

**MASTER OF COMPUTER APPLICATIONS AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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**VALLIAMMAI ENGINEERING COLLEGE**  
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**DEPARTMENT OF COMPUTER APPLICATIONS**

**BRANCH:** MCA  
**YEAR / SEMESTER:** II / IV  
**SUBJECT CODE & TITLE:** MC7404 NETWORK PROGRAMMING

**QUESTION BANK**

**UNIT – I**

**PART – A**

<b>Qn, No</b>	<b>Questions</b>	<b>BTL</b>
1	What is meant by Shell in Unix?	1
2	Explain the meaning of a Process in Unix?	4
3	List the environment variables in Unix	1
4	State the uses of setjmp ( ) and longjmp ( ) functions?	1
5	Compare ProcessID 0 , ProcessID 1 and ProcessID 2	2
6	Write the uses of fork( ) function in Unix	1
7	Distinguish between fork( ) and exec( ) functions	2
8	Illustrate a session in Unix with an example	3
9	List the three different things that we can tell the kernel to do when a signal occurs	1
10	Show the functions of unreliable signals?	3
11	Discuss about interrupted system call?	2
12	What happens when the sticky bit of executable program is set?	1
13	Examine how vfork() is different from fork()?	4
14	Invent how can a process obtain its saved set-user-ID?	5
15	Determine the limitations of pipes?	6
16	Plan the steps involved in obtaining a shared resource by a process?	5
17	Explain how a system call is different from Library function?	2
18	Examine the fields present in the environment list?	4
19	Illustrate how can a process communicate with other process using a Pipe	3
20	Determine the features of a semaphore?	6

**MASTER OF COMPUTER APPLICATIONS AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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**PART - B**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	Briefly discuss about i. Memory Layout of a C program (8) ii. File sharing (8)	2
2	List the environment variables & discuss their related functions in UNIX (16)	1
3	Compare and contrast a. fork() versus vfork() functions (8) and b. wait() versus waitpid() functions (8)	4
4	Assess the following functions with their syntax a. Unix Directory and File structure (8) b. Initial process sequence while the system boot up (8)	6
5	Explain a. The terminal logins (8) and b. Network logins in UNIX (8)	2
6	Describe the following features of Unix a. Process and processes groups (6) b. Sessions (6) c. Signals (4)	1
7	Write short notes on a. Different File types in Unix (8) b. Overview Unix System Architecture (8)	1
8	Illustrate the following with their related functions a. Pipes in UNIX (8) b. Co-Processes in UNIX (4) c. Message Queues (4)	3
9	Examine the following with the related functions and structures a. Semaphores (8) b. Shared Memory (8)	5
10	Show the overview of TCP /IP protocols used in network communication with neat diagram and explain (16)	3

**MASTER OF COMPUTER APPLICATIONS AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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**UNIT II**

**PART A**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	What is a socket in TCP communication	1
2	What are the byte ordering functions?	1
3	Outline the structure of a IPv4 internet socket address	2
4	Analyze about various address conversion functions	4
5	What is meant by well known ports?	1
6	Discuss the uses registered ports	2
7	What is meant by dynamic or private ports?	1
8	Explain the value result arguments	4
9	Show the byte manipulation functions	3
10	Illustrate the socket function with its syntax	3
11	What you think about 'connect' function	5
12	Show the syntax of 'bind' function.	3
13	Explain the syntax of 'listen' function	2
14	List the uses of 'accept' function	1
15	Describe the syntax of 'close' function	6
16	Distinguish between incomplete connection queue completed connection queue	2
17	Compose the features of Concurrent Server	5
18	Describe the functions of Iterative Server	1
19	Distinguish between the 'read' and 'write' functions	4
20	Assess the usage of a Port?	6

**PART B**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	Identify the internet socket address structures with explanations of a. Internet Protocol (IPv4) (8) b. Internet Protocol (IPv6) (8)	4
2	Show the various address conversion functions with their syntax (16)	3
3	Compare and contrast a. Illustrative Server (8) and b. Concurrent Server (8)	2
4	Show the function call sequence in TCP Client/Server communication with a neat diagram and explain each function. (16)	1
5	Develop a coding in C to implement the concurrent server (16)	5

**MASTER OF COMPUTER APPLICATIONS AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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6	Discuss the following functions with their syntax i. Socket() (8) ii. Bind() (8)	2
7	How would you have handled the following functions in Unix? Explain I. Listen() (8) II. Accept() (8)	6
8	Describe the following functions with respect to the socket programming i. Connect() (8) ii. Close() (8)	1
9	Describe the features of the following functions with their syntax i. Readn() (6) ii. Writen() (6) iii. Readline() (4)	1
10	Show a C code to demonstrate an iterative server (16)	3

**UNIT III**

**PART A**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	Create the block diagram for simple TCP echo client and server communication	5
2	Write brief outline of zombie state of a process	1
3	Assess the uses of I/O Multiplexing in networking applications	6
4	Distinguish between termination of server process and crashing of server host	1
5	Classify the steps involved in a TCP echo server.	1
6	Determine the features of server process and server host	6
7	Identify the various I/O models	4
8	Illustrate the distinct phases for an input operation on a socket	3
9	Show the diagram for blocking I/O model	3
10	Explain how signals are handled in POSIX?	2
11	Describe the features I/O multiplexing	2
12	What are boundary conditions?	1
13	Devise Asynchronous I/O model	5
14	Explain the purpose of select() function	2
15	List the uses of 'poll' function	1
16	List out the function's/macro's that operate on fd_set descriptor set	1
17	Show the syntax of shutdown() function	3
18	Distinguish between close() and shutdown() functions.	2
19	Construct the syntax of pselect() function	4
20	Identify the syntax of poll() function	4

**MASTER OF COMPUTER APPLICATIONS AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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**PART B**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	Compose a C program to implement a TCP echo client/server (16)	5
2	Recommend a day time client/server application using TCP sockets (16)	6
3	Write short notes on i. POSIX signal handling (8) ii. I/O Models (8)	1
4	Describe the syntax of a. Signal Handling functions with example (8) b. Synchronous I/O Models (8)	1
5	Illustrate how a SIGCHLD signal handler handles a. wait() system call (8) and b. waitpid() system call (8)	3
6	Compare and contrast between wait() & waitpid() with suitable diagrams (16)	4
7	Show the steps involved in a. crashing of server host (8) and b. Crashing and rebooting the server (8)	3
8	Distinguish between select() and poll() system calls with examples (16)	2
9	Explain the features of i. I/O Multiplexing (8) ii. Signal driven I/O (6) iii. Asynchronous I/O (4)	2
10	Write a C program for TCP server using poll() function (16)	1

**UNIT- IV**

**PART A**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	Write the syntax of getsockopt and setsockopt functions	1
2	Name the two socket options for TCP	1
3	List the use of SO_BROADCAST option?	1
4	Write the uses of SO_KEEPALIVE option	1
5	Show the Nagles algorithm	3
6	Illustrate the syntax of i) recvfrom() and ii) sendto()	3
7	Write the expansion for i) DNS and ii) FQDN	1
8	Outline the features of DNS	2
9	Explain about resource records	2
10	Classify the types of resource records	6
11	Determine the features of AAAA record	6
12	Distinguish between PTR record and MX record	2
13	Show a block diagram for typical arrangement of clients, resolvers and name	3

**MASTER OF COMPUTER APPLICATIONS AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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14	Explain the syntax of gethostbyname() function	4
15	Interpret the syntax of gethostbyaddr() function	2
16	Examine how getservbyname() function is used in C?	5
17	Examine the syntax of getservbyport() function	5
18	Explain getaddrinfo() function with its syntax	4
19	Explain in detail about UDP	4
20	List out the socket options of ICMP	1

**PART B**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	Discuss about the socket options available for a. The stream sockets (8) and b. The Datagram sockets (8)	2
2	Explain generic socket options in detail (16)	4
3	Analyze the following functions i) getsockopt() (4) ii) setsockopt() (4) iii) ICMP socket option (4) iv) TCP socket option (4)	6
4	Describe an echo Client/Server system using UDP sockets (16)	1
5	Write short notes on i) DNS (6) ii) Resource Records (4) iii) Resolvers and Name servers (4)	1
6	Describe the applications of i) Resolvers and Name server (8) ii) gethostbyname() (4) iii) gethostbyaddr() (4)	1
7	Explain a mechanism to implement the following functions i) getservbyname() (8) ii) getservbyport() (8)	2
8	Create a C program to implement getaddrinfo() function (16)	5
9	Construct C program to implement a server using multiplexing that handles a. TCP Client requests (8) and b. UDP Client request (8)	3
10	Illustrate the implementation of UDP client and server that reverse the given input string (16)	3

**MASTER OF COMPUTER APPLICATIONS AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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**UNIT – V**

**PART – A**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	List out the drawbacks in using a child process to handle the clients	1
2	Find the meaning of a thread.	1
3	State the advantages of threads	1
4	Determine the comparative advantage of using threads over child processes	6
5	Outline the entities that are shared by all threads within a process	2
6	Describe the entities that are unique for each thread	1
7	Illustrate a function to create a thread with its syntax	3
8	Device a function for making a thread joinable	5
9	Show a function that get ID of a thread	3
10	Determine the syntax of detaching a thread	6
11	Write short notes on terminating a thread	1
12	Examine functions related to mutex with their syntax	4
13	Show any two functions related to condition variable	3
14	Explain the use of raw socket?	2
15	Identify the packets that a process can read with raw socket	4
16	Design a socket function to create raw socket	5
17	Show the uses of ping program	2
18	What is the use of trace route program?	1
19	Explain how IPv6 Server on dual stack hosts serving both IPv4 and IPv6 clients.	4
20	Compare the format of ICMPv4 echo request and echo reply message.	2

**Part B**

<b>Qn. No</b>	<b>Questions</b>	<b>BT Level</b>
1	Summarize the Pv4 & IPv6 systems interoperability with neat sketches (16)	6
2	Discuss the dual stack host with IPv6 Server that handle both a. IPv4 Clients (8) b. IPv6 Clients (8)	2
3	Illustrate the processing of received IPv4 or IPv6 datagram's (by IPv6 Server) depending on type of receiving socket with neat diagram (16)	3
4	Describe the processing of IPv6 Client that handles a. IPv 4 Server (8) and b. IP v6 Server (8)	1
5	Explain the following i) Drawback of using child processes to handle the client request. (4) ii) Advantage of using thread instead of child processes (4) iii) Entities shared by threads of same processes (4)	4

**MASTER OF COMPUTER APPLICATIONS    AY: 2015-16**  
**MC7404 NETWORK PROGRAMMING**

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	iv) Entities that are unique to each thread    (4)	
6	How would you have handled various functions related to threads? Discuss    (16)	2
7	Write a C program to implement a. TCP echo server using threads    (8) b. A TCP client that receives echoed string from the server (8)	1
8	Explain the features of i) Mutexes with related functions    (8) ii) Condition variables and related functions    (8)	3
9	Construct a C program to implement PING command    (16)	5
10	Develop a C program to implement traceroute command    (16)	1

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