

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: M. TECH.  
BRANCH: COMP. SC.**

**SEMESTER : I  
SESSION : MO/2022**

**SUBJECT: CS504 DISTRIBUTED SYSTEMS**

**TIME: 3:00 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) One of the common characteristics of Distributed System is Transparency, how is it perceived by user and application programmer? Discuss various kinds of transparencies that a Distributed system must exhibit. [CO1], [BL2] [5]
- Q.1(b) Elaborate the mechanism of sharing a 'global' IP address at home using Routers with Network Address Translation. [CO1], [BL3] [5]
- Q.2(a) While implementing Client-Server Communication, what are the options available for issues like addressing, blocking, buffering and reliability. [CO2], [BL4] [5]
- Q.2(b) What do you mean by Remote Procedure Call? Explain its implementation steps in Distributed System. [CO2],[BL2] [5]
- Q.3(a) Explain P2P system. What is the purpose of an overlay network in P2P system? [CO3], [BL2] [5]
- Q.3(b) Describe NFS architecture emphasizing its transparency feature. [CO3], [BL4] [5]
- Q.4(a) Write an algorithm to implement vector clock in distributed system. [CO4], [BL3] [5]
- Q.4(b) Write the Ricart & Agrawala's algorithm & explain how it solves the mutual exclusion problems in a distributed system. [CO4], [BL1] [5]
- Q.5(a) Explain how the two-phase commit protocol is applied to nested transactions. [CO5], [BL2] [5]
- Q.5(b) Discuss distributed deadlock detection using edge chasing algorithm. [CO5], [BL2] [5]

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