

OPERATING SYSTEM

Paper: 3.1

(Old Course)

1. (a) What are the main functions of Operating system? Explain. 6
(b) Explain time sharing system. 4

Or

What do you mean by distributed system? Explain.

2. (a) Explain process table. 5
(b) Explain the main design issues of thread. 5

Or

Explain user level thread.

3. (a) What do you mean by semaphore? How can it be used to achieve mutual exclusion? 2+5=7
(b) Explain Dining philosopher problem. 5

Or

Explain Peterson's Solution.

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Contd.

4. (a) What is the main difference between preemptive and non-preemptive scheduling? 2

- (b) Explain *any one* of the following scheduling, algorithm, three-level scheduling, FCFS, Multiple queues. 5

5. (a) Explain Banker's algorithm for single resource. 6

- (b) How can we prevent deadlock? 4

Or

What are the main conditions to occur deadlock?

6. (a) What do you mean by segmentation? What are its benefits and drawbacks? 2+5=7

Or

Explain NFU page replacement algorithm.

- (b) What do you mean by paging and page fault? 2

7. (a) What is i_nodes? Explain. 4

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- (b) What are the main differences between sequential access and random access files? 3

Or

Explain file system security.

8. Explain user space I/O Software. 5

Or

Explain structure of I/O management subsystem.

9. Write short notes on : (*any two*) 5×2=10

- (a) Device driver
(b) Process states
(c) Virtual memory
(d) TLB.

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DATA MINING AND WAREHOUSING

(New Course)

Paper : 6.1.2

Full Marks : 80

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. What is data warehouse ? Why data warehouse is subject-oriented, time varying and integrated ? 2+4=6
2. Write the difference between R-OLAP and M-OLAP. 4
3. What are the different stages of KDD ? How do you relate data mining in KDD ? Give a brief account of data mining techniques. 3+3+4=10
4. Explain the terms — Spatial data mining and Web mining. 6
5. Define support and confidence in transaction. What is upward and downward closure property of item sets ? 4+4=8

6. Describe the working principle of PAM algorithm. 6
7. Explain the following concepts in the context of DBSCAN : 12
 - (i) E-neighbourhood of an object
 - (ii) Core-object
 - (iii) Directly – Density – Reachable
 - (iv) Density – Reachable
 - (v) Density – Connected
 - (vi) Noise.
8. How can you differentiate CLARANS from CLARA ? 6
9. What do you mean by decision tree ? What are the different methods of determining the goodness of a split ? What are entropy gain and gain ratio ? What is Gini index ? 2+2+4+2=10

10. Write short notes on : **(any four)** 4×3=12
 - (i) Text mining
 - (ii) Supervised and unsupervised learning
 - (iii) Categorical and numerical attribute
 - (iv) CART
 - (v) C 4.5
 - (vi) Bitmap indexing.