**Name:**

**Enrolment No:**

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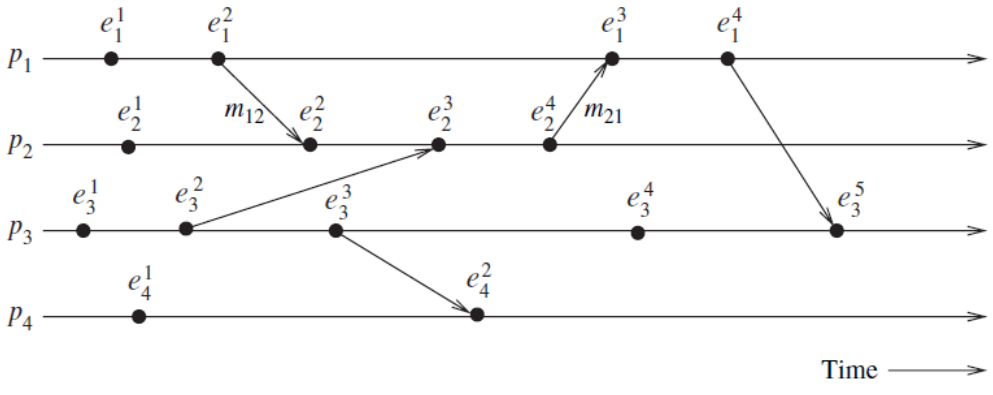
**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**
**End Semester Examination, May2020**

**Course: Distributed Computing** **Semester : VIII**
**Program: B.Tech- CSE/Mobile Computing** **Time : 03 hrs.**
**Course Code: CSIB 489** **Max. Marks: 100**

**Instructions: Attempt all the questions.**

## SECTION A

| S. No. | | Marks | CO |
|---|---|---|---|
| Q 1 | Which of the following is not a feature of the distibuted system?<br>(a) No common physical clock (b) Geographical separation<br>(c) Common memory (d) Autonomy and heterogeneity | **2** | **CO1** |
| Q 2 | Which of the following is not true with regard to RMI and RPC?<br>(a) They both support programming with interfaces.<br>(b) They both are typically constructed on the top of request-reply protocol.<br>(c) They both can offer a range of call semantics.<br>(d) They both offer different level of transparency. | **2** | **CO 2** |
| Q 3 | Marshalling is the process of taking a collection of data items and assembling them into a form suitable for transmission in a message. **(True/False)** | **2** | **CO 2** |
| Q 4 | Location transparency allows for which of the following?<br>(a) Users to treat the data as if it is at one location.<br>(b) Programmers to treat the data as if it is at one location.<br>(c) Managers to treat the data as if it is at one location<br>(d) All of the above. | **2** | **CO 4** |
| Q 5 |  | **2** | **CO 3** |

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| | Which of the following does not correspond to a consistent global state?<br>(a) {LS11, LS22, LS32, LS41} (b) {LS12, LS23, LS32, LS41}<br>(c) {LS13, LS24, LS34, LS42} (d) {LS14, LS24, LS34, LS42}<br><br>{Hint: Here LSij is refererring to the local state of the process *i* upto the event *j;* where i, j =1, 2, 3,...} | | |
| Q 6 | Which of the following approaches are used to achieve reliable systems?<br>(a) Fault prevention (b) Fault removal<br>(c) Fault tolerance (d) All of the mentioned | **2** | **CO 4** |
| Q 7 | Ricart and Agarwala algortihm is used for:<br>(a) Deadlock detection (b) Leader Election<br>(c) Mutual Exclusion (d) Deadlock Recovery | **2** | **CO3** |
| Q 8 | Chandy-Misra-Haas algorithm is used for:<br>(a) Deadlock detection (b) Leader Election<br>(c) Mutual Exclusion (d) Deadlock Recovery | **2** | **CO3** |
| Q 9 | Logical extension of process migration is<br>(a) Process Migration (b) Data Migration<br>(c) Thread Migration (d) System Migration | **2** | **CO2** |
| Q 10 | Processes on a remote systems are identified by<br>(a) Host ID (b) Host Name & Identifier<br>(c) identifier (d) Process ID | **2** | **CO2** |
| Q 11 | if one site fails in the distributed system,<br>(a) the remaining sites can continue operating<br>(b) all the sites will stop working<br>(c) the directly connected site will stop working<br>(d) none of the mentioned | **2** | **CO1** |
| Q 12 | All the resources are tightly coupled in the computing paradigm of :<br>(a) Grid Computing (b) Centralized Computing<br>(c) Parallel Computing (d) Distributed Ccomputing | **2** | **CO1** |
| Q 13 | The only way of communication in distributed system is via *message passing.* **(True/False)** | **2** | **CO1** |
| Q 14 | In distibuted computing, deadlock detection & recovery is the most popular way of handling deadlock. **(True/False)** | **2** | **CO3** |
| Q 15 | Which of the following is not a valid token type in the client-server algorithm of distributed mutual exclusion?<br>(a) Request (b) Held (c) Grant (d) Release | **2** | **CO3** |
| Q 16 | Which one of the following is correct with regard to the CORBA?<br>(a) Common Object Request Broker Agent<br>(b) Common Object Response Broker Architecture<br>(c) Common Object Request Broker Architecture<br>(d) None of the above | **2** | **CO4** |
| Q 17 | Which of the following is not a main component of CORBA's language-independent RMI framework?<br>(a) IDL (b) CDR (c) Both (a) & (b) (d) JSS | **2** | **CO4** |

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| Q 18 | Which of the following is not one of the stages in the evolution of distributed DBMS?<br><br>(a) Unit of Work (b) Remote Unit of Work<br>(c) Distributed Unit of Work (d) Distributed Request | **2** | **CO4** |
| Q 19 | Depending on the situation each node in the Distributed Database system can act as, _____ .<br><br>(a) Client (b) Server (c) (a) & (b) (d) None of the these | **2** | **CO4** |
| Q 20 | A transaction manager is which of the following?<br>(a) Maintains a log of transactions (b) Maintains before & after databases images<br>(c) Maintains appropriate concurrency control (d) All of these | **2** | **CO4** |
| Q 21 | Which of the following is true concerning a global transaction?<br>(a) The required data are at one local site and the distributed DBMS routes requests as necessary.<br>(b) The required data are located in at least one nonlocal site and the distributed DBMS routes requests as necessary.<br>(c) The required data are at one local site and the distributed DBMS passes the request to only the local DBMS.<br>(d) The required data are located in at least one nonlocal site and the distributed DBMS passes the request to only the local DBMS. | **2** | **CO4** |
| Q 22 | Weed out the odd one from the following:<br>(a) physical clock (b) scalar clock (c) vector clock (d) matrix clock | **2** | **CO3** |
| Q 23 | In RMI Architecture which layer Intercepts method calls made by the client/redirects these calls to a remote RMI service?<br>(a) Stub & Skeleton Layer (b) Application Layer<br>(c) Remote Reference Layer (d) Transport Layer | **2** | **CO2** |
| Q 24 | RMI stands for:<br>(a) Remote Method Isolation (b) Random Method Isolation<br>(c) Remote Method Invocation (d) Random Method Invocation | **2** | **CO2** |
| Q 25 | An RMI Server is responsible for _____.<br>(a) Creating an instance of the remote object (b) Exporting the remote object<br>(c) Binding the instance of the remote object to the RMI registry (d) All of the above | **2** | **CO2** |
| Q 26 | What is the built on top of the socket programming?<br>(a) EJB (b) RMI (c) both (a) & (b) (d) None of the these | **2** | **CO2** |
| Q 27 | In distributed system, each processor has its own<br>(a) memory (b) clock (c) both memory & clock (d) none of these | **2** | **CO1** |
| Q 28 | Which of the following is an example of distributed system?<br>(a) Network of workstations (b) Distributed manufacturing system<br>(c) Network of branch office computers (d) All of these | **2** | **CO1** |
| Q 29 | Which of the following statement is true with regard to a Peer Group?<br>(a) Any process in the system can send messages to the group.<br>(b) Only the members of the group can send messages to the group.<br>(c) All the group members are equal.<br>(d) There is a coordinator. | **2** | **CO1** |

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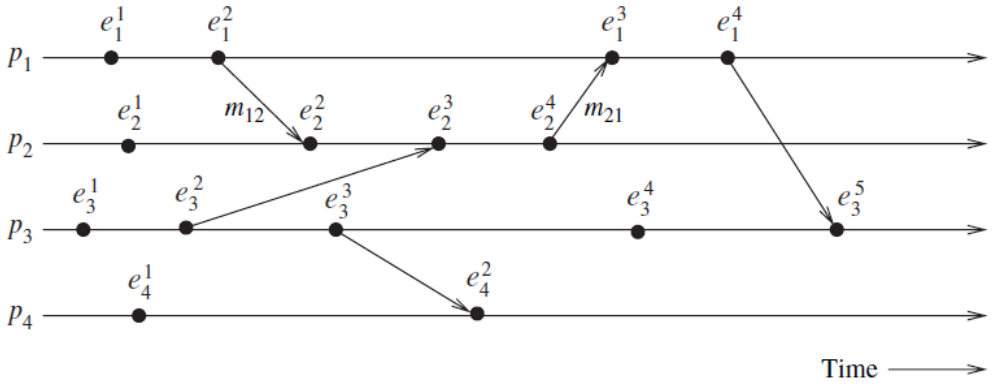
| Q 30 | Which of the following is not a valid request model in distributed deadlock?<br>(a) AND model (b) OR model (c) AND-OR model (d) XNOR model | **2** | **CO3** |
| | **SECTION B (Descriptive)** | | |
| Q 31 | What are the challenges involved in building the distributed systems?<br>**OR**<br>State the differences between centralized and distributed computing. | **10** | **CO 1** |
| Q 32 | Define the client stub and server stub. | **10** | **CO 2** |
| Q 33 | Compare between the homogeneous and heterogeneous distributed database management systems.<br>**OR**<br>Discuss the SoA governance along with its functions in brief. | **10** | **CO 4** |
| Q 34 |  <br>Associate the appropriate scalar timestamp (assume *d=1*) with each of the event listed in the aforementioned figure.<br>{Note: while answering the above, you can use the notation Eij to represent the *jth* event at process *i;* where i,j = 1, 2, 3, 4, ...}<br>**OR**<br>Consider a group of distributed processors P1, P2, P3, and P4 that use the **Ricart and Agrawala** algorithm for ensuring mutual exclusion. Assume that P4 is currently in the critical section and there is no other node in the WANTED state. Now consider requests from P1 and P2 (in that order) to enter the Critical Section.<br>Determine the state at each processor. | **10** | **CO 3** |