

No. of Printed Pages : 4

Sl. No.

### **B3.E3-R5 : DISTRIBUTED AND PARALLEL COMPUTING**

**DURATION : 03 Hours**

**MAXIMUM MARKS : 100**

**Roll No. :**

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**Answer Sheet No. :**

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**Name of Candidate :** \_\_\_\_\_ ; **Signature of Candidate :** \_\_\_\_\_

#### **INSTRUCTIONS FOR CANDIDATES :**

- Carefully read the instructions given on Question Paper, Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English Language only.
- Question paper contains Seven questions. The Question No. 1 is compulsory. Attempt any FOUR Questions from Question No. 2 to 7.
- Parts of the same question should be answered together and in the same sequence.
- Questions are to be answered in the ANSWER SHEET only, supplied with the Question Paper.
- Candidate cannot leave the examination hall/ room without signing on the attendance sheet and handing over his/her Answer Sheet to the Invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

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**DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

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1.
  - (a) What is a Distributed System and what are its Benefits ?
  - (b) What is Edge computing in a Distributed Computing Paradigm ?
  - (c) What is Network Virtualization ?
  - (d) Explain lock-based protocol.
  - (e) What is the Role of Middleware in Distributed System ?
  - (f) What is shared in OpenMP ?
  - (g) What is Parallel Random-Access Machine ? (7×4)
  
2.
  - (a) Briefly explain the Challenges and Failures of a Distributed System.
  - (b) Differentiate between Parallel and Distributed Computing.
  - (c) What is Soft Computing ? Briefly discuss along with its need. (6+6+6)
  
3.
  - (a) What are the Characteristics that impact Distributed System Performance and Operation ?
  - (b) What are different ways of IPC ?
  - (c) How data are stored at different sites in Distributed Database Management System ? (6+6+6)
  
4.
  - (a) What is Concurrency problem ? Give its solution using lock-based protocol.
  - (b) In Distributed Computing, explain the Bully Algorithm.
  - (c) What is Network File System (NFS) ? (8+6+4)
  
5.
  - (a) Explain Edge Computing Challenges and ways to address them.
  - (b) What are the Key Business Benefits of Edge Computing?
  - (c) What is Fog Computing? Briefly discuss. (7+6+5)
  
6.
  - (a) Explain Parallel Programming Paradigms.
  - (b) Discuss UMA, NUMA, COMA and CC-NUMA Architecture.
  - (c) Write a short note on IPC. (6+6+6)
  
7.
  - (a) Explain the Cache Coherence Problem and its resolution means.
  - (b) Explain Mutual Exclusion as a Fundamental problem in Distributed Computing.
  - (c) What are the advantages of Distributed Shared Memory System ? (9+5+4)

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**SPACE FOR ROUGH WORK**

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