KUMARAGURU
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Register Number: ……..

B.TECH DEGREE EXAMINATIONS: MAY 2015

(Regulation 2009)

`Sixth Semester

INFORMATION TECHNOLUGY

ITY111**:** TCP/IP and Socket Programming

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. What uses the destination network, not the destination computer, when forwarding a packet?
   a) Gateways b) Networks
   c) Routers d) Internet gateways
2. Which works well in a classful situation because addresses are self-identifying?
   a) Binary tree structures b) Hashing
   c) Supernetting d) Router
3. Name the algorithm that TCP accommodates when varying internet delays.
   a) Adaptive Retransmission b) Multicast forwarding
   c) Finite state d) Sliding window
4. What field has been replaced by TIME-TO-LIVE field?
   a) FLOW LABEL b) TRAFFIC CLASS
   c) PROTOCOL d) HOP LIMIT
5. When a socket address structure is passed to any socket function, it is always passed by _____?
   a) Argument b) Reference
   c) Pointer d) Array
6. Outline the socket that parent closes while the child handles the new client.
   a) Bind b) Listen
   c) Connect d) Accept
7. When readline reads the line echoed back from the server, fputs writes it to standard.
   a) Input b) Output
   c) Text d) Stream

8. Relate the most prevalent model for I/O.

a) Blocking I/O
b) I/O multiplexing
c) Nonblocking
d) Asynchrnous I/O

9. Which option enables or disables the ability of the process to send broadcast messages?

a) SO_DEBUG Socket
b) SO_BROADCAST Socket
c) SO_ERROR Socket
d) SO_DONTROUTE Socket

10. Which is primarily used to map between hostnames and IP addresses?

a) DNS
b) Gethostbyname
c) gethostbyaddr
d) Getservbyname

PART B (10 x 2 = 20 Marks)

11. Distinguish between unicast and broadcast delivery.
12. Label the three fields in the datagram header.
13. The three-way handshake accomplishes two important functions. Justify.
14. Show the format of IGMP message used for communication between hosts and routers.
15. List the four functions that pass a socket address structure from the kernel to the process.
16. Examine why accept function is called by a TCP server.
17. Show a simple echo client/server using UDP.
18. What happens when a Unix system is shutdown?
19. Analyze the use of port number in getservbyname and getservbyport functions.
20. Outline the purpose of Nagle algorithm in TCP Socket options.

PART C (5 x 14 = 70 Marks)

21. a) (i) Three networks are interconnected by two routers. Justify. (8)

(ii) Suppose machine A wants to send a packet to machine B across a physical network to which they both attach, but A has only B's internet address IB. Then how does A map that address to B's physical address, PB? (6)

(OR)

b) (i) IP provides three important definitions. Examine. (7)

(ii) Explain the term congestion and discuss the reasons behind the occurrence of congestion. (7)

22. a) (i) Summarize the properties of the reliable delivery service. (10)

(ii) The three-way handshake accomplishes two important functions. Justify. (4)

(OR)

b) (i) Elaborate the two approaches taken to implement silly window avoidance on the receiver side and what are the advantages and disadvantages of delayed acknowledgements. (7)

(ii) The changes introduced by IPv6 can be grouped into seven categories. Propose. (7)

23. a) (i) Acquaint the term value-result argument and measure how the three functions bind, connect and sendto pass a socket address structure from the process to the kernel. (6)

(ii) Recommend with suitable reasons that the connect function is used by a TCP client to establish a connection with a TCP server. (8)

(OR)

b) (i) Three functions can be used whenever we read from or write to a stream socket. What are the three functions and explain them. (6)

(ii) The listen function is called only by a TCP server and it performs two actions. Prove. And to understand the backlog argument, we must realize that for a given listening socket, the kernel maintains two queues. Estimate. (4 + 4)

24. a) (i) Propose a simple code for TCP Echo Client for str_cli function that handles the client processing loop. (7)

(ii) Identify the various steps that take place if the client is not actively sending data to the server when the server host crashes, the client is not aware that the server host has crashed. (7)

(OR)

b) (i) Develop a simple code for UDP Echo Server for main function. (7)

(ii) Discuss poll function briefly in I/O multiplexing. (7)

25. a) (i) SO_REUSEADDR socket option serves four different purposes. Examine. (8)

(ii) Explain how resolver is used in Domain Name System. (6)

(OR)

b) (i) Analyze SO_KEEPALIVE Socket Option briefly. (7)

(ii) Illustrate getservbyname and getservbyport functions briefly. (7)

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