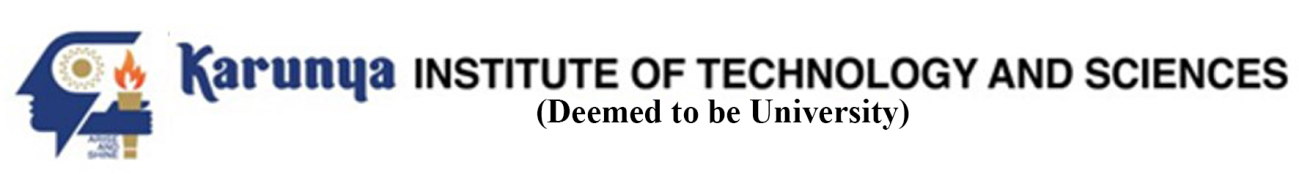
Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **17CS3013** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DISTRIBUTED SYSTEMS** | **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. | State some guiding principles for designing a scalable and fault tolerant distributed system(DS). | CO1 | 10 |
|  | b. | Discuss the merits of DS and explain the diversity and complexity of DS. | CO1 | 10 |
| OR | | | | |
| 2. | a. | Discuss on the variants of 3-tier client-server architecture. Compare fat and thin client. Which architectural model do you prefer? | CO1 | 10 |
|  | b. | Compare the Omission failures, Arbitrary failures and Timing failures that are exhibited by processes and communication channels in DS, | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | List the available middlewares for inter-process communication in DS. What are the benefits of using the middleware? | CO2 | 4 |
|  | b. | Explain the purpose of remote procedure call (RPC)? Discuss each of the components of Sun RPC. | CO2 | 8 |
|  | c. | Identify the approaches available for external data representation. Employ the approaches to represent the bank customers details. | CO2 | 8 |
| OR | | | | |
| 4 | a. | State the underlying principle of ‘routing overlays’. How the principle is implemented in Pastry algorithm? | CO2 | 10 |
|  | b. | Discuss the various invocation semantics that can be achieved when the request-reply protocol is implemented over a TCP/IP connection. | CO2 | 10 |
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| 5. | a. | Describe the design and implementation of Directory Service using the service architecture and internal data structures of X.500. | CO4 | 10 |
|  | b. | Identify the components of file service architecture. What are the responsibilities of each of the components? | CO4 | 10 |
| OR | | | | |
| 6. | a. | Indicate the importance of computer clock synchronization in DS.Write about Berkley and Christian algorithms. | CO5 | 10 |
|  | b. | Consider a group of ten processors numbered 1 to 10. Initially, process 10 was the coordinator. Process 8 waited for the coordinator’ response, for a specified time interval ‘T’. Use “Bully” algorithm to elect a new coordinator. | CO5 | 10 |
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| 7. | a. | Describe (with a schedule) how a non-recoverable situation could arise if write locks are released after the last operation of a transaction but before its commitment. | CO3 | 10 |
|  | b. | State the purpose of atomic commit protocols. Explain the steps of two-phase commit protocol for nested transactions. | CO3 | 10 |
| OR | | | | |
| 8. | a. | Define Phantom deadlocks and explain the approach followed to detect the deadlocks in distributed environment. | CO3 | 10 |
|  | b. | Apply a basic architectural model to manage replicated data in distributed environment. | CO3 | 10 |
|  | | **Compulsory**: |  | |
| 9. | a. | Outline a system to support a distributed music download facility. Suggest suitable QoS parameters. | CO6 | 8 |
|  | b. | Justify the statement “Quality of Service (QoS) is considered important in distributed multimedia systems”. What are the two main subtasks of QoS Manager? | CO6 | 8 |
|  | c. | Discuss about stream adaptation methods : scaling and filtering. | CO6 | 4 |