ROLL NO. | 2 | 4 | 0 | 1 | 9 | 2 | 0 | 1 | 4 | | | | |

G.L. BAJAJ INSTITUTE OF TECHNOLOGY & MANAGEMENT
GREATER NOIDA
MCA (3rd) SEM
SESSIONAL TEST (ODD SEM 2025-26)
COMPUTER NETWROK (BMC-303)

Faculty Name: Dr. Upasana Dohare, Mr. Akhilesh Nagar

Time: 2:00 Hrs **Max. Marks: 50**

Note:
(i) No student will be allowed to leave the examination Room before end of exam.
(ii) Diagram should be neat and clean.
(iii) Mention Question number/section correctly.
(iv) Be precise in your answer.
(v) Do not write anything on question paper except Roll number.

Course Outcomes:

Following are the course outcomes of the subject: -

CO Code	Course Outcome(CO)	Bloom's Level
BMC 303.1	Describe communication models TCP/IP, ISO-OSI model, network topologies along with communicating devices and connecting media.	K2
BMC 303.2	Apply knowledge of error detection, correction and learn concepts of flow control along with error control.	K3
BMC 303.3	Classify various IP addressing techniques, sub netting along with network routing protocols and algorithms.	K4
BMC 303.4	Understand various transport layer protocols and their design considerations along with congestion control to maintain Quality of Service.	K2
BMC 303.5	Understand applications-layer protocols and elementary standards of cryptography and network security.	K2

Section: A

1. Attempt all questions. **(2*5= 10)**

Q.No.	Questions	Marks	CO	BL
a)	Explain the term protocol standard. Classify and describe the different categories of protocol standards.	2	BMC 303.1	K2
b)	Identify the components of a data communication system.	2	BMC 303.1	K2
c)	For n devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology?	2	BMC 303.1	K2
d)	Describe the various types of data transmission errors encountered in data communication systems.	2	BMC 303.2	K2
e)	Why framing is required in data link Layer? Deign a frame format.	2	BMC 303.2	K2

Section: B

2. Attempt any four of the following: **(4*5 = 20)**

Q. No.	Questions	Marks	CO	B
a)	What are the different transmission media available for data transfer in networks? Discuss any two wired and two wireless media in detail.	5	BMC 303.1	K
b)	Describe the relative advantages and disadvantages of STAR, MESH, RING and BUS topologies.	5	BMC 303.1	K
c)	State the reasons for using protocols in a network and describe their fundamental elements.	5	BMC 303.1	K

d)	Illustrate the Error in data communication. What do understand by Error Detection in data communication? Describe and discuss the different detection techniques or methods with suitable examples.	5	BMC 303.2	K3
e)	Describe the working of the checksum method for error detection. For the data unit 1001100111100010001001001000010 0, Compute the 8-bit checksum for both sender and receiver sides and verify the correctness of the received data.	5	BMC 303.2	K3
f)	Explain Longitudinal Redundancy Check error detection method with suitable example. Suppose the source send data unit 10101001 00111001 11011101 11100111 10101010, to destination but during the transmission it is hit by a burst noise of length eight as follow 10100011 10001001 11011101 11100111 10101010 Check this data will be accepted or rejected by the destination.	5	BMC 303.2	K3

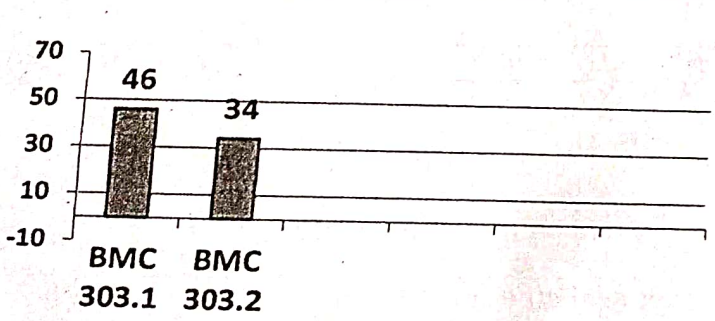
Section: C

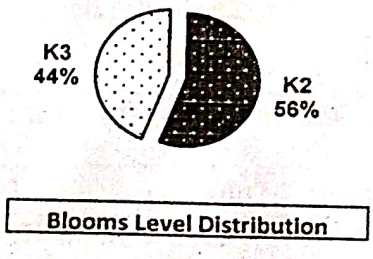
3. Attempt any one question (10 *1 = 10)

Q. No.	Questions	Marks	CO	BL
a)	A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is x^3 + 1. Show the actual bit string transmitted. Suppose the third bit from the left is inverted during transmission. Show that this error is detected at the receiver's end.	10	BMC 303.2	K3
b)	Write down the procedure for Encoding a message by Hamming Code. Give an example to Determining the Position of Redundant Bits. Suppose the data bit to be transmitted is 1011010, to be solved using the hamming code method. Assume that during transmission, the data bit at position 7 is changed from 1 to 0. Then by applying the parity bit technique to identify the error.	10	BMC 303.2	K3

4. Attempt any one question (10 *1 = 10)

Q. No.	Questions	Marks	CO	BL
a)	Explain the difference between the TCP/IP and OSI models. Also, discuss the architecture and functions of each layer in the TCP/IP model.	10	BMC 303.1	K2
b)	Consider the message sender wants to send is 1101011011 and generator polynomial is x^4+x+1.Find the message transmitted by sender. If the receiver receives the message, check if the receiver receives the correct message or not.	10	BMC 303.2	K3





Checked By
(Head of Department)