JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- October 2018

Dr. Vivek Sehgal

Ph.D. I Semester

COURSE CODE: 14P1WCI231

MAX. MARKS: 25

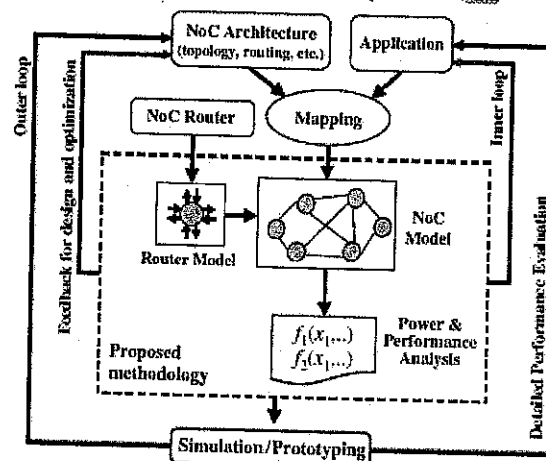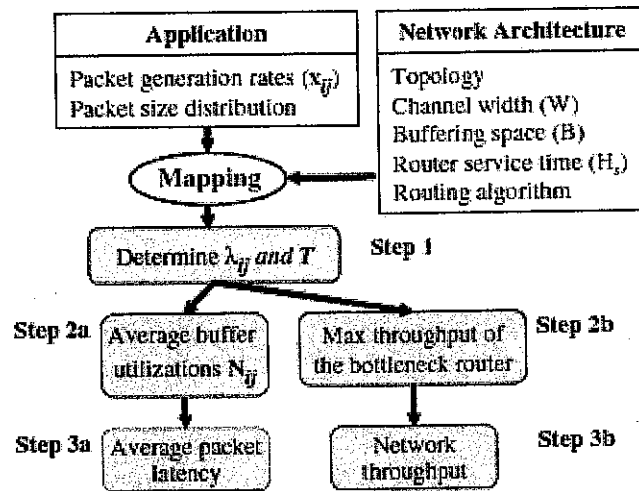COURSE NAME: MODELING ANALYSIS AND OPTIMIZATION OF NOC COMMUNICATION

COURSE CREDITS: 03

MAX. TIME: 1.5Hr

Note: All questions are compulsory. Each question carries equal marks. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. List and explain the significant matrices for NoC Performance Analysis based on following illustration.

2. (a) Tabulate Performance Analysis of Router, Shared Bus and Point-to-Point Configurations.

   (b) Derive Router model with Multiple Virtual Channels

3. Using the following performance techniques, how will you calculate:
   i.   Average Buffer Utilization and Packet Latency
   ii. Network Throughput

Application	Network Architecture
Packet generation rates (x_{ij}) Packet size distribution	Topology Channel width (W) Buffering space (B) Router service time (H_s) Routing algorithm

Mapping

Determine λ_{ij} and T — Step 1

Step 2a — Average buffer utilizations N_{ij}

Step 2b — Max throughput of the bottleneck router

Step 3a — Average packet latency

Step 3b — Network throughput

4. Explain the Iterative Long-Range Link Insertion Algorithm. How will you calculate the following Critical Traffic Values
   i. Total packet injection rate
   ii. Free packet delay

5. Explain the following routing strategy using 4x4 Mesh architecture