(i) Printed Pages : 4] Roll No. .....

(ii) Questions : 9] **Sub. Code : 8 6 0 4**

Exam. Code : 1 2 1 9

PGDCA 1st Semester Examination

1127

DATA COMMUNICATIONS AND NETWORKS

Paper : PGD-1104

Time : 3 Hours] **[Max. Marks : 60**

Note :– Attempt *five* questions in all, including Q. No. **1** in Section-A, which is compulsory and taking *one* each from Section-B to Section-E.

Section–A

Compulsory Question

1. (a) Differentiate between analog and digital communications.

   (b) Differentiate between Data rate and Baud rate.

   (c) For *n* devices in a network, what is the number of cable links required for a mesh and star topology ?

(d) What are design issues of layered architecture ?

(e) Differentiate between twisted pair and co-axial cables.

(f) Define Internetworking. 6×2=12

Section–B

2. (a) What is a computer network ? Discuss its various topologies and their respective suitability.

(b) How does a router differ from a bridge ? Your answer should state the layers of the OSI reference model at which each operates. When might one use a bridge and when a router ? Explain. 6,6

3. Describe the function, interfaces, services, and examples for various layers in the OSI and TCP/IP models. 12

Section–C

4. Describe the architectures, properties, and make comparisons for various guided transmission media and wireless transmission. Highlight major problems by which transmission line suffer. 12

5. (a) What is Switching ? What is the difference between packet and circuit switching ? Discuss the pros and cons of these techniques.

(b) Describe the goals of multiplexing and two main multiplexing techniques. 6,6

Section–D

6. Explain various methods to detect transmission errors using detection codes including CRC and parity check, by taking suitable examples. Construct the Hamming code for the bit sequences 10011010. 12

7. Write short notes on the following :

(a) Sliding window protocol for frame transmission

(b) HDLC 6,6

Section–E

8. (a) What are the main functions and design issues of the Network layer ?

(b) What is routing ? Discuss in detail the distance vector routing algorithm. What kind of routing information do routers running distance vector algorithm exchange among themselves ? 6,6

9. What are general principles of congestion control ? What is the need of congestion control in networks ? Explain the working of Leaky Bucket Algorithm for congestion control with the help of suitable exmple. How is Leaky Bucket Algorithm different from token bucket algorithm ? 12