Examination	: First Sessional	**Seat No.**	:
Date	: 03/08/2016	**Day**	: Wednesday
Time	: 1:15 to 2:30	**Max. Marks**	: 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1	**Do as directed.**	**[12]**
(a)	Explain terms TTL, MSS and Window size in case of TCP Communication.	**[02]**
(b)	Explain Generic Socket Structure with its data members and its significance.	**[02]**
(c)	Explain Byte Manipulation Functions along with Header File.	**[02]**
(d)	List out the advantages of Shared Memory over FIFO and PIPE for inter process communication.	**[02]**
(e)	Explain the concept of memory mapped file in brief.	**[02]**
(f)	List out and explain functions used for locking and unlocking of semaphore.	**[02]**
Q.2	Attempt Any Two following questions.	**[12]**
(a)	Implement parent-child processes (application) using shared memory. Parent and child share a piece of memory in which the counter variable and semaphore are stored. To do so a memory-mapped file is used. Both parent and child processes should increment the value of counter variable by value 20.	**[06]**
(b)	Implement Echo Client – Server Program Using UDP.	**[06]**

<div align="center">OR</div>

(b)	i) Write a piece of code to create concurrent server using socket. ii) Write a code by which application can provide application level acknowledgement.	**[06]**
Q.3	Attempt following questions	**[12]**
(a)	Implement File Transfer application using Client – Server TCP. Where client send file name from command line and server open file and returns content of file to client.	**[06]**
(b)	Implement server-client application using PIPE. The client sends the Two Numbers, x and y, to server. Server calculates power of x^y and returns results to client. The client displays result on console.	**[06]**

<div align="center">OR</div>

Q.3	Attempt following questions	**[12]**
(a)	Implement a calculator like client-server application using FIFO. The client sends the two operands and one operator to the server. Server performs given operation on operands and returns the result back to client. The client displays result on console.	**[06]**
(b)	Explain SO_KEEPALIVE and SO_LINGER socket option in detail in case of TCP client server scenario.	**[06]**