Data Communication
BS-SE

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Module: **14**

Question 1:
Answer:
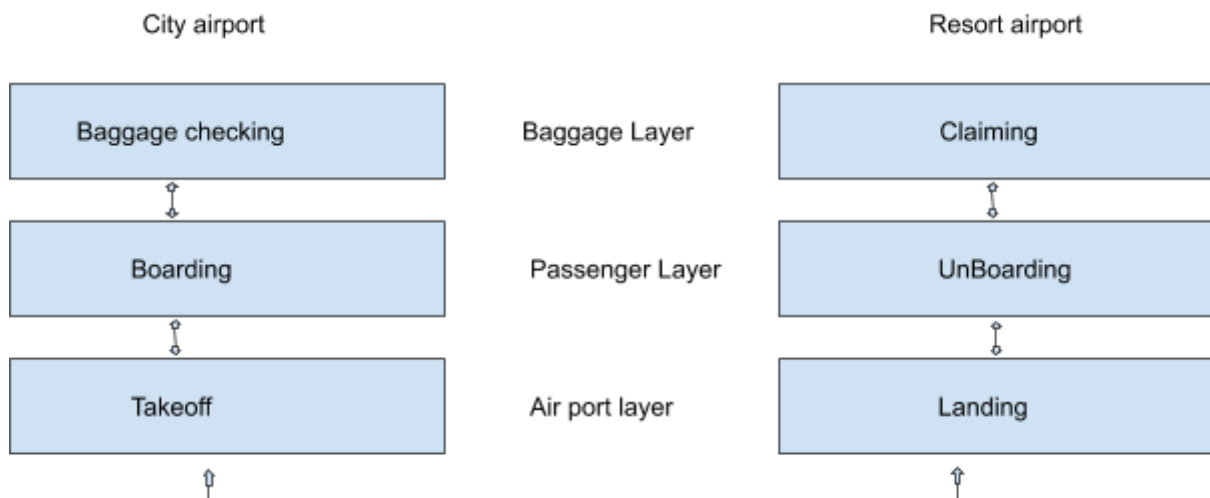
Question 2:
Answer:

The benefits are:
- A single study layer as a whole is presented in this layer.
- The band is as high as the number of layers is reduced.
- It shows the actual separation of the application form the Model.

The Disadvantage are:
- It can make thinking about network architecture less efficient.
- There will be security issues as network security and system security will be turned on in one place that could expose our network to our threat.
- It make troubleshooting difficult since most errors can be in one place

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Question 3:
Answer: On the Lan 1 data packets are 40 and 42 form sender 1 on the transmission medium and passing through the R1 gateway towards from Lan 1 to Lan 2, and sender 2 gets the required packets which is 80 and 82 from the transmission medium of the transport layer.

Question 4:
Answer:

a).
Formula C= B* [SNR_{db}/3]

Given: Bandwidth: 15 KHz
         SNR_{db}: 30

Solution: C = 15*30/3 = 1500 kbps
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b).
Given: Bandwidth: 100 KHz
         SNR_{db}: 2

Solution: C = 100*2/3 = 66.6 Kps
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c).
Formula: C = B $\log^2$ (1+SNR)

Given: Bandwidth: 0.5 KHz
         SNR_{db}: 10

Solution: C = 0.5 * 10^6 * $\log^2$(1+10)
         C = 0.5 * 10^6 * 3.45
         C = 17 Mbps

Note: *we can handle all eq on both formulas*

Question 5:
Answer: Using Nyquist eq : $C = 2B \log_2 M$

Given: C = 4800 bps

Sol: $C = 2B \log_2 M$
        => 4800 = 2B * 8
        => B = 4800 /16
        => B = 300 Hz

Question 6:
Answer:
        Given: No of bits = 8
                Bit duration= 8ns

        Sol: Bit Rate = 8/8ns
             => 1ns * 10^9 bps
             => 100 Mbps

Question 7:
Answer: