M.Phil 1st Semester Examination, 2019

COMPUTER SCIENCE

PAPER —COS-112

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

UNIT — I

(*Advanced Operating System*)

Answer any **one** question :   10 × 1

1. (*a*) What is happened-before relation in distributed OS ?

    (*b*) Explain the fully distributed approach based

on event-ordering scheme to implement mutual exclusion in a distributed environment.

(c) Explain two phase commit(2pc) protocol to ensure atomicity of a transaction in distributed environment. $2 + 5 + 3$

2. (a) What is monitor in OS ?

   (b) What is the advantage of monitor ?

   (c) Implement dining-philosophers problem using monitor. $2 + 2 + 6$

UNIT – II

(*Advanced Database System*)

Answer any **one** question : 10×1

3. (a) What are Mobile Databases ? Explain the characteristics of mobile databases. Give an application of mobile databases.

   (b) How does Clustering differ from Classification ? $(2 + 3 + 2) + 3$

4. (*a*) Explain the features and challenges of multimedia databases.

(*b*) What are Semantic Databases ? List the features of semantic databases. Explain the process of searching the knowledge in semantic databases.　　　　　4 + 6
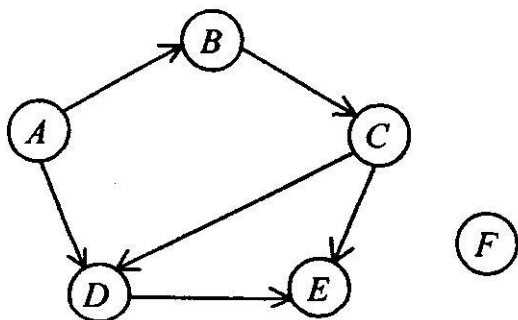
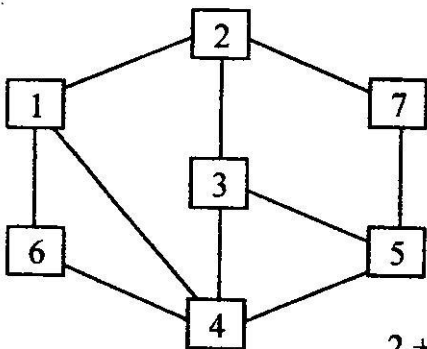## UNIT — III

(*Advanced Data Structure*)

Answer any **one** question :　　　10 × 1

5. (*a*) Compare tree and hash tables.

(*b*) Explain 'mod hash function' with appropriate example.

(*c*) What are Collision Resolution Techniques.

(*d*) Define B tree with example.　　2 + 3 + 3 + 2

6. (*a*) Define connected graph with an example.

(*b*) *Find the ad*jacency matrix and adjacency list of the following Digraph.

(c) Explain Depth First Search method on the following graph.

$2 + (2 + 2) + 4$

UNIT – IV

(*Emerging Technologies*)

Answer any **one** question : 10×1

7. (*a*) What is cloud computing ? Describe the essential characteristics of cloud computing.

   (*b*) How many types of deployment models are used in cloud ? Explain each of them ?

   $(2 + 2) + 6$

8. (*a*) With the help of a neat diagram, explain cloud computing reference architecture.

   (*b*) What is hypervisors ? Mention the different types of Hypervisors available in hardware virtualization of cloud. $5 + (2 + 3)$

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