



**K. K. Wagh Institute of Engineering Education & Research, Nashik**  
(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-II Summer 2025	
Exam Seat No.:	
Academic Year: 2024-2025	Semester: VI
Class: TY IT	Program: B.Tech
Branch Code: INT	Pattern: 2022
Name of Course: Communication Networks	Course Code: INT223017
Max. Marks: 30	Duration: 1:15 Hrs.

**Instructions:** Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains ONE page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last column indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

**Marks CO**

**Question No. 1**

- 1 a) Explain the function of the Internet layer in the TCP/IP model. (3) 1
- 1 b) Explain how circuit switching differs from packet switching in terms of resource allocation and data transmission efficiency (4) 1

**Question No. 2**

- 2 a) Describe the **OSI Model's** layers in detail, explaining the functions and the significance of each layer. Provide examples of protocols that operate at each layer. (4) 1
- 2 b) Describe the different types of transmission media used in the Physical Layer. Compare guided and unguided media with examples. (4) 1

**Group OR**

- 2 c) What is the main limitation of circuit switching, especially when compared to packet switching? (4) 1
- 2 d) Explain the TCP/IP Model layers in detail, explaining the functions and the significance of each layer. (4) 1

**Question No. 3**

- 3 a) Explain the difference between error detection and error correction. Provide examples. (3) 2
- 3 b) Data to be transmitted is 110101 and the divisor polynomial is  $x^4 + x + 1$ . Represent the divisor as a binary number. Perform CRC encoding and determine the transmitted code word. (4) 2

**Question No. 4**

- 4 a) Explain the role and working of the HDLC (High-Level Data Link Control) protocol in the Data Link Layer. How does it ensure error detection and flow control? (4) 2
- 4 b) What are the different types of Medium Access Control protocols? Explain Random Access, Controlled Access in detail (4) 2

**Group OR**

- 4 c) Explain the Ethernet Protocol in detail. (4) 2

4 d) Compare and contrast the **CSMA/CD** and **CSMA/CA** protocols in terms of collision handling

(4) 2

..... **End of question paper**.....