[width=2cm]logo.png

ABV-Indian Institute of Information Technology & Management, Gwalior
Computer Networks (IT208)
Major Examination — Session 2023

Time: 3 Hours   **Max Marks: 70**

Note: All questions are compulsory. Answer with suitable diagrams wherever required.

Section A (Short Answer Questions)

1. Explain the difference between a connection-oriented and a connectionless service. (5 Marks)

2. What is error detection? Explain parity check and CRC. (5 Marks)

3. Compare OSI and TCP/IP reference models. (5 Marks)

Section B (Long Answer Questions)

4. (a) Explain Stop-and-Wait ARQ protocol.
   (b) Derive efficiency expression for Stop-and-Wait. (10 Marks)

5. (a) What are subnet masks?
   (b) A network has IP: 192.168.10.0/26. Find total subnets, hosts per subnet, and range of first subnet. (10 Marks)

6. (a) Explain sliding window protocol.
   (b) Differentiate between Go-Back-N and Selective Repeat ARQ. (10 Marks)

7. Discuss various multiple access protocols: Pure ALOHA, Slotted ALOHA, CSMA/CD. (10 Marks)

Section C (Problem Solving)

8. Consider 5 stations sharing a channel using slotted ALOHA. Each transmits with probability 0.2 in a slot. Find the throughput of the system. (10 Marks)

9. A message of 10,000 bits is to be transmitted at 2 Mbps over a 4000 km satellite link. Propagation speed is 2×10^8 m/s. Compute: (i) Transmission delay, (ii) Propagation delay, (iii) End-to-End delay. (10 Marks)