B. write the SQL queries. (5M)

Table.5B

Sample Table – Worker

WORKER_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT
001	Monika	Arora	100000	2014-02-20 09:00:00	HR
002	Niharika	Verma	80000	2014-06-11 09:00:00	Admin
003	Vishal	Singhal	300000	2014-02-20 09:00:00	HR
004	Amitabh	Singh	500000	2014-02-20 09:00:00	Admin
005	Vivek	Bhati	500000	2014-06-11 09:00:00	Admin
006	Vipul	Diwan	200000	2014-06-11 09:00:00	Account
007	Satish	Kumar	75000	2014-01-20 09:00:00	Account
008	Geetika	Chauhan	90000	2014-04-11 09:00:00	Admin

i) Write an SQL Query to Fetch “FIRST_NAME” From Worker Table In Upper Case.

ii)Write an SQL Query to Print The FIRST_NAME and LAST_NAME from Worker Table into A Single Column COMPLETE_NAME. A Space Char Should Separate Them.

iii)Write an SQL Query to Print All Worker Details from The Worker Table Order By FIRST_NAME in aacending order.

iv)Write an SQL Query to Print All Worker Details from The Worker Table Order By FIRST_NAME Ascending And DEPARTMENT Descending.

v) Write an SQL Query to Print Details for Workers With The First Name As “Vipul” And “Satish” From Worker Table.