

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**MSc DEGREE EXAMINATION DECEMBER 2024
(Fourth Semester)**

Branch – SOFTWARE SYSTEMS(Five year Integrated)

COMPUTER NETWORKS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

- 1 The OSI Reference Model consists of how many layers?
(i) 5 (ii) 7 (iii) 9 (iv) 11
- 2 Packet switching is most commonly used in
(i) Telecommunication networks (ii) Computer networks
(iii) Traditional telephony (iv) Analog TV
- 3 Which error detection method uses a polynomial division technique?
(i) Parity check (ii) Checksum
(iii) Hamming Code (iv) Cyclic Redundancy Check (CRC)
- 4 What is the purpose of the sliding window protocol?
(i) Flow control (ii) Error detection
(iii) Congestion control (iv) Addressing
- 5 What does TCP stand for?
(i) Transmission Control Protocol
(ii) Transport Communication Protocol
(iii) Transfer Control Process
(iv) Transmission Communication Process

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a) Explain about the key goals of a computer network.
OR
b) Classify between analog and digital data transmission.
- 7 a) Discuss about multiplexing, and how is it used in networks?
OR
b) Show the difference between TDM and FDM.
- 8 a) How does transmission impairment affect the quality of digital communication?
OR
b) Discuss about Hamming Code, and how does it detect and correct errors?

Cont...

- 9 a) Evaluate the function of CSMA/CD in Ethernet networks.
OR
b) How does Distance Vector Routing work?
- 10 a) Discuss about the three-way handshake in TCP, and why is it used?
OR
b) Explain the role of the 'window size' in TCP

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a) Analyze how data encoding techniques work in digital communication.
OR
b) Justify how bandwidth affects network performance?
- 12 a) Formulate about the working principles of multiplexing techniques in data communication.
OR
b) Differentiate about the advantages and limitations of synchronous vs. asynchronous communication?
- 13 a) Explain different types of transmission impairments and their impact on data communication.
OR
b) Compare the concept of error detection and correction improve the reliability of data transmission?
- 14 a) Describe the Stop-and-Wait ARQ and Go-Back-N ARQ protocols and compare their efficiencies.
OR
b) State about subnetting and why it is used?
- 15 a) Explain the process of TCP connection establishment and termination.
OR
b) Design the structure of TCP headers, highlighting important fields.

Z-Z-Z

END