MGIS-01/PGDGIS-01/CGIS-01

INTRODUCTION TO INFORMATICS

(MGIS/PhDGIS/CGIS–11/16/17)

First Year Examination-2020

Time Allowed : 2 Hours   Maximum Marks : 80

Note : This paper is of Eighty (80) marks divided into Two (02) sections A and B. Attempt the question 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 Twenty (20) marks each. Learners are required to answer any two (02) questions only.   (2×20=40)

1. Answer the following :

   (a) What are the various Magnetic media devices? List and Explain.   10

   (b) Describe the term "Number System". Explain following conversions with the help of proper example.   10

       (i) Hexadecimal to Binary.

       (ii) Binary to Decimal.

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.

    (i) Draw Gantt charts for the FCFS and SJF scheduling algorithms.   5

    (ii) What is the waiting time of each process for each of these scheduling algorithms?   5

(iii) What is the average waiting time of each scheduling algorithm? 2½

(iv) Which of the algorithms result in minimum average waiting time (over all processes)? 2½

(b) What is Process? Explain various states of a process with the help of suitable diagram. 5

3. Answer the following :

(a) Describe TCP/IP model in detail with the help of proper, neat and clean diagram. 10

(b) What are the various types of networks? Also discuss various types of network topologies. Explain using suitable diagrams wherever applicable. 10

4. (a) What do you mean by relational algebra? What are the operations of Relational Algebra? Consider the following relations. 10

Train (Train_on, Tname, Destination, Source, Journey_Hrs)

Write the relational algebra statements to answer the following queries :

(i) To find the number and names of all the trains

(ii) To find the details of the trains that start from Hyderabad.

(iii) To find all destinations, source and Journey Hours of train number "23344".

(iv) To find all the train numbers whose source is "New Delhi" and destination in "Chennai".

(v) To display all the details of trains whose journey hours is more than 48.

[Hint : Take necessary assumptions]

(b) Why we use Array, Stack and Queues. What are the main significance of each. Use push ( ) and pop ( ) operation on stack in an example.   10

5. (a) Consider the following page reference string :

70120304230321201701

How many page faults will occur, if there are three frames and initially all are empty, using LRU and Optimal Page replacement? 10

(b) What do you understand from the term: "Registers"? Also discuss various internal and external storage devices. 10

Section-B

(Short answer type questions)

Note: Section-B Contains Eight (08) short answer type questions of Ten (10) marks each. Learners are required to answer any four (04) questions only. (4×10=40)

1. Give an introduction to Error detecting codes and Computer memory.

2. Explain Fragmentation and its types. Also discuss first fit, best fit and worst fit strategies. Use suitable example to illustrate this.

3. Discuss following terms :

   (i) Concept of Keys. 5

   (ii) Entity integrity and Referential integrity constraints. 5

4. Explain OSI model in detail with the help of proper, neat and clean diagram.

5. Explain the following terms :

   (a) LAN

   (b) WAN

   (c) Firewall

   (d) Switch.

6. What is Database? Discuss various data abstraction levels. Also state different level schemas. Use proper diagram in support of your answer.

7. What is the fundamental goal of operating system? Explain various functions and services of an operating system. Elaborate.

8. Explain the following terms :

   (a) Normalization

   (b) SQL.

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