



Jahangirnagar University

Institute of Information Technology

2nd Year 1st Semester B.Sc. (Honors) Final Examination-2020

Course No. # ICT - 2109

Course Title# Data and Telecommunication

Examination Roll No. #

19 23 40

Registration No. #

2019 36 50 283

Academic Session #

2018 - 2019

Total no of written pages in the script # 5

Exam Date: 21, Aug , 2021

Instructions:

1. Examinee must write his/her exam roll no. and page no. at the top of every page of the script.
2. Do not write your name or any identification mark anywhere of the script.
3. Total time for exam is 45 minutes. You will get 15 additional minutes for submission.
4. Delay in submission is not acceptable.
5. You have to submit your exam script in PDF format.
6. The examinee must submit the examination script **through online (Google classroom/email/google form etc.)** as prescribed by the examiner.
7. You must use **your EXAM ID** only for naming your submitted file.
8. After completing the exam, you must write the total number of pages used for the exam in the top sheet.

Answer to the Question no-2

Setup Request: A setup request frame is sent from the source to the destination.

Figure Shows the Process.

- a. Source A sends a setup frame to switch 1.
- b. Switch 1 receives the setup request frame.
It knows that a frame from A to B goes out through Port 3. The switch assigns the incoming Port (1) and chooses an available incoming VCI (14) and outgoing Port (3). The switch then forwards the frame through Port 3 to switch 2.
- c. Switch 2 receives the setup request frame.
The same events happen here as at switch 1. These columns of the table are completed.
In this case incoming Port (1) incoming VCI (86) and outgoing Port (2)

d. Switch 3 receives the setup request frame. Again there columns are completed incoming Port (2) incoming VCI (22) and outgoing Port (3).

e. Destination B receives the setup frame and if it is ready to receive frames from A it assigns a VCI to the incoming frame that come from A in this case 77. This VCI lets the destination know that the frames come from A. and not other sources.

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Answer to the question no - 1

a.

The type of signal depends on the Propagation characteristics of the communication channel. If the channel is an electrical cable or the "void" of space electromagnetic Propagation is generally the simplest and most economical.

b.

C. Given

$$\begin{aligned}\text{Frame of size} &= 5 \text{ million bit} \\ &= 5 \times 10^6 \text{ bits}\end{aligned}$$

$$\begin{aligned}\text{Queuing time} &= 2 \mu\text{s} \\ &= 2 \times 10^{-6} \text{ s}\end{aligned}$$

$$\begin{aligned}\text{Processing time} &= 1 \mu\text{s} \\ &= 1 \times 10^{-6} \text{ s}\end{aligned}$$

$$\begin{aligned}\text{Distance } d &= 2000 \text{ km} \\ &= 2000 \times 10^3 \text{ m}\end{aligned}$$

$$\text{The speed of light} = 2 \times 10^8 \text{ m s}^{-1}$$

$$\begin{aligned}\text{Bandwidth, } B &= 5 \text{ Mbps} \\ &= 5 \times 10^6 \text{ bps}\end{aligned}$$

We know

$$\begin{aligned}\therefore \text{Propagation time} &= \frac{\text{Distance}}{\text{Propagation speed}} \\ &= \frac{2000 \times 10^3}{2 \times 10^8} \\ &= 0.01 \text{ s.}\end{aligned}$$

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$$\begin{aligned}\text{Transmission time} &= \frac{\text{Frame of size}}{\text{Bandwidth}} \\ &= \frac{50 \times 10^6}{5 \times 10^6} \\ &= 1 \text{ s}\end{aligned}$$

$$\therefore \text{Delay} = \text{Propagation time} + \text{Transmission time} + \text{Queuing time} + \text{Processing time.}$$

$$= 0.01 + 1 + 2 \times 10^{-6} + 1 \times 10^{-6}$$

$$= 1.010030 \text{ s.}$$

Ans.