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MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

IV SEMESTER B.TECH. (CSE) DEGREE
END SEMESTER EXAMINATION- MAY-2019
SUBJECT: ESSENTIALS OF IT [CSE 3282] – OPEN ELECTIVE
REVISED CREDIT SYSTEM
(07 / 05 / 2019)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1 A) List and explain any three major functions of the Operating System. (3M)

1 B) Write notes on : (3M)
a) Uni-Programming b) Multi programming c)Multi-processing

1 C) Explain the Least Recently Used (LRU) 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 LRU scheme assuming there exist only three frames and all frames are empty initially. (4M)

2 A) Write notes on the following (3M)
a) Process state diagram b) Context switching

2 B) Calculate the average waiting time, average turnaround time and average response time for the following processes given in Table 2B using the shortest job first algorithm. (3M)

Table.2B

Process	Arrival Time (ms)	CPU Time (ms)
P1	0	3
P2	0	7
P3	2	6
P4	5	4
P5	3	5

2 C) What are the significance and need for concurrency in process management? Mention how inter process communication helps in process management. With neat sketch explain the problems in co-operating processes. (4M)

3 A) List salient features of FCFS disk scheduling algorithm. Calculate the total seek time (arm motion) using FCFS algorithm for disk queue { 30, 85, 130, 45, 175} considering the total number of cylinders are 200 and the initial position of disk head is at cylinder number 100. (3M)

3 B) With a neat sketch, explain the concept of the direct memory access controller. (3M)

3 C) Enumerate the differences between file system interface and DBMS interface. Explain the core concepts with relevant examples. Mentions various users of DBMS. (4M)

4 A) Define the following terms in DBMS: (3M)
a) Candidate key b)Primary key c)Alternate key

4 B) Explain Full functional dependency, Partial functional dependency and Transitive dependencies with suitable example. (4M)

4 C) Explain Binary 1:1, Binary 1: N and Binary M: N conversion process. Enumerate E-R model to relational databases with a suitable example. (3M)

5 A) List various types of statements in SQL. Briefly explain the function of INSERT, UPDATE, DELETE and SELECT 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 Using the Alias Name as <WORKER_NAME>.

ii) Write an SQL Query to Fetch Unique Values of DEPARTMENT from Worker Table.

iii) Write an SQL Query to Print the First Three Characters of FIRST_NAME from Worker Table.

iv) Write an SQL Query to Print The FIRST_NAME from Worker Table After Removing White Spaces from The Right Side.

v) Write an SQL Query to Print The FIRST_NAME from Worker Table After Replacing ‘a’ With ‘A’.