

(i) Printed Pages : 2 Roll No. ....

(ii) Questions : 9 Sub. Code : 

8	7	1	2
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Exam. Code : 

1	2	1	9
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PGDCA 1<sup>st</sup> Semester

(2122)

## 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) List the essential elements of network architecture.  
(b) Define Routers and Gateways.  
(c) Explain High Level Data Link Protocol.  
(d) What is Tunneling as a technique of internetworking ?  
3,3,3,3

### SECTION—B

2. (a) What is network topology ? Explain the different network topologies with their use.  
(b) What are the different types of networks ? Explain in detail.  
6,6

3. (a) Differentiate between Hub and Switch on the basis of layer, ports, device type, and speed.  
(b) Explain the OSI reference model with neat diagram.

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### SECTION—C

4. List out the differences between FDMA and TDMA. Which method is suitable for communication between computers and why ?

12

5. Explain the following :

(a) Guided Transmission media

(b) Analog versus Digital communication.

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### SECTION—D

6. A generator polynomial for CRC is  $x^5 + x^2 + 1$ .

(a) What is the generator polynomial in binary form ?

(b) What is checksum for the message 1101011011 in binary form ?

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7. Discuss the operational mechanism of Stop-and-Wait ARQ and explain how it differs from Go-back-N ARQ.

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### SECTION—E

8. Describe a non-adaptive and an adaptive routing protocol with which you are familiar.

12

9. List and explain factors for occurrence of congestion in a computer network. Explain the concept of token bucket in controlling network congestion.

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