

**S.Y. B.SC (INFORMATION TECHNOLOGY) – SEM-III**  
**SUB:COMPUTER NETWORK**  
**PUNE VIDHYARTHI GRIHA'S**  
**COLLEGE OF SCIENCE & TECHNOLOGY**

**Q.P CODE: USIT303**

**(TIME :2 ½ Hrs.)**

**TOTAL MARKS :75**

**N.B:-**

1. All questions are compulsory.
2. Answers to the same question must be written together.
3. Numbers to the right indicate full marks.
4. Draw neat labeled diagrams wherever necessary.
5. Use of Non-programmable calculators are allowed.

**Q1) Attempt the following (Any three) (Each of 5 marks)**

**[15M]**

- a) Define Data Communication? Write Characteristics of Data Communication System.
- b) i) What are the Components of Communication System? Explain  
ii) Differentiate between LAN, MAN and WAN.
- c) Explain the following Network Devices:  
i) Network Interface Card (NIC)                      ii) Router                      iii) Hub
- d) Explain the types of Transmission modes for data flow.
- e) Explain various layers of OSI models.
- f) What is Internet Standard? Explain the maturity level of an RFC.

**Q2) Attempt the following (Any three) (Each of 5 marks)**

**[15M]**

- a) Write short notes on:  
i) Digital and Analog Data                      ii) Periodic and non-Periodic Signals
- b) What are the different types of transmission impairments.
- c) Explain Data Link Layer and its functions in detail.
- d) Differentiate between Single bit Error and Burst Error with suitable examples.
- e) i) Explain the Architecture of Bluetooth.    ii) Elaborate Bluetooth Layered Architecture.
- f) Write Short note on:  
i) Cellular Telephony.    ii) Frequency-Reuse Principal.    iii) Hard Handoff and soft Handoff.

**Q3) Attempt the following (Any three) (Each of 5 marks)**

**[15M]**

- a) I) Find the class of each address:  
i) 227.12.14.87                      ii) 193.14.56.22

iii) 14.23.120.8

iv) 252.5.15.111

II) Write short note on:

i) Address Depletion.

ii) Network Mask.

b) A Classless address is given as 167.199.170.82/27. Find the number of addresses in the block, the first address, and the last address.

c) Elaborate Distance Vector Routing with suitable example?

d) Differentiate between IPV4 and IPV6 Protocol?

e) Write short note on:

i) ARP Protocol

ii) ICMP Protocol

f) Draw IPV4 datagram format and explain various fields?

**Q4) Attempt the following (Any three) (Each of 5 marks)**

[15M]

a) What do you mean by Connection oriented and a Connection less service provided by Transport Layer Protocol?

b) Explain the services provided by User Datagram Protocol (UDP) and its datagram format.

c) Discuss the three-way handshaking in TCP for connection establishment with suitable example.

d) Explain TCP Segment format.

e) Write short note on UDP and its uses.

f) Write short note on TCP and its uses.

**Q5) Attempt The following (Any three) (Each of 5 marks)**

[15M]

a) Explain the Architecture of e-mail.

b) Elaborate the architecture of World wide web (WWW).

c) Write short note on:

i) POP3      ii) TELNET

d) Explain the format of request and response message of HTTP protocol.

e) State the difference between Static, Dynamic and Active Web Documents.

f) Describe the working of DHCP.