

[5254]-665

B.E. (Computer Engineering)

**COMPUTER NETWORK DESIGN AND MODELING.**  
(2012 Pattern) (Elective - I) (Semester - I)

Time : 2:30 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figure to the right indicates full marks.
- 4) Assume suitable data, if necessary.

Q1) Theoretically prove network analysis, architecture, and design are similar to other engineering processes with respect to following areas - problems to be addressed, Analyzing data and optimization. [6]

OR

Q2) What is the need of developing service metric? With the help of suitable diagram explain the requirement analysis process. [6]

Q3) What are the different Application Types and Application Groups needs to consider while designing a network. [8]

OR

Q4) Write a short note on:

- a) Service metrics for RMA. [4]
- b) Variables used as service metrics. [4]

Q5) Write Flowspec Algorithm and explain with example. [8]

OR

Q6) Explain in detail with example and diagram - Topological Models, Flow-Based Models, Functional Models and Distributed computing model. [8]

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Q7) a) What are the different Addressing Strategies during the life cycle of the network explain with diagram. [8]  
b) What is importance of Network Layout for analyzing network performance? [4]

OR

Q8) a) Explain FCAPS model in details [4]  
b) Explain with diagram: [8]  
i) In-band and out-of-band management  
ii) Centralized, Distributed, and Hierarchical Management

Q9) a) What are the different addressing mechanisms strategies explain in details? [8]  
b) Explain Prioritization, Traffic Management, Scheduling, Queuing and Quality of Service with respect to performance mechanism. [10]

OR

Q10) a) List four types of problems that the performance architecture addresses. Give examples of each type of problem? [8]  
b) What are the roles of design traceability and design metrics for analyzing network performance? [10]

Q11) a) Enlist the tools used for network simulation and elaborate any one of them. [4]  
b) Explain the concept of the NED Language and IDE Support for NED. [6]  
c) Explain in details the The OMNeT++ Approach for Modeling. [8]

OR

Q12) a) Explain Simulating a Computer Network in ns-3. [6]  
b) Write a short note on: [12]  
i) Smart Pointers in ns-3  
ii) Events in ns-3  
iii) Scalability with distributed simulation.

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