Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May – 2017**

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| **Code :** | **14CS3019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DISTRIBUTED SYSTEM** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | List the challenges involved in designing distributed system (DS). What are the different types of transparencies identified by International Organizations? Explain in detail. | CO1 | 10 |
| b. | Apply the concepts of two-tier and three-tier architectures for a banking application. Draw the models and state the advantages and disadvantages of those variants. Which architecture is more beneficial? | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Compare the following two extreme variants of the interaction model: Synchronous and asynchronous DS | CO1 | 6 |
| b. | State the characteristics of interprocess communication. Explain the interprocess communication mechanism using Berkeley API functions. | CO2 | 14 |
| 3. | a. | Apply Java API for UDP to transmit datagram packets between client and server. The client will repeatedly read a line of input from the user and sends it to the server using UDP datagram message and receives reply from the server. The client sets a timeout on its socket so that it can inform the user when the server does not reply within the timeout period. Write the corresponding server and client programs. | CO2 | 10 |
|  | b. | List the approaches available for external data representation. Demonstrate the concept using one of the representation approaches for transferring a student record | CO2 | 6 |
|  | c. | Identify the parameters sent in request- reply message structure. | CO2 | 4 |
| (OR) | | | | |
| 4. | a. | Discuss the role of each component of Remote Method Invocation (RMI). | CO2 | 12 |
|  | b. | Explain the different RMI invocation semantics. Identify the invocation semantics used in CORBA. | CO2 | 8 |
| 5. | a. | Design a distributed event notification architecture to send notifications to subscribers on events like new job advertisement, new training course and interview which are advertised by different IT companies such as Italian, Hew and Electric. State the roles of participating objects, events, notification, publisher and subscriber. | CO2 | 10 |
|  | b. | Compare the different clock synchronization algorithms to synchronize the clocks over the Intranet and Internet. | CO3 | 10 |
| (OR) | | | | |
| 6. | a. | Analyze the efficiency of the approaches followed in Pastry algorithm in routing the messages to its destination. Which approach is better and why? | CO3 | 12 |
|  | b. | Consider a group of six processors numbered 1 to 6. Initially, process 6 was the coordinator. Process 3 waited for the coordinator’ response, for a specified time interval ‘T’. How will you use “Bully” algorithm in this situation to elect a new coordinator? | CO3 | 8 |
| 7. | a. | Explain the different DNS navigation schemes and analyze which method is advantageous in real-time distributed scenario. | CO3 | 10 |
|  | b. | Differentiate flat and nested transactions with illustrations. | CO3 | 5 |
|  | c. | Define Phantom deadlocks and explain the approach followed to detect the deadlocks in distributed environment. | CO3 | 5 |
| (OR) | | | | |
| 8. | a. | Demonstrate the purpose of ‘intentions list’ in transaction recovery process? How recovery process is carried out for nested transactions. | CO3 | 10 |
|  | b. | Use the following nested transaction diagram and explain how the main coordinator will take decision to commit / abort Transaction ‘T’. Also, provide the information held by coordinators of nested transactions in a tabular form. | CO3 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Justify the statement “Quality of Service (QoS) is considered important in distributed multimedia systems”. What are the two main subtasks of QoS Manager? | CO3 | 10 |
|  | b. | Discuss about stream adaptation methods : scaling and filtering. | CO3 | 10 |

ALL THE BEST