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Subject: Advanced Operating Systems
Code: 10M11CI212

Hours: 02:00
Max. Marks: 35

All Questions are compulsory and carrying equal marks.

Q. 1 i) Suppose a general Resource graph is used for the system state then shows the resources request and response for reusable and consumable resources.

ii) The mutual exclusion problem can be solved in various ways in Distributed system, note down the each technique and merits & demerits of each technique.

4+3

Q. 2 i) During the scheduling of several processes in the Distributed systems, what type of strategies are followed and discuss any load distributing algorithm with an example.

ii) Note down the mechanism used for building distributed file systems.

5+2

Q. 3 i) The following instruction executed concurrently, show the sequence that does not have any conflict and also indicate a sequence in which conflict occurred with its detail.

I1: $R_3 <= R_3$ op R_5
I2: $R_4 <= R_3 + 1$
I3: $R_3 <= R_5 + 1$
I4: $R_7 <= R_3$ op R_4

ii) What are the reasons that turn the researchers to develop an operating system for DBMS?

5+2

Q. 4 Write the Singhal's heuristic algorithm with the suitable example along with the number of messages needed for each CS invocation. 7

Q. 5 Describe the limitations of Lamport's clock and how the following events are dissemination in vector clock.

P_1: e_1, e_2, e_3;
P_2: e_1, e_2, e_3, e_4;
P_3: e_1, e_2;
and the following happened before relations are captured
$e_{12} \rightarrow e_{22}$; $e_{24} \rightarrow e_{13}$; and $e_{31} \rightarrow e_{23}$

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