Paper Code : BCA 316	L	T	C
Paper Id: 20316	3	1	4

Paper: Network Programming

Pre-requisite: Knowledge of Basic Networking/ Networking Protocols

Aim: To enable the students to develop the necessary skills for developing robust & scalable network applications and to build necessary basic knowledge for managing networks

Objective

- To learn the basics of socket programming using TCP Sockets.
- To learn basics of UDP sockets.
- To develop knowledge of threads for developing high performance scalable applications.
- To learn about raw sockets.
- To understand simple network management protocols & practical issues.

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks

UNIT-I

Introduction to Network Programming: OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application. **[No. of Hrs.: 11]**

UNIT-II

Sockets : Address structures, value – result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function. **[No. of Hrs.: 11]**

UNIT-III

TCP client server : Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination,

Crashing and Rebooting of server host shutdown of server host. I/O Multiplexing and socket options: I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option.

[No. of Hrs.: 11]

UNIT-IV

Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option.

[No. of Hrs.: 11]

TEXT BOOKS:

[T1] UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. - W.Richard Stevens, Pearson Edn. Asia.
[T2] UNIX Network Programming, 1st Edition, - W.Richard Stevens. PHI.

REFERENCES:

[R1] UNIX Systems Programming using C++, T CHAN, PHI.
[R2] UNIX for Programmers and Users, 3rd Edition Graham GLASS, King abls, Pearson Education
[R3] Advanced UNIX Programming 2nd Edition M. J. ROCHKIND, Pearson Education