

M.Tech. Electronics & Communication Engineering (CBCS Pattern) Semester-I  
**PECS12 - Data Communication and Networking**

P. Pages : 1

Time : Three Hours



**GUG/S/25/10979**

Max. Marks : 70

- Notes :
1. All questions carry equal marks.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answers wherever necessary with the help of neat sketches.
  4. Attempt **any five** questions.

1. A) Explain how data is transmitted and received in a seven layer OSI model. **7**  
B) Compare and contrast TCP and UDP. Include aspects such as connection-oriented vs. connectionless communication, reliability, and use cases. **7**
2. A) Explain the control field used in HDLC protocol for the different frame types. **7**  
B) Explain the techniques used for error detection in data communication. **7**
3. A) Explain the concept of protocol architecture in networking. Discuss its importance in ensuring reliable communication between devices. **7**  
B) Explain IPV4 header format in detail. **7**
4. A) Explain three different ways in which the CRC algorithm can be described. **7**  
B) Explain how is WDM similar to FDM? How are they different? **7**
5. A) Explain the advantage of sliding window protocol compared to stop and wait flow control protocol. **7**  
B) Draw and explain three stage network. Also calculate the total number of cross points required. **7**
6. A) Explain the difference between flow control and congestion control. **7**  
B) Explain the various layers of fiber distributed data interface. (FDDI). **7**
7. A) Write a note on digital signature with public key cryptography. **7**  
B) Explain how collision detection works in CSMA/CD. What mechanisms are in place to handle collisions and how does this affect network performance? **7**
8. A) Define error control and its importance in data communication. What types of errors can occur during transmission? **7**  
B) Why does ATM use small, fixed length cells. Explain ATM protocol architecture. (ATM reference model) **7**

\*\*\*\*\*