Roll No……..….. **Total No. of Printed Pages: 1**
Total No. of Questions: [09]

BCA (Semester – 5th)
COMPUTER NETWORKS
Subject Code: BCAP1524
Paper ID: [160124]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:

a. What are the five components of data communication?
b. What is transmission mode and its types?
c. Calculate the number of links and ports required to connect 20 computers using mesh topology?
d. What is flow control, and why is it necessary in data communication?
e. Define attenuation? How it affects signal transmission.
f. What is the function of a repeater in a network?
g. List the key design issues of the network layer?
h. What is the key difference between a router and a switch?
i. Compare and contrast many-to-one and one-to-many communications.
j. What is a parity check, and how does it help in error detection?

Section – B **(5 marks each)**

Q2. Define network topology. Compare bus, ring, and star topologies.
Q3. Write down the differences between guided and unguided transmission media.
Q4. Explain the working of Go-Back-N ARQ sliding window protocol for flow control.
Q5. What is routing in computer networks? Compare static and dynamic routing.
Q6. Explain circuit switching and packet switching in details along with their limitations and advantages

Section – C **(10 marks each)**

Q7. Name and describe the seven layers of the OSI model. Compare the OSI and TCP/IP models in terms of their structure, layer functions, and real-world application.
Q8. a) What is error control in computer networks? Explain how checksum is used in error detection?
b) What is an IP address? Explain the different IP address classes in classful addressing.
Q9. What is multiplexing in data communication? Explain in detail the working principles of Frequency Division Multiplexing, Time Division Multiplexing, and Wavelength Division Multiplexing, highlighting their key features, applications, and differences.