

**MGIS-01/PGDGIS-01/CGIS-01**  
**Introduction to Informatics**  
**(MGIS/PGDIS/CGIS-11/16/17)**  
 1<sup>st</sup> Semester, Examination 2019

**Time : 3 Hours**

**Max. Marks : 80**

Note : This Paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

**Section- A**

**(Long-Answer-type questions)**

Note : Section 'A' Contains Five (05) Long-Answer type questions of Fifteen (15) marks each. Learners are required to answer any three (03) questions only.

**(3 x 15 =45)**

1. Answer the following :
  - a. What are the various Secondary storage devices? List and Explain. (7 marks)
  - b. Describe the term "Number System". Explain following with proper example. (8 marks)
    - (i) Binary to Hexadecimal
    - (ii) Decimal to Binary
  
- 2.a. Consider the following set of processes, with the length of CPU given in milliseconds.

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The Processes are assumed to have arrived in the order P1, P2, P3, P4, P5 all at time 0.

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- i. Draw Gantt charts for the Non-preemptive priority (smaller priority number shows the higher priority) & RR(quantum=1) scheduling algorithms. (5 marks)
  - ii. What is the waiting time of each process for each of these scheduling algorithms? (2 marks)
  - iii. What is the average waiting time of each scheduling algorithm? (1 marks)
  - iv. What is the turn-around time of each process for each of these scheduling algorithms? (2 marks)
- b. Explain RAM and ROM in detail. (5 marks)
3. Answer the following :
- a. Describe OSI model in detail with the help of proper, neat and clean diagram. (8 marks)

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- b. Discuss various types of network topologies. Use suitable diagram and specifications in support of your answer. (7 marks)
4. a. Consider the following table and write the Query in relational algebra for the following : (8 marks)
- EMP (empno, empname, emp\_desination, emp\_address, emp\_sal)  
DEPT (empno, dept\_no, dept\_name, dept\_ph.no)
- i. List the employee number, employee address and employee salary.
  - ii. List the details of employees who are manager.
  - iii. List the details of employees who are manager and belong to 'New Delhi'.

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- iv. List the details of employees who are Director and salary is more than 50000.
- v. List the details of employees who are Director and works in Computer Science Deptt.

(Hint : Take necessary assumptions)

- b. Discuss following Relational constraints: (7marks)
  - i. Key constraints
  - ii. Entity integrity constraints
  - iii. Referential integrity constraints

- 5.a. Suppose that the following process arrive for execution at the times indicated. Each process will run for the amount of time listed. In answering the questions, use non-preemptive scheduling and base all decisions on the information you have at the time the decision must be made.

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Process	Arrival Time	Burst Time
P1	0.0	8
P2	0.4	4
P3	1.0	1

- i. What is the individual process waiting time & average waiting time for these processes using FCFS scheduling algorithm? (4 marks)
- ii. What is CPU utilization and individual process response time for these processes with the FCFS scheduling algorithm? (3 marks)
- iii. What is the throughput and average turnaround time for these processes with the FCFS scheduling algorithm? (3 marks)
- b. Discuss various Memory organizations. Use suitable diagram and give proper specifications. (5 marks)

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**Section - B**  
**(Short-Answer-Type questions)**

Note : Section 'B' contains eight (08) Short-answer type questions of Seven (07) marks each. Learners are required to answer any Five (05) questions only.

**(5x7=35)**

1. Give an introduction to Information technology and representation of characters in computers.
2. Discuss various terms with the help of suitable diagrams.
  - a. Process States
  - b. PCB
3. Explain following data structures properly : Array, Stack and Queue. Show the use of push( ) and pop ( ) operation on stack.
4. What are the various types of networks? Explain using suitable diagrams.
5. Explain the following terms :
  - a. Switch
  - b. Router
  - c. Firewall
  - d. Security

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6. What is Database? List and explain various advantages of Database over file systems in detail.
7. What do you mean by operating system? Explain various types of operating systems. Give at least three specifications of each.
8. What is Normalization? Differentiate between 1 NF, 2NF, 3 NF and 4 NF. Give suitable points in support of your answer.

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