



**II SEMESTER M. TECH (Embedded Control And Automation)**  
**END SEMESTER EXAMINATIONS MAY 2024**  
**Industrial and Computer Communication Networks (ICE 5404)**

**Time:3 Hours**

**05-05-2024**

**MAX. MARKS: 50**

**Instructions to Candidates:**

- ❖ Answer **ALL** the questions.

Q.No.	Description	M	CO	PO	BL
1A	Justify the significance of TCP/IP protocols in computer communication. Differentiate TCP/IP and OSI 7 layers.	4M	CO1	1,2,12	02
1B	What is the difference between a signal element and a data element in a line coding scheme? Draw the signal pattern for data elements $r=1$ , $r=2$ , $r=4$ , and $r=\frac{1}{2}$ .	4M	CO2	1,2,12	03
1C	Write down the impact of different transmission impairments on the transmission media.	2M	CO1	1,2,12	02
2A	What is the significance of the flow control mechanism in TCP/IP-based computer networks? Showcase different flow control mechanisms used in computer networks.	4M	CO2	1,2,4,5,12	03
2B	Justify the need for an optical fiber network for next-generation communication. Illustrate the different entities of SONET used for optical networks with relevant block diagram.	4M	CO2	1,2,4,5,12	03
2C	What is the difference between control media access and random media access mechanisms? Highlight different protocols used for both random access techniques.	2M	CO2	1,2,4,5,12	03
3A	What is non-adaptive routing? Classify and differentiate the working of different types of non-adaptive routing techniques used in computer networks.	5M	CO3	1,2,4,5,12	03
3B	Justify the need for a dynamic routing algorithm for data center communication (DCN). Elucidate the working of Distance Vector Routing Protocol (DVR) with appropriate examples.	5M	CO3	1,2,4,5,12	03

<b>4A</b>	Justify why UDP is preferably used for online gaming. Differentiate the UDP and TCP protocols in terms of their packet format, use cases, and connection reliability.	<b>4 M</b>	<b>CO4</b>	<b>1-5,12</b>	<b>04</b>
<b>4B</b>	Signify the role of DNS servers and web servers in a computer network. Demonstrate the process of website searching using a DNS server. Briefly describe different possible attacks on DNS servers.	<b>4M</b>	<b>CO4</b>	<b>1,2,3 12</b>	<b>03</b>
<b>4C</b>	Explain the working of the Bluetooth protocol. Explain how it will help to create a PAN network.	<b>2M</b>	<b>CO4</b>	<b>1,2,3, 12</b>	<b>02</b>
<b>5A</b>	Justify the need of industrial network protocols in industries. Explain the working of MODBUS and PROFIBUS using appropriate block diagrams and technical details.	<b>5 M</b>	<b>CO5</b>	<b>1,2,3,5,12</b>	<b>03</b>
<b>5B</b>	Why XMPP protocol is widely used for instance messaging services like WhatsApp? Demonstrate the architecture and working principle of XMPP for IoT applications.	<b>5 M</b>	<b>CO5</b>	<b>1,2,3,5,12</b>	<b>03</b>

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