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



**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **14CS3019** | **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. | List the main challenges that arise in designing a distributed system (DS). Explain atleast four of the challenges in detail. | CO1 | 16 |
| b. | Explain how the performance of distributed system is affected by increase in sale. Explain any two scenario. | CO1 | 4 |
| (OR) | | | | |
| 2. | a. | Is it true that client-server architectural model can be modified based on application instead of using simple two-tier architecture? If it is true, state the variations that can be derived from simple client-server architectural model. | CO1 | 10 |
| b. | Name the fundamental models of DS. State and describe the ways in which the process and communication channels fail in a DS. | CO1 | 10 |
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| 3. | a. | Write a TCP client program that repeatedly reads a line of input from the user, sends it to the server, and receives a message from the server. The client sets a timeout on its socket so that it can inform the user when the server does not reply. Write the corresponding server and client program. | CO2 | 12 |
|  | b. | A user wants to transmit the following structure: a Boolean, an integer, and a fixed-length character string of eight characters. How will you represent the data in CDR format? | CO2 | 8 |
| (OR) | | | | |
| 4. | a. | What is the purpose of remote method invocation (RMI)? Discuss about the role of each of the components in RMI. | CO2 | 15 |
|  | b. | Discuss the various invocation semantics that can be achieved when the request-reply protocol is implemented over a TCP/IP connection. | CO2 | 5 |
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| 5. | a. | What are the functional and non-functional requirements of P2P middleware? | CO3 | 5 |
|  | b. | Why first stage of Pastry routing algorithm is not efficient? How the algorithm has been modified to work efficiently? Explain in detail. | CO3 | 15 |
| (OR) | | | | |
| 6. | a. | Discuss the different clock synchronization algorithms available to synchronize the clocks over the Intranet and Internet. | CO3 | 12 |
|  | b. | With neat illustration, explain the Bully algorithm. | CO3 | 8 |
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| 7. | a. | List the different DNS navigation schemes and propose a scheme which is more advantageous in real-time distributed scenario. | CO3 | 10 |
|  | b. | Differentiate flat and nested transactions with illustrations. State the locking rules for ‘nested transactions’. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | What is the purpose of ‘intentions list’ in transaction recovery process? How recovery process is carried out for nested transactions? | CO3 | 10 |
|  | b. | Discuss the operation of two-phase commit protocol for nested transactions with illustration. | CO3 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. |  | Write in detail on the Quality of Service Manager’s responsibilities and its two main subtasks in handling multimedia applications. | CO3 | 20 |

ALL THE BEST