

Date: 12.10.2019

Time: (2 $\frac{1}{2}$ Hours)

Total Marks: 75

N.B (1) All questions are compulsory.

(2) Figures to the right indicate marks for respective sub questions.

(3) Use of **Non-programmable** calculators is **allowed**.

(4) Draw **neat labeled diagrams** wherever **necessary**.

(5) Symbols used have their usual meaning

(6) Draw the sketches and diagrams where necessary

Q.1) Attempt **any THREE** of the following. (15)

a) Discuss parallel transmission and serial transmission.

b) List and Explain the functions of ISO's OSI Model Layers.

c) Define Data Communication. Explain components of data communication with the help of diagram.

d) Discuss the different quality of service characteristics for overall network performance.

e) Explain Nyquist Bit Rate for Noiseless Channel.

f) Write short note on

a) Amplitude Shift Keying (ASK)

b) Quadrature Amplitude Modulation (QAM)

Q.2) Attempt **any THREE** of the following. (15)

a) Write short note on Frequency Hopping Spread Spectrum (FHSS).

b) Write note on guided media and its types.

c) Differentiate between circuit switching and packet switching

d) Explain Address Resolution Protocol (ARP) with operations.

e) How does a single bit error differ from burst error?

f) What is virtual circuit network? What are its characteristics?

Q.3) Attempt **any THREE** of the following. (15)

a) Explain the working of Stop-and-Wait Protocol.

b) Write short note on CSMA/CD.

c) Explain Gigabit Ethernet in detail.

d) Explain the architecture of Bluetooth.

e) Discuss the following satellite networks

a) GEO Satellites b) MEO Satellites

f) What is Virtual LAN? How are stations grouped into different VLANs? Explain.

Q.4) Attempt **any THREE** of the following. (15)

- a) What is dynamic host configuration protocol? Explain the DHCP message format.
- b) Write short note on NAT (Network Address Resolution)
- c) What are the different transition strategies from IPv4 to IPv6? Explain.
- d) What is routing information protocol? Explain the RIP algorithm.
- e) Explain Distance-Vector Routing algorithm.
- f) Write note on ICMPv4 (Internet Control Message Protocol version 4)

Q.5) Attempt **any THREE** of the following. (15)

- a) With the help of a diagram, explain the Selective-Repeat protocol.
- b) Write short note on Piggybacking.
- c) Explain the architecture of electronic mail.
- d) Write note on HTTP.
- e) Explain the services of TCP.
- f) Explain flow control and error control mechanism in SCTP.
