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10th batch
6th sem.

# Daffodil International University

**Faculty of Science & Information Technology**
**Department of Information Technology & Management (ITM)**
**Midterm Examination, Summer 2026**
**Course Code: ITM 315, Course Title: Data Communication and Networking**
**Section: A (10th Batch) Teacher: BCD**

**Time: 01:30 Hrs** **Marks: 25**

**Answer ALL Questions**

***[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]***

| | | | | |
|---|---|---|---|---|
| 1 | *a)* | What is Data Communication? Briefly describe the characteristics of Data Communication. | 1+3=4 | CLO1 Level -3 |
| | *b)* | Interpret the knowledge of Bit interval and Bit rate in digital signal? There is a famous telephone channel. Its bit rate is 16 bps. The channel wants to send a signal 1100011011000101 of 4 levels. Now, draw the spectrum of this signal with proper levels. | 2+3=5 | CLO2 Level -3 |
| 2 | *a)* | A multinational corporation is expanding its offices across three floors of a building. The network architect decides to connect each computer and server to multiple other devices directly, so data can take several paths to reach its destination. She observes that even if several connections fail, data still finds alternative routes. However, she also notices that setting up the network required a large number of cables, and troubleshooting can be challenging because every device has multiple connections<br><br>What is Period and Wavelength? Which network topology is being used in the Scenario? Describe the functionality of this topology and write two advantages and two disadvantages of this topology. | 2+4=6 | CLO2 Level - 5 |
| | *b)* | A periodic signal has a bandwidth of 20 Hz. The highest frequency is 60 Hz. What is the lowest frequency? Draw the spectrum if the signal contains all frequencies of the same amplitude. | 2 | |
| 3 | *a)* | Briefly describe the following coding scheme with suitable signal<br>(i) Biphase : Differential Manchester<br>(ii) (ii) Bipolar: AMI and Pseudoternary | 2+3=5 | CLO2 Level - 5 |
| | *b)* | How many levels in TCP/IP model? List their name. Write down the five differences between OSI model and TCP/IP model. | 1+2=3 | |