

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Seventh semester B.Tech examinations (S), September 2020

**Course Code: IT405****Course Name: Internetworking with TCP/IP**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer any two full questions, each carries 15 marks.*

Marks

- 1 a) How does the layering principle apply to an internet that can transfer messages across multiple networks? (4)
- b) How many class A, B, and C networks can exist? How many hosts can a network in each class have? (4)
- c) Why is ICMP only allowed to report problems to the original source? (4)
- d) How do routers prevent datagrams from circling forever in TCP/IP internet? (3)
- 2 a) What is a soft state in ARP? What are its advantages and disadvantages? (5)
- b) An IP datagram of size 1000 bytes arrives at a router. The router has to forward this packet on a link whose MTU (maximum transmission unit) is 100 bytes. Assume that the size of the IP header is 20 bytes. What is the number of fragments of IP datagram? (3)
- c) Why do we use protocol ports rather than process identifiers to specify the destination within a machine? (7)
- 3 a) Explain how ethernet technology has influenced design choices in the protocols? (8)
- b) Write an algorithm for IP forwarding mechanism. (7)

**PART B***Answer any two full questions, each carries 15 marks.*

- 4 a) Explain how Random Early Detection (RED) avoids global synchronization? (8)
- b) IP software must always check the destination addresses on incoming multicast datagrams and discard datagrams if the host is not in the specified multicast group. Explain how the host might receive a multicast destined for a group to which that host is not a member. (3)
- c) How is Label Switching Router (LSR) used to implement Multi-Protocol Label Switching (MPLS)? (4)

- 5 a) What is the limitation of exterior gateway protocols? (3)
- b) What is Open Shortest Path First (OSPF) protocol? How do routers use OSPFv2 message to broadcast information about the status of its directly connected links to all other routers? (5)
- c) How does a hardware classifier achieve high speed? (7)
- 6 a) What is slow convergence problem in router using distance-vector protocol? Explain the technique that is used to solve the slow convergence problem in routers. (8)
- b) Why multicasting is not widely used in the global internet? Explain Truncated Reverse Path Forwarding (TRPF) scheme in multicasting. (7)

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) How can mobile IP allow a host to retain its address without requiring routers to learn host-specific routes? (5)
- b) What is traffic policing? Explain leaky bucket traffic shaping mechanism. (5)
- c) What is Software Defined Networking (SDN)? How does SDN architecture separate control software from the underlying network devices? (10)
- 8 a) How and when is the Network Address Translation (NAT) table initialized? (5)
- b) Explain how IPv6 Neighbour Discovery Protocol handles neighbour reachability? (5)
- c) Explain how Software Defined Networking technology can be used to configure and control all the devices in campus intranet? (5)
- d) What are the basic actions of OpenFlow switch while forwarding a packet? (5)
- 9 a) What is spatial locality of reference in mobile IPv4 mobile host? (4)
- b) How can an organization that uses the global Internet to connect its sites guarantee that all communication is kept private? (6)
- c) How do group tables in OpenFlow support forwarding mechanism of packets? Explain the design of fast-failover group to detect and overcome port failures? (6)
- d) Describe the uses of OpenFlow? (4)

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