

(i) Printed Pages : 2

Roll No. ....

(ii) Questions : 9

Sub. Code : 

8	6	8	6
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Exam. Code : 

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PGDCA 1<sup>st</sup> Semester

1128

DATA COMMUNICATIONS AND NETWORKS

Paper—PGD—1104

Time Allowed : Three Hours]

[Maximum Marks : 60

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

**SECTION—A**

**(Compulsory Question)**

1. (a) What is Analog to Digital signal conversion ?
- (b) Explain the fundamental difference between a Service and a Protocol.
- (c) What are the advantages and disadvantages of connection-oriented and connectionless protocols respectively ?
- (d) What is the difference between packet and circuit switching ?
- (e) What is high level data link protocol ?
- (f) What is internet bandwidth ? 6×2=12

**SECTION—B**

2. What is network topology ? Explain different network topologies with example and compare them with each other. 12

3. Describe the OSI seven layer model. Name each of the layers in the model and draw a diagram that shows the ordering of these layers. Write a paragraph describing the areas of function that each layer is responsible for. 12

### SECTION—C

4. Classify various types of transmission media for data communication and explain any two of them in detail. 12
5. What is modulation ? Explain Amplitude Modulation (AM), Frequency Modulation (FM) and Phase Modulation (PM) with examples. 12

### SECTION—D

6. What are error detecting and correcting codes ? What is the utility of Hamming distance in error detection and correction ? Explain with a suitable example. 12
7. (a) Compare the Go-Back-N ARQ protocol with Selective-Repeat ARQ.
- (b) A network with bandwidth of 10 Mbps can pass only an average of 12000 frames/minute with each frame carrying an average of 10000 bits. What is throughput of this network ? 6,6

### SECTION—E

8. Give an overview of the distance vector method of updating routing table information. In particular, explain using an example how information about a node failure propagates using this algorithm. 12
9. Describe the token bucket mechanism for congestion control. What problems in the simpler approach are addressed by using a token bucket mechanism ? Explain with an example. 12