CS 356 Fall 2017 (Lam)

Bring a calculator and one page of notes (printed or handwritten). *You can use the calculator in your cell phone but you must abide by the UT-Austin Student Honor Code. More specifically, you must not use the phone for any other purpose, such as accessing information stored in the phone or on the Internet.*

Review homework solutions

Note: Following lists of topics for your reference only. It is possible to have exam questions on materials covered in my lectures that are not in the following lists.

Chap 4 notes (network data plane)

Intra-AS versus inter-AS routing

Datagram vs. virtual circuit; IP forwarding versus VC forwarding; routers maintain state info

- VC identifier unique for each link versus IP address
- layer 2 1/2

Data plane (forwarding) versus control plane (routing)

CIDR addressing; address prefix aggregation; longest prefix match

Protocols in IP layer, IP fragmentation and reassembly

What is a subnet?

DHCP, NAT (NAT traversal problem)

IPv6, header field changes from v4 (e.g., flow label), transition from v4 to v6, tunneling (different kinds)

Generalized forwarding unifies four different kinds of devices (router, switch, firewall, NAT)

Chap 5 notes (network control plane)

Link state routing, LS broadcast

Distance vector routing, good news versus bad news

Hierarchical routing: intra-AS and inter-AS

EIGRP, RIP, OSPF – routing within an autonomous system

BGP (internal and external), reachability, routing policies (import and export rules),

BGP attributes of advertised prefix: AS path for loop-freedom, next-hop

ICMP and Traceroute

SDN uses logically centralized server(s) vs routing protocols; network control apps

Chap 6 notes (link layer)

Why a frame needs a trailer?

CRC algorithm for error detection

Reliable delivery in link layer?

Taxonomy of multiple access protocols

Slotted ALOHA protocol and its throughput, CSMA/CD protocol and its throughput

Token passing, star-shaped ring

MAC address flat and location-independent, ARP protocol (soft state)

How to use both IP and MAC addresses to deliver a packet to its IP destination;

if there are no MAC addresses in layer 2, what to do?

Ethernet frame, switches, switch table (soft state), self-learning, plug and play (DHCP, ARP)

VLAN, MPLS

Chap 7 notes (wireless LAN)

Wireless network elements

Wireless link characteristics, adaptive modulation

Hidden terminal and fading problems (affect carrier sensing and collision detection)

Collision detection hard to do in wireless

CSMA/CA (requires an ACK, can use RTS and CTS packets)

mobility in IP subnet