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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

December 2016 Semester End Main Examinations

Course: Computer Networks
Course Code: 16CS5DCCON

Duration: **3 hrs**
Max Marks: **100**

Date: 26.12.2016

Instructions: 1. Answer any five full questions choosing one from each unit.
2. Assume missing data (if any) suitably

UNIT 1

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|---|----|---|----|
| 1 | a) | How do you consider that P2P architecture is scalable? Will P2P still function in an environment where nodes are highly distributed and decentralized? Provide peer-to-peer application architecture. | 06 |
| | b) | What do you mean by a non-persistent connection? Depict the steps of transferring a web page from server to client for non persistent connection. | 06 |
| | c) | Illustrate with a neat diagram the working principle of POP3 mail access protocol | 08 |

UNIT 2

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|---|----|--|----|
| 2 | a) | How does the DNS protocol facilitate the HTTP protocol to obtain the IP- address of the requested destination? What are the important services offered by DNS, discuss? How a distributed database can be implemented by DNS in order to scale to obtain hostname-to-IP-address service? | 10 |
| | b) | What are the services offered by TCP? Illustrate with a neat diagram the working while you implement connectionless multiplex and demultiplex service. | 10 |

UNIT 3

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|---|----|--|----|
| 3 | a) | UDP use 1's Complement for their checksums. Suppose you have the following three 8-bit Bytes: 01010101, 01110000, 01001100. What is the 1's complement of the sum of these 8-bit bytes? Why does UDP take the 1's complement of the sum and not just the sum? How does the receiver detect errors, with 1's complement scheme? Is it possible that a 1-bit error will go undetected? | 10 |
| | b) | Illustrate with a neat diagram how segment exchange happens in TCP. Provide a typical sequence of TCP states visited by a client TCP. | 10 |

UNIT 4

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|---|----|--|----|
| 4 | a) | Discuss how you tackle congestion in a scenario, where there are two senders, a router with finite and infinite buffer space allotted. | 10 |
| | b) | What is the principle behind Additive-Increase, Multiplicative- Decrease for congestion control | 10 |

OR

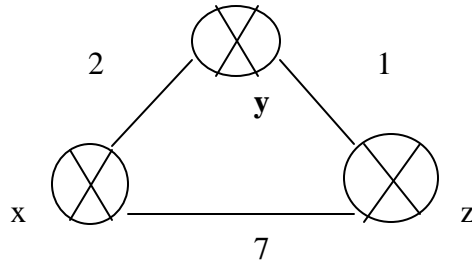
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|---|----|---|----|
| 5 | a) | Illustrate with a neat diagram how congestion can be controlled for ATM which uses ABR service | 10 |
| | b) | Provide a high-level view of generic router architecture. Discuss the three different switching techniques. | 10 |

UNIT 5

- 6 a) Illustrate with a neat diagram the datagram format of IPv6 and discuss the fields. 10
Why do we need to shift from IPv4 to IPv6?
- b) Suppose that an ISP has advertised to the outside world that the IP address is 200.23.16.0/20. Show how the address aggregation is achieved if this ISP supports eight organization with first longest prefix match. 10

OR

- 7 a) Provide the routing table for node y using distance vector algorithm 10



- b) Provide the BGP route selection process and routing policy applied on an autonomous system. 10
