

END TERM EXAMINATION

SEVENTH SEMESTER [BTECH] JANUARY-FEBRUARY 2023

Paper Code: IT401

Subject: Advanced Computer Networks

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.No. 1 which is compulsory.
Select one question from each unit.

- Q1 a) Discuss five client error status codes while doing a client request (5)
b) Discuss the different sections of domain name space (5)
c) Discuss Persistence timer in TCP (5)
d) Briefly discuss five approaches to congestion control (5)
e) Explain the working of Reverse Address Resolution Protocol (5)

UNIT I

- Q2 a) Discuss transmission impairment in computer networks (6)
b) Explain the factors which affect the performance of a network (6.5)
- Q3 a) Write the functions of physical, network and transport layers. (6)
b) What are physical & logical addresses? Discuss the working of Address Resolution Protocol. (6.5)

UNIT II

- Q4 a) An ISP is granted a block of addresses starting with 100.100.0.0/16. The ISP needs to distribute these addresses to three groups as follows: (6)
i) First group has 32 customers each need 1024 addresses
ii) Second group has 64 customers, each need 64 addresses.
iii) Third group has 64 customers, each need 32 addresses.

Design the subblocks and find out how many addresses are still available after the allocations.

- b) Discuss the two node instability problem in distance vector routing. Also discuss solutions to this problem. (6.5)
- Q5 Explain the process of fragmentation of IP packets and their reassembly at receiver's end with the help of an example. (12.5)

UNIT III

- Q6 a) Explain the process of queuing in user datagram protocol(UDP). (6)
b) What are different categories of ports? Write uses of UDP. (6.5)
- Q7 a) What is TCP? Discuss connection establishment in TCP. (6)
b) What is silly window syndrome? Discuss the syndrome created by sender and its solutions (6.5)

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UNIT IV

- Q8 Explain cryptography. What is public and private cryptography? What
are the different types of firewalls? (12.5)
- Q9 Explain the terms Internet, Intranet and Extranet. What are virtual
private networks? Explain how these can be implemented. Explain the
advantages and disadvantages of virtual private networks. (12.5)

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SEVENTH SEMESTER [B.TECH] DECEMBER 2019

Paper Code: IT-401

Subject: Advanced Computer Networks

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q. No. 1 which is compulsory. Select one question from each unit.

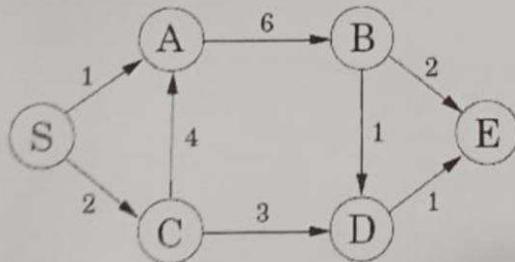
- Q.1 a. Why does a data link layer protocol generally doesn't handle error correction. (1)
 b. Write eight differences between circuit switched and packet switched networks. (4)
 c. Explain different types of noises. (4)
 d. What do you mean by transmission mode? Explain different transmission modes. (4)
 e. Explain KARN's algorithm. (4)
 f. Explain tunnelling a packet in a WAN. (4)
 g. What are the advantages of IPv6 over IPv4. (4)

UNIT - I

- Q.2 a. Explain the Go Back N ARQ protocol with the help of windows. (6.5)
 b. Explain the functions of physical and network layers. (6)
- Q.3 a. Draw ARP packet format and explain working of ARP. (6.5)
 b. Draw flow diagram for stop and wait ARQ protocol and explain . (6)

UNIT - II

- Q.4 a. Explain the distance vector routing with a network of routers having four immediate neighbours. (6.5)
 b. Find the shortest path from router S to E using shortest path algorithm and showing steps (6)



- Q.5 a. An ISP is granted a block of addresses starting with 200.150.0.0/16. The ISP needs to distribute these addresses to three groups as follows: (6.5)
- First group has 32 customers each needs 512 addresses
 - Second group has 64 customers , each needs 64 addresses.
 - Third group has 64 customers , each needs 32 addresses.

Design the subblocks and find out how many addresses are still available after the allocations.

P.T.O.

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH(CSE/IT)] NOVEMBER -DECEMBER 2018

paper Code: IT-401

Time : 3 Hours

Subject: Advanced Computer Networks

Maximum Marks :75

Note: Attempt any five questions including Q no. 1 which is compulsory.
Select one question from each unit.

(10x2.5=25)

Q1 Answer the following:

- (a) Explain the functions of physical layer.
(b) Explain how flow control and error control are ensured in data link layer.
(c) Mention various parameters considered in hierarchical routing.
(d) Explain the role of choke packets in congestion control.
(e) A network on the Internal has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle?
(f) Compare private network and virtual private network. Give their applications.
(g) Mention the services of transport layer. Explain the role of ports in this layer.
(h) Explain the role of security considered in internet protocol and email.
(i) Compare the features of static web pages and dynamic web pages used in WWW.
(j) Explain the working mechanism of symmetric key algorithms in network security.

UNIT-I

- Q2 (a) Compare ARP and RARP. Give an illustration for each. (6)
(b) Mention various transmission impairments that occur in physical layer. (4)
(c) Compare guided media and unguided media with reference to speed and security. (2.5)

OR

- Q3 (a) Give an example to illustrate data link layer protocol. (4)
(b) Compare static channel and dynamic channel allocation. (4)
(c) Explain TDMA and FDMA used in MAC layer. (4.5)

UNIT-II

- Q4 (a) Explain distance vector routing and link state routing. Give an example for each. (6.5)
(b) Compare multicast and anycast routing. Give their applications. (6)

OR

- Q5 (a) Explain the following congestion control algorithms: (3+3=6)
(i) Load shedding
(ii) Admission control
(b) Give the ATM header format for the following: (3.5)
(i) UNI (User-Network Interface)
(ii) NNI (Network-Network Interface)
(c) Explain any four parameters considered in router configuration. (3)

UNIT-III

- Q6 (a) Explain various features of RMON. (3.5)
(b) Draw the format of TCP header and explain various fields. (4)
(c) Explain SNMP. Describe briefly the role of SMI and MIB in SNMP. (2+3=5)

OR

- Q7 (a) Explain the role of message transfer agent and user agent in electronic mail. (4)
(b) Explain the features of ATM AAL1 and ATM AAL2. (4)
(c) Explain connection establishment using three-way handshaking in TCP. (4.5)

UNIT-IV

- Q8 (a) Explain the process of authentication in network security. (4)
(b) Explain the features of secure sockets layer. (4)
(c) Explain various types of attacks. (4.5)

OR

- Q9 (a) Explain briefly packet filter firewall and proxy firewall. (5)
(b) Explain the features of virtual private network. (4)
(c) Explain various components of cryptography. (3.5)

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH./M.TECH.] DECEMBER 2016 – JANUARY 2017

Paper Code: IT-401

Subject: Advanced Computer Network

Time: 3 Hours

Maximum Marks: 60

Note: Attempt any five questions including Q.no.1 which is compulsory.
Select one question from each Unit.

- Q1 (a) A supernet has a first address of 205.16.32.0 and a supernet mask of 255.255.248.0. How many blocks are in this supernet and what is the range of address? (4)
- (b) Discuss the two approaches of packet switching. Which protocol is associated with virtual circuit approach and datagram approach respectively. (4)
- (c) A sender sends a series of packets to the same destination using 5-bit sequence of numbers. If the sequence number starts with 0, what is the sequence number of the 100th packet? (4)
- (d) A packet has arrived and the header of network layer has offset value 100, HLEN is 5 and Total length is 100 (in bytes), M bit value is 1. What is the value of first byte and last byte? Is this a first fragment, last fragment or middle fragment? Do we know if the packet was fragmented? (4)
- (e) Differentiate between open loop and closed loop algorithms to handle the congestion at network layer. (4)

Unit-I

- Q2 A router with IP address 125.45.23.12 & Ethernet physical address 23:45:AB:4F:67:CD has received a packet for a host destination with IP address 125.11.78.10 & Ethernet physical address AA:BB:A2:4F:67:CD. Show the entries in the ARP request and reply packet. Assume no subnetting. Encapsulate the packet in the data link frame. Fill in all the field. (10)
- Q3 Draw ARP Datagram and explain all fields in details. (10)

Unit-II

- Q4 An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows: (10)
(a) The first group has 200 medium size businesses; each needs approximately 128 addresses.
(b) The second group has 400 small business; each needs approximately 16 addresses.
(c) The third group has 2000 households; each needs 4 addresses.
Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.
- Q5 In RIP, why is expiration timer value six times that of the periodic timer value? How does the hop count limit alleviate RIP's problems? Contrast and compare distance vector routing with link state routing? Why do OSPF messages propagate faster than RIP messages? (10)

Unit-III

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- Q6** Discuss ATM in network layer in detail. Why is AAL5 called SEAL? (10)
 Describe the address binding in IP over ATM.

- Q7** Host A and Host B are communicating over a TCP connection, and Host B has already received from A all bytes up through byte 358. Suppose Host A then sends two segments to Host B back-to-back. The first and second segments contain 50 and 80 bytes of data, respectively. In the first segment, the sequence number is 359, the source port number is 1028, and destination port number is 80. Host B sends an acknowledgement whenever it receives a segment from Host A. (10)
- (a) In the second segment sent from Host A to B, what are the sequence number, source port number, and destination port number?
 - (b) If the first segment arrives before the second segment, in the acknowledgement of the first arriving segment, what is the acknowledgement number, the source port number and the destination port number?
 - (c) If the second segment arrives before the first segment, in the acknowledgement of the first arriving segment, what is the acknowledgement number?

Unit-IV

- Q8** Why do we need a DNS when we can directly use an IP address? To find the IP address of a destination we need the service of DNS. DNS need the services of UDP or TCP. UDP or TCP need the services of IP. IP need an IP destination address. Is this a vicious cycle here? If not, who breaks this cycle and how? (10)
- Q9** Explain Application and Packet filter firewalls in details. (10)

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH/M.TECH] DECEMBER-2015

Paper Code: IT-401

Subject: Advanced Computer Network

Time: 3 Hours

Maximum Marks: 60

Note: Attempt any five questions including Q.no. 1 which is compulsory.
Select one question from each unit.

- Q1 (a) What is physical, logical and port address? (2x10=20)
(b) How to map physical address to logical address and vice-versa?
(c) Discuss the two approaches of packet switching.
(d) Which protocol is associated with virtual circuit approach and datagram approach?
(e) Differentiate between broadcast, multicast, unicast and unic平.
(f) A packet has arrived and the header of network layer has offset value 100, HLEN is 5 and Total length is 100 (in bytes), M bit values is 1. What is the value of first byte and last byte? Is this a first fragment, last fragment or middle fragment? Do we know if the packet was fragmented?
(g) Differentiate between open loop and closed loop algorithms to handle the congestion at network layer.
(h) What is VPN?
(i) Out of various layers in TCP/IP model, name the layer used for:
(i) Segmentation and reassembly of data.
(ii) Combination of bits into bytes and bytes into frames.
(iii) Hop to hop delivery
(iv) Process to Process delivery
(v) End to end delivery
(j) What is SNMP?

Unit-I

- Q2 Discuss ATM in network layer in detail. Why is AAL5 called SEAL? Describe the address binding in IP over ATM. (10)
- Q3 Why is IP called the best effort delivery protocol? Discuss IPv4 header format. (10)

Unit-II

- Q4 An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows:
(a) The first group has 200 medium size businesses; each needs approximately 128 addresses.
(b) The second group has 400 small business; each needs approximately 16 addresses.
(c) The third group has 2000 households; each needs 4 addresses.
Design the sub blocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations. (10)
- Q5 Contrast and compare distance vector routing with link state routing? Why do OSPF message propagate faster than RIP message? (10)

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Unit-III

- Q6 Explain congestion control in TCP in detail. **(10)**
- Q7 Differentiate in between UDP and TCP. What are the various fields which are present in TCP header but not present in the UDP header? Discuss their significance and reasons for not being there in UDP header. **(10)**

Unit-IV

- Q8 Why do we need a DNS when we can directly use an IP address? To find the IP address of a destination we need the service of DNS. DNS need the services of UDP or TCP. UDP or TCP need the services of IP. IP need an IP destination address. Is this a vicious cycle here? If not, who breaks this cycle and how? **(10)**
- Q9 Differentiate in between public and private key cryptography. Illustrate through an example. **(10)**

(Please write your Exam Roll No.)

Exam Roll No.

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH/M.TECH] DECEMBER 2014-JANUARY 2015

Paper Code: IT-401

Subject: Advanced Computer Networks

Time: 3 Hours

Maximum Marks: 60

Note: Attempt any five questions including Q.no. 1 which is compulsory.

(2.5x8=20)

- Q1 (a) What are the benefits of subnetting a network? (8)
(b) Compare and Contrast Unicasting and Multicasting?
(c) What is a Private network address?
(d) What is meant by segmentation?
(e) What is hosted and netid?
(f) Draw the TCP/IP stack. Label the protocols in their position.
(g) What is the role of the TTL field in IP header?
(h) What is the size of an Ethernet address? Describe its parts (if any). (2)
- Q2 (a) Discuss ARP and RARP in detail. (8)
(b) Define the term Computer Network. (2)
- Q3 (a) Explain how fragmentation and reassembly occurs in TCP/IP. (8)
(b) What is MTU? Why is it required? (2)
- Q4 (a) Under what conditions an ICMP error message is generated? Under what conditions an ICMP error message is not generated? Discuss. (7)
(b) What is ICMP echo request and reply? (3)
- Q5 (a) Explain in details IP addressing methods. In classful addressing how is an IP address in class A, Class B and Class C divided. (6)
(b) Given the address 23.56.7.91 and the default class A mask, find the beginning address (network address). (2)
(c) Given the address 201.180.56.5 and the default class C mask, find the beginning address (network address). (2)
- Q6 (a) Explain the distance vector routing protocol? (5)
(b) Explain the TCP transmission policy and congestion control. (5)
- Q7 (a) Explain the role of DNS in a network. (5)
(b) Explain adaptive flow control in detail and its usage. (5)
- Q8 Write short note on **any two** of the following:- (2x5=10)
(a) SNMP.
(b) Virtual public network.
(c) Firewalls.
(d) NAT.

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END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH./M.TECH.] DECEMBER-2012

Paper Code: IT401

Subject: Advanced Computer Networks

Time : 3 Hours

Maximum Marks :60

Note: Attempt five questions including Q.no. 1 which is compulsory.
Select one question from each unit.

- Q1 Answer the following questions briefly:- (2x10=20)
- (a) Differentiate between Open Loop and Closed Loop algorithms to handle the congestion.
 - (b) Explain count to infinity problem in Distance Vector Routing.
 - (c) What is the difference between applications and packet filtering firewalls?
 - (d) Compare OSI reference model with TCP/IP protocol suite.
 - (e) How TCP provides reliability in the network?
 - (f) A router has an IP address 108.5.18.22. It sends a direct broadcast packet to all hosts in this network. What are the source and destination IP addresses used in this packet?
 - (g) An IP packet has arrived with first few hexadecimal digits as 45000028000100000102.... How many hops can this packet travel before being dropped? The data belong to what upper layer protocol?
 - (h) An IP packet has arrived in which the offset value is 100, the value of HLEN is 5 and the value of total length field is 100. What is the number of the first byte and last byte?
 - (i) What is Silly Window Syndrome?
 - (j) Explain digital signatures with respect of security.

UNIT-I

- Q2 An ISP is granted a block of addresses starting with 160.200.0.0/16(65, 536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows:-
- (a) The first group has 64 customers, each needs 256 addresses.
 - (b) The second group has 128 customers, each needs 128 addresses.
 - (c) The third group has 128 customers each needs 64 addresses.
- Design the subblocks and find out how many addresses are still available after these allocations. (10)

- Q3 A host with IP address 130.23.43.20 and physical address B2:34:55:10:22:10 has a packet to send to another host with IP address 130.23.43.25 and physical A4:6E:F4:59:83:AB(which is unknown to the first host). The two hosts are on the same Ethernet network. Show the ARP request and reply packets encapsulated in Ethernet Frames. (10)

UNIT-II

- Q4 What is congestion control? What are choke packets? Discuss load shedding, Leaky Bucket Algorithm and Token Bucket Algorithm in detail. (10)
- Q5 Discuss ATM Network in network layer in detail. Why AAL5 is used to encapsulate an IP datagram? Also, describe the address binding in IP over ATM. (10)

UNIT-III

- Q6 Differentiate TCP header and UDP header. How connection is established in TCP? (10)
- Q7
- (a) Discuss Virtual Public Network in detail. (3)
 - (b) Discuss RMON and SNMP in brief. (2)
 - (c) What are asymmetric key ciphers? Explain with one algorithm. (5)

UNIT-IV

- Q8
- (a) List five types of OSPF packets. (2)
 - (b) Discuss link state update packets in detail. (5)
 - (c) Explain three timers used in RIP. (3)
- Q9 Compare and contrast the fields in the main header of IPv4 and IPv6. Make a table that shows the presence and absence of each field. (10)

END TERM EXAMINATION

SEVENTH SEMESTER [B.TECH./M.TECH.] - DECEMBER 2010

Paper Code: IT401
Paper ID: 15401
Time : 3 Hours

Subject: Advanced Computer Networks

Maximum Marks : 60

Note: Attempt five questions including Q.1 which is compulsory.

- Q1 (a) Explain two functions each of presentation and application layer. (2x10=20)
(b) Discuss direct and limited broadcast address.
(c) Explain ARP.
(d) Explain the fragmentation offset field of an IP datagram.
(e) Explain the Redirection error message in ICMP protocol.
(f) List four uses of UDP protocol.
(g) What do you mean by half close in TCP?
(h) Explain Transient link in OSPF terminology.
(i) Explain Primary and Secondary servers used in DNS protocol.
(j) Explain four aspects of security i.e. privacy, integrity, authentication, nonrepudiation.

UNIT-I

- Q2 (a) Explain the Ethernet frame format. (5)
(b) Explain the various connecting devices:-
(i) Repeaters (ii) Hubs (iii) Bridges (iv) Routers (v) Gateways (5)
- Q3 (a) Discuss the different types of HDLC frames and their fields. (5)
(b) What are character-oriented and bit-oriented protocols? Discuss byte stuffing and unstuffing along with bit-stuffing and un-stuffing in detail. (5)

UNIT-II

- Q4 Write all the steps for setting up host to host communication using two switches and two routers. Draw neat labelled circuit diagram for the same. (10)
Write all the commands.
- Q5 What do you mean by IP over ATM? Discuss the fields added at the end of the message when AALS passes the message in 48-byte segments to ATM layer. How does fragmentation take place? Take an example. How the cells are routed? (10)

UNIT-III

- Q6 Discuss the TCP segment format. (10)
- Q7 (a) What is a mask? An organization is granted the block 16.0.0.018. The administrator wants to create 500 fixed length subnets (5)
(i) Find the subnet mask.
(ii) Find the number of addresses in Subnet.
(iii) Find the first and last address in 1st Subnet.
(iv) Find the first and last address in the 500th Subnet.
(b) Discuss the time-exceeded message in ICMP protocol. List the conditions under which no ICMP error messages are generated. (5)

UNIT-IV

- Q8 (a) Discuss the two types of firewalls.
(b) Discuss advantages of IPv6 over IPv4. Explain any two types of addresses in IPv6. (5)
- Q9 (a) Explain the concept of Network Address Translation (NAT).
(b) Explain private network, Intranet and Extranet. Explain tunneling related to VPN technology. (5)

04/03/2018