Computer Networks-II VTU Question Paper Set

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10CS64

Sixth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Computer Networks – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. What is virtual–circuit packet switching? Explain. **(06 Marks)**
b. List and explain the goals of routing algorithms. **(06 Marks)**
c. Explain Bellman-Ford algorithm with example. **(08 Marks)**

2 a. Describe the FIFO and priority queues. **(06 Marks)**
b. What is weighted fair queuing? Explain. **(06 Marks)**
c. Explain Dijkstra's algorithm. Find the shortest path for the below network using Dijkstra's algorithm. **(08 Marks)**

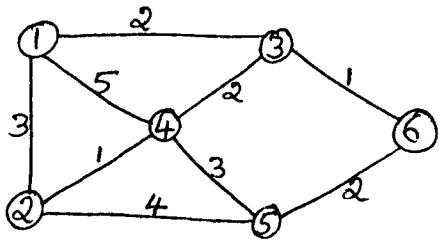

Fig. Q2(c)

3 a. Explain TCP/IP architecture with neat diagram. **(10 Marks)**
b. Describe the IPV6 header format with neat diagram. **(10 Marks)**

4 a. What is OSPF? Explain OSPF operations with aid of diagram. **(10 Marks)**
b. Explain multicast routing with example. **(10 Marks)**

PART – B

5 a. What is the purpose of network management? Explain the characterization of network management. **(06 Marks)**
b. Consider a plaintext message m = 9, get the cipher-text message by using RSA algorithm. Assume that a = 3, b = 11. Also find the public and private keys. **(06 Marks)**
c. What is DNS? Also explain the domain name space and DNS message format. **(08 Marks)**

6 a. Explain the queuing model of leaky – bucket traffic shaping algorithm. **(06 Marks)**
b. Give the significance of differentiated services of QoS. **(06 Marks)**
c. What are VPNs? Explain the types of VPNs and benefits of VPNs. **(08 Marks)**

7 a. What is signal sampling? Explain the sampling process with the types of signal samplings. **(06 Marks)**
b. Explain the SIP components with neat diagrams. **(06 Marks)**
c. Explain the different lossless compression methods with example. **(08 Marks)**

8 a. Explain the different table driven routing protocols used in Ad-hoc networks. **(10 Marks)**
b. Explain DEEP clustering protocol algorithm. **(10 Marks)**

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10CS64

Sixth Semester B.E. Degree Examination, June/July 2016
Computer Networks – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Differentiate between connection oriented and connectionless services. **(04 Marks)**

b. Define routing algorithm. Explain the Bellman – Ford algorithm with an example. **(10 Marks)**

c. A 64 – kilobyte message is to be transmitted over two hops in a network. The network limits packets to a maximum size of 2 kilobytes, and each packet has a 32 – byte header. The transmission lines in the network are error free and have a speed of 50 Mbps. Each hop is 1000 km long. How long does it take to get the message from source to destination? **(06 Marks)**

2 a. With neat diagram explain leaky bucket algorithm used for policing. **(08 Marks)**

b. Explain the FIFO and priority queue scheduling for managing traffic at packet level. **(08 Marks)**

c. Write a note on closed loop control in packet switching network. **(04 Marks)**

3 a. Explain the format of IPV4 basic header. **(08 Marks)**

b. With neat diagram, explain UDP datagram. **(08 Marks)**

c. Write a note on address resolution protocol. **(04 Marks)**

4 a. Explain the three – way handshake for establishing a TCP connection. **(08 Marks)**

b. Write a note on RIP protocol. **(04 Marks)**

c. Explain the border gateway protocol. **(08 Marks)**

PART – B

5 a. Define domain name system. Explain DNS message format. **(08 Marks)**

b. Explain in detail any two major categories of threats to network security. **(08 Marks)**

c. Write a note on network management system. **(04 Marks)**

6 a. Explain the overview of differentiated services operation of QOS with neat diagram. **(08 Marks)**

b. Explain multiprotocol Lable switching (MPLS) and its packet format. **(06 Marks)**

c. Write a note on P2P connection in context with overlay networks. **(06 Marks)**

7 a. Define data compression. Explain overview of digital voice process in multimedia networking. **(08 Marks)**

b. Explain in brief SIP. **(08 Marks)**

c. Write a short note on H·323 protocol. **(04 Marks)**

8 a. Explain types of attack in Ad-hoc networks. **(06 Marks)**

b. Explain LEACH clustering protocol in wireless sensor network. **(08 Marks)**

c. Write a note on Zig-Bee technology. **(06 Marks)**

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10CS/IS64

Sixth Semester B.E. Degree Examination, Dec.2015/Jan.2016
Computer Networks – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Differentiate between connection oriented and connectionless services. **(04 Marks)**

b. Define routing and its goals. **(06 Marks)**

c. Explain Dijkstra's algorithm. Consider the network given below in Fig. 1(c). Use the Dijkstra's algorithm to find shortest paths from node 4 to other nodes. **(10 Marks)**

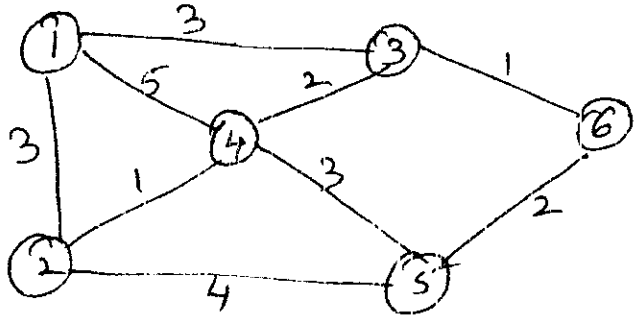

Fig.Q1(c)

2 a. Explain the FIFO and priority queue scheduling for managing traffic at flow level. **(10 Marks)**

b. Define congestion control with graph. Explain the leaky bucket algorithm for policing the traffic at flow level. **(10 Marks)**

3 a. Explain the IP address classification. Identify the following IP address to which class they belong to :

i) 200·58·20·165

ii) 128·167·23·20

iii) 16·196·128·50

iv) 150·156·10·10. **(07 Marks)**

b. A host in an organization has an IP address 150·32·64·34 and subnet mask 255·255·240·0. What is the address of this subnet? **(06 Marks)**

c. Give the format of IPv6 basic header. Compare IPv6 with IPv4. **(07 Marks)**

4 a. Write a note on :

i) IGMP protocol

ii) Mobile IP. **(10 Marks)**

b. Explain the three way handshake for establishing a TCP connection. **(06 Marks)**

c. Write a short note on routing information protocol. **(04 Marks)**

PART – B

5 a. Explain the routing table poisoning and denial –of –service attacks. **(08 Marks)**

b. Define network management and explain SNMP and SNMP messages. **(08 Marks)**

c. Differentiate between DES and RSA. **(04 Marks)**

6 a. Define MPLS. Explain its operation. **(06 Marks)**

b. Explain the classification of resource allocation schemes. **(06 Marks)**

c. With a neat diagram, explain the differentiated services QoS. **(08 Marks)**

7 a. Briefly explain MPEG standards and frame types for compression. **(06 Marks)**

b. With a neat diagram, explain the H·323 components and list the steps in signaling. **(06 Marks)**

c. Explain session initiation protocol (SIP) in detail. **(08 Marks)**

8 a. Write short notes on :

i) Zigbee technology

ii) Clustering in sensor networks. **(08 Marks)**

b. Briefly explain the direct and multihop routing of intra-cluster routing protocol, with the help of relevant diagrams. **(06 Marks)**

c. Explain sensor node structure with relevant figure. **(06 Marks)**

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10CS64

Sixth Semester B.E. Degree Examination, June/July 2015
Computer Networks – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Explain datagram and virtual circuit packet switching with delay calculation diagrams. **(08 Marks)**

b. With neat diagram, explain the generic packet switch. **(04 Marks)**

c. Consider the network in Fig.Q.1(c).

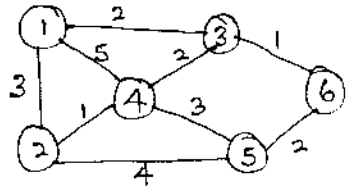

Fig.Q.1(c)

i) Use the Dijkstra's algorithm to find the set of shortest paths from node 4 to other nodes.

ii) Find the set of associated routing table entries. **(08 Marks)**

2 a. Discuss the priority and weighted fair queuing. **(06 Marks)**

b. Explain the concept of Random Early Detection (RED). **(04 Marks)**

c. Give the classification of congestion control algorithms. Explain the leaky bucket and token bucket traffic shaper with neat diagram. **(10 Marks)**

3 a. Describe the various fields of IP version 4 header. **(06 Marks)**

b. i) A small organization has a class C address for seven networks each with 24 hosts. What is an appropriate subnet mask?

ii) Perform CIDR aggregation on the /24 IP address 200.96.86.0/24, 200.96.87.0/24, 200.96.88.0/24, 200.96.89.0/24. **(06 Marks)**

c. Why transition from IPV4.0 to IPV6.0 is required? Explain the IPV6 network addressing. **(08 Marks)**

4 a. Explain the TCP 3 way handshake for establishing a TCP connection. **(06 Marks)**

b. What are the classification of internet routing protocols? Explain in detail routing information protocol (RIP). **(08 Marks)**

c. Write note on: i) Reverse path multicasting ii) Mobile IP. **(06 Marks)**

PART – B

5 a. Explain the remote login protocols. **(06 Marks)**

b. What are the elements of network management? Discuss the interaction between SNMP management station and SNMP agent. **(08 Marks)**

c. Write RSA algorithm. For RSA algorithm of 4 bit message 1001, choose a = 3 and b = 11, find the public keys and private keys for this and show the cipher text. **(06 Marks)**

6 a. Describe the various types of resource allocation schemes. **(06 Marks)**

b. Define VPN. Discuss the concept of tunneling and point to point protocol in VPN. **(06 Marks)**

c. What is MPLS network? Explain MPLS operation. **(08 Marks)**

7 a. Explain the JPEG compression for still images. **(06 Marks)**

b. Explain the following:

i) Huffman encoding

ii) Lempel – Ziv – wetch encoding with an example. **(08 Marks)**

c. Briefly explain with neat diagram, how Content Distribution Network (CDN) interaction with DNS (Domain Name System). **(06 Marks)**

8 a. Explain DSDV, TORA routing protocols for mobile adhoc networks. **(08 Marks)**

b. What are the classifications of sensor networks? Explain with relevant diagram DEEP clustering protocol in sensor network. **(06 Marks)**

c. Describe the direct or multihop intracluster routing protocols with neat diagram. **(06 Marks)**

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Sixth Semester B.E. Degree Examination, Dec.2014/Jan. 2015
Computer Networks – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Differentiate between virtual circuit and datagram. **(06 Marks)**

b. Find shortest path tree from node 5 to all nodes and also find the associated routing table entries for node 5 using Dijkstra's algorithm. **(08 Marks)**

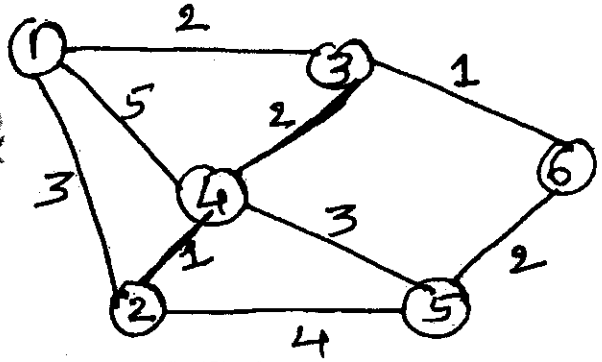

Fig. Q1(b)

c. Suppose we wish to transmit a large message ($L = 10^6$) over three hops. Now suppose that transmission line in each hop has an error rate of $P = 10^{-6}$ and each hop does error checking and retransmission :
   i) How many bits need to be transmitted using message switching?
   ii) Now suppose the same above message is broken up into ten 10^5 bit packets, how many bits need to be transmitted over the three hops? **(06 Marks)**

2 a. Explain Fair queuing mechanism of traffic management at packet level and also compute the expression for finish time in packet by packet fair queuing. **(07 Marks)**

b. Explain the leaky bucket algorithm used for policing. **(06 Marks)**

c. Suppose that ATM cells arrive at a leaky bucket policer at times t = 1, 2, 3, 5, 6, 8 11, 12, 13, 15 and 19. Assume I = 4 and L = 4. Plot the bucket content and identify any nonconforming cells. **(07 Marks)**

3 a. Explain the IP address classification. Identify the following IP address to which class they belong to : i) 200·58·20·165 ii) 128·167·23·20
iii) 16·196·128·50 iv) 150·156·10·10. **(07 Marks)**

b. A host in an organization has an IP address 150·32·64·34 and subnet mask 255·255·254·0. What is the address of this subnet? What is the range of IP address that a host can have on this subnet? **(07 Marks)**

c. Write a note on user datagram protocol(UDP). **(06 Marks)**

4 a. Provide a structure of OSPF common header and write a note on OSPF operation. **(08 Marks)**

b. Write a note on internet group management protocol. **(06 Marks)**

c. What do you mean by mobile IP? Explain mobile IP routing operation. **(06 Marks)**

PART – B

5 a. What do you mean by remote login and also explain secure shell(SSH) protocol. **(06 Marks)**

b. What are the elements of network security? Explain the threats to network security. **(06 Marks)**

c. Explain RSA algorithm. Using RSA algorithm encrypt a message m = 9. Assume a = 3 and b = 11. Find public and private keys and also show the ciphertext. **(08 Marks)**

6 a. What do you mean by VPN? Explain its types. **(07 Marks)**

b. Write a note on MPLS operation. **(07 Marks)**

c. Write a note on overlay networks. **(06 Marks)**

7 a. Write a note on overview of information process and compression in multimedia networks. **(04 Marks)**

b. Briefly explain various compression methods without loss. **(12 Marks)**

c. Explain voice over IP system. **(04 Marks)**

8 a. Briefly explain the classification routing protocols in wireless Ad-hoC networks. **(06 Marks)**

b. List the security issues in Ad - hoC networks. Explain types of attacks. **(07 Marks)**

c. Differentiate between inter cluster and intra cluster routing protocols in WSN. **(07 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2014
Computer Network – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting atleast TWO question from each part.***

PART – A

1 a. Differentiate between connection oriented and connectionless services. **(05 Marks)**

b. Compare the datagram packet switching and virtual packet switching. **(06 Marks)**

c. Explain the Dijkstra's routing algorithm, with an example. **(09 Marks)**

2 a. Explain the FIFO and priority queue scheduling for managing traffic at packet level. **(08 Marks)**

b. Define congestion control with graph. Explain the leaky bucket algorithm for policing the traffic at flow level. **(12 Marks)**

3 a. Explain :
i) IP address classification
ii) Subnet addressing. **(10 Marks)**

b. Give the format of IPV6 basic header. Compare IPV6 with IPV4. **(10 Marks)**

4 a. Explain OSPF protocol and its operation. **(10 Marks)**

b. Write a note on :
i) IGMP protocol
ii) Mobile IP. **(10 Marks)**

PART – B

5 a. Write a note on only Two :
i) Remote login protocols
ii) File transfer and FTP
iii) World wide web and HTTP. **(08 Marks)**

b. Define network management and explain SNMP and SNMP messages. **(06 Marks)**

c. Compare secret key and public key cryptography systems. **(06 Marks)**

6 a. Explain the differentiated services QoS with a neat diagram. **(08 Marks)**

b. Explain VPN and its types based on tunneling. **(08 Marks)**

c. Explain the need for overlay networks. **(04 Marks)**

7 a. Briefly explain the MPEG standards and frame types for compression. **(06 Marks)**

b. Explain the Huffman encoding, with an example. **(06 Marks)**

c. With a neat diagram, explain the H.323 components and list the steps in signaling. **(08 Marks)**

8 a. Explain the wireless routing protocol for AD – HoC networks. **(05 Marks)**

b. Briefly explain the direct and multihop routing of intracluster routing protocol, with the help of relevant diagrams. **(06 Marks)**

c. Write short notes on :
i) Clustering in sensor networks
ii) Security vulnerbilibities of AD – HoC networks. **(09 Marks)**

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Sixth Semester B.E. Degree Examination, Dec.2013/Jan.2014
Computer Networks – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Differentiate between connection oriented and connectionless services. **(04 Marks)**

b. Define routing and its goals. **(04 Marks)**

c. Consider the network, in the following Fig.Q.1(c):

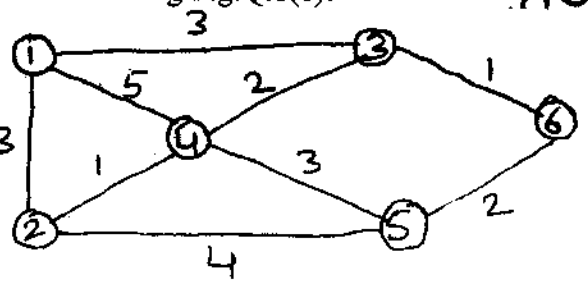

Fig.Q.1(c)

i) Use the diJkstra's algorithm to find the set of shortest path from node 4 to other nodes.

ii) Find the set of associated routing table entries. **(12 Marks)**

2 a. Explain the leaky bucket algorithm for policing the traffic at flow control. **(10 Marks)**

b. Explain fair queing at the packet level. Show the transmission sequences for field flow and packet by packet system by considering the two logical buffers (buffer 1, buffer 2). Assume each has a single L-bit packet to transmit at t = 0 and no sub-sequent packets arrive, assume C = L bits/second = 1 packet/second. **(10 Marks)**

3 a. Write the advantages and disadvantages of UDP. **(06 Marks)**

b. What do you mean by tunneling? What are the needs to changes from IPV4 to IPV6? Write the IPV6 basic header and describe its fields. **(10 Marks)**

c. What is routing information protocol (RIP)? What is the maximum width of a RIP networks? **(04 Marks)**

4 a. With a neat diagram, explain the TCP state transition diagram. **(08 Marks)**

b. Explain in detail, the operation of OSPF (open shortest path first) by considering on example network. **(12 Marks)**

PART – B

5 a. Explain DNS message format with a neat diagram. **(06 Marks)**

b. Apply RSA and do the following:

i) Encrypt a = 3, b = 11, x = 3 and m = 9.

ii) Find the corresponding y.

iii) Decrypt the ciphertext. **(06 Marks)**

c. What is SNMP? List the PDUs of SNMPV2? Explain SNMP PDU format. **(08 Marks)**

6 a. List the benefits of creating VPN's. Explain VPN types. (10 Marks)
b. Explain need for overlay networks and P2P connection. (10 Marks)

7 a. What is an MPLS network? Explain with diagram how the packets are forwarded using MPLS. (08 Marks)
b. Write a note on VOIP signaling. (04 Marks)
c. Discuss the differentiated services QOS approach. (08 Marks)

8 a. List and explain the applications and features of adhoc networks. (08 Marks)
b. Explain the structure of a typical sensor node. (07 Marks)
c. Write short notes on Zigbee technology. (05 Marks)

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10CS64

Sixth Semester B.E. Degree Examination, June/July 2013
Computer Networks II

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Differentiate between connection-oriented and connectionless services. **(04 Marks)**
b. Explain and derive delays in datagram packet switching. **(08 Marks)**
c. Define routing algorithm. Explain the Bellman-Ford algorithm with an example. **(08 Marks)**

2 a. Explain the FIFO and priority queue scheduling for managing traffic at packet level. **(08 Marks)**
b. Suppose that ATM cells arrive at a leaky bucket policer at times t = 2, 3, 6, 9, 11, 16, 23, 24, 25, 26 and 30. Assume I = 4 and L = 6. Plot the bucket content and identify any non-conforming cells. **(08 Marks)**
c. Write a note on traffic management at the flow aggregate level. **(04 Marks)**

3 a. Explain the format of IPV4 format header. **(08 Marks)**
b. With a neat diagram, explain UDP datagram. **(08 Marks)**
c. Write a note on internet control message protocol (ICMP). **(04 Marks)**

4 a. With a neat diagram, explain the format of the TCP segment. **(08 Marks)**
b. Explain the Border Gateway Protocol (BGP). **(08 Marks)**
c. Write a note on Network Address Translation (NAT). **(04 Marks)**

PART – B

5 a. Explain the remote login protocols. **(08 Marks)**
b. Explain the RSA algorithm with an example. **(08 Marks)**
c. Write a note on firewals. **(04 Marks)**

6 a. With a neat diagram, explain the integrated services QoS. **(08 Marks)**
b. Explain multiprotocol label switching (MPLS) operation and packet format. **(08 Marks)**
c. Write a note on virtual private networks. **(04 Marks)**

7 a. List and explain the compression methods without loss. **(08 Marks)**
b. With a neat diagram, explain the session initiation protocol (SIP). **(08 Marks)**
c. Write a note on real-time media transport protocols. **(04 Marks)**

8 a. Briefly explain the classification of routing protocol. **(06 Marks)**
b. Explain the DEEP clustering algorithm. **(06 Marks)**
c. Explain the intracluster and intercluster routing protocols. **(08 Marks)**

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