

Daffodil International University
Faculty of Business and Entrepreneurship
Department of Business Administration

Semester: Summer-2026

Examination: Mid-term

Time: 1.5 Hours

Full Marks: 25

Course Code: MIS-612-325

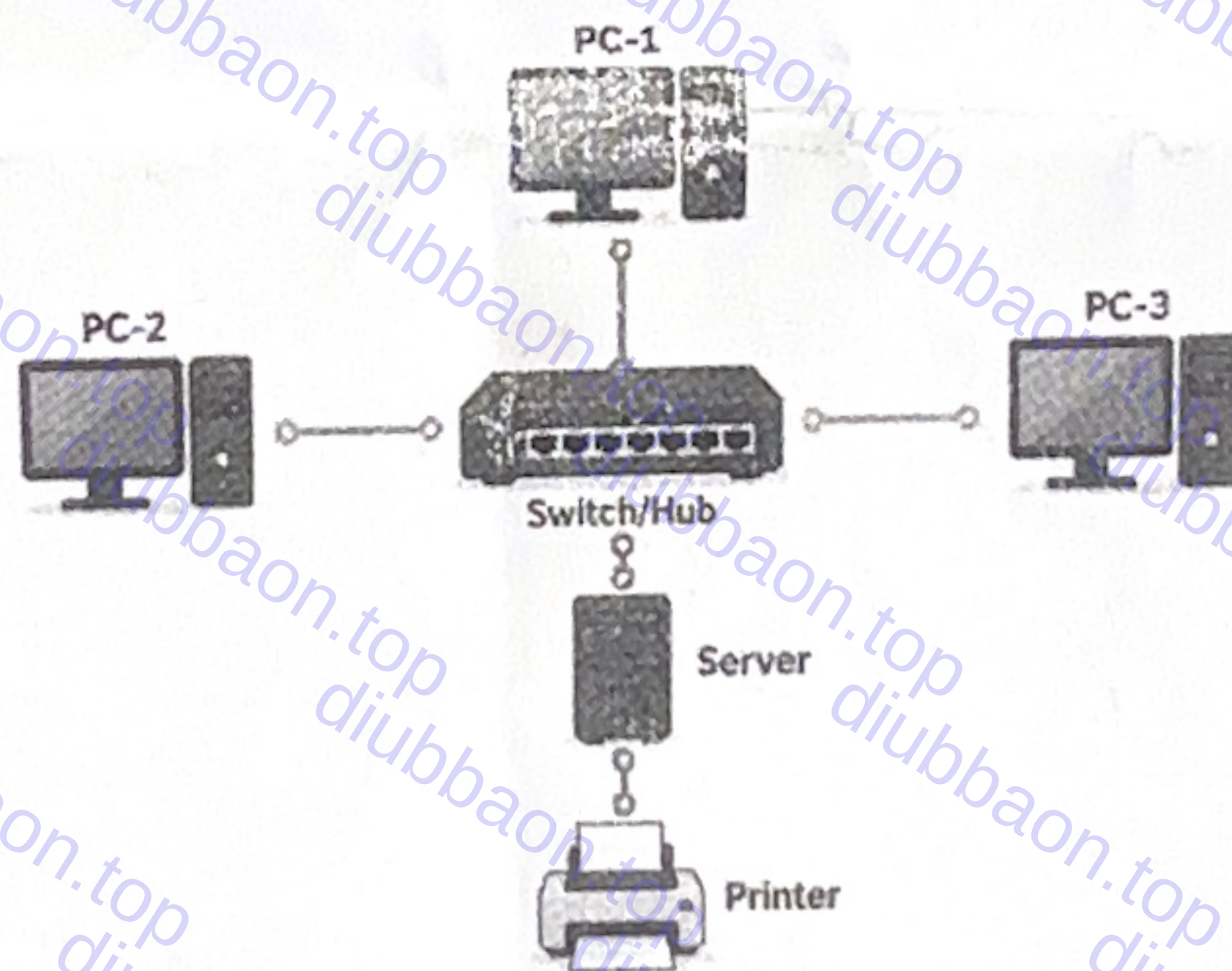
Course Title: Data Communication and Networking for Business

(Answer all questions)

1. a) State the meaning of data communication. Then list the layers of the OSI model and the TCP/IP model. (2.5 Marks) [CLO-1, L1]
- b) Distinguish between analog and digital signals in terms of nature, shape, and noise effect, using one suitable example for each. (2 Marks) [CLO-2, L2]
- c) Complete the following table by writing the meaning of each component of data communication and one relevant business example for each. (2 Marks) [CLO-1, L3]

Component	Meaning	One Business Example
Sender		
Receiver		
Message		
Transmission Medium		
Protocol		

2. a) From the following network diagram, identify the topology and mention one advantage and one disadvantage of using it in a business office network. (2.5 Marks) [CLO-3, L3]



- b) Compare Nyquist Theorem and Shannon's Capacity Formula in terms of channel condition and the factors affecting maximum data rate. (2 Marks) [CLO-2, L2]
- c) Examine how any two basic networking commands such as ping, ipconfig, tracert, or nslookup can be used to diagnose connectivity problems in a business network. (1.5 Marks) [CLO-4, L4]
3. a) Analyze the working process of satellite internet by showing the communication flow from the user device to the satellite, gateway, internet, and back to the user with a simple flow diagram. (2 Marks) [CLO-4, L4]
- b) For the following tasks, choose the most suitable medium from twisted pair, fiber optic, and radio wave, and state the reason for each choice:

- short-distance low-cost office networking
- high-speed secure branch communication
- wireless communication in open space

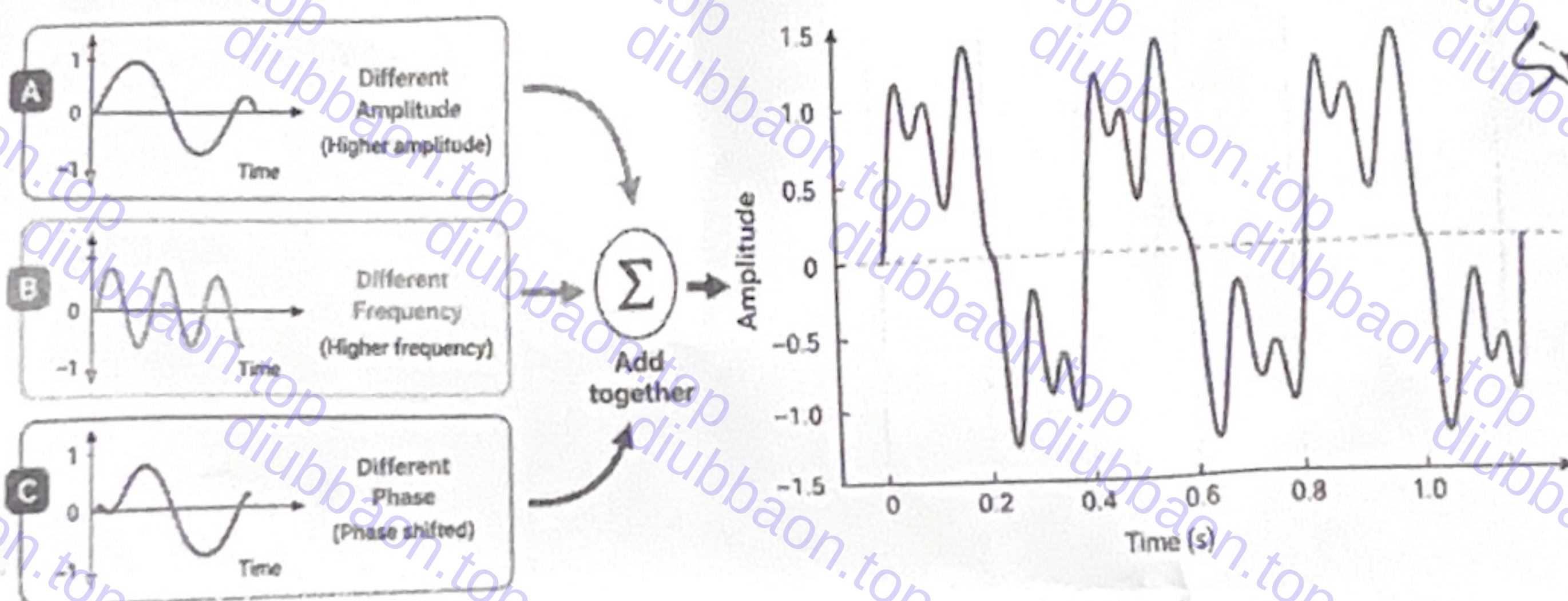
Apply your knowledge to choose the most suitable medium in each case from twisted pair, fiber optic, and radio wave, and justify your choice. (3 Marks) [CLO-3, L3]

a) Complete the following comparison of FDM, TDM, and WDM with respect to basis of separation, common uses, and best suitable medium. (2 Marks) [CLO-4, L3]

Technique	Basis of Separation	Common Use	Best Suitable For
FDM			
TDM			
WDM			

b) Interpret the plotted waveform in the attached figure to explain the nature of a composite periodic analog signal. In your answer, discuss: (2.5 Marks) [CLO-4, L4]

- how the waveform differs from a simple periodic sine wave?
- how multiple sine waves combine to create the waveform shown?
- why composite periodic signals are more useful in practical communication systems?



c) Bangladesh Fisheries Development Corporation (BFDC) is planning to establish a remote coastal branch office in Cox's Bazar, Bangladesh to support fish landing operations, cold-chain coordination, export communication, and branch-level administrative activities. The proposed office will rely on cloud communication, and branch-level administrative activities. The proposed office will rely on cloud accounting software, video conferencing, email communication, file transfer, and regular connectivity with the head office in Dhaka as well as with international partners engaged in seafood export, logistics, and compliance management. Since the branch is located in a coastal and disaster-prone area, the organization is concerned about communication reliability, transmission delay, and continuity of business operations during cyclones or terrestrial network failure. (3 Marks) [CLO-5, L5]

Assess the following:

- whether satellite internet or fiber optic/submarine cable connectivity would be more suitable for communication in a remote disaster-prone coastal location.
- why submarine fiber optic cables are generally more suitable than satellite internet for large-scale international business communication.
- the usefulness of a network simulator in designing, testing, and validating the branch network before actual deployment.