

# Solutions to selected problems in Chapter 8.

- P. 8.3: a) No they are unique  
b) (port, VCI) pair is unique.

- P. 8.5: a) Packet 1:2  
b) Packet 2:3  
c) Packet 3:3  
d) Packet 4:2

- P. 8.13: a) yes combines  $n$  inputs to  $k$  outputs  
b) yes divides  $n$  inputs to  $k$  outputs

P. 8.14 assume all datagrams start at time zero:

$$1. \frac{3200 \times 10^3 \text{ m}}{2 \times 10^8 \frac{\text{m}}{\text{s}}} + (3 + 20 + 20)_{\text{ms}} = 59 \text{ ms}$$

$$2. \frac{11700 \times 10^3 \text{ m}}{2 \times 10^8 \frac{\text{m}}{\text{s}}} + (3 + 10 + 20)_{\text{ms}} = 91.5 \text{ ms}$$

$$3. \frac{12200 \times 10^3 \text{ m}}{2 \times 10^8 \frac{\text{m}}{\text{s}}} + (3 + 10 + 20 + 20)_{\text{ms}} = 114. \text{ ms}$$

$$4. \frac{10200 \times 10^3 \text{ m}}{2 \times 10^8 \frac{\text{m}}{\text{s}}} + (3 + 7 + 20)_{\text{ms}} = 81 \text{ ms}$$

$$5. \frac{10700 \times 10^3 \text{ m}}{2 \times 10^8 \frac{\text{m}}{\text{s}}} + (3 + 7 + 20 + 20)_{\text{ms}} = 103.5 \text{ ms}$$

order of arrival: 1, 4, 2, 5, 3