VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (C.S.E.) II Year II-Semester Advanced Supplementary Examinations, June/July-2017

Data Communication

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A *(10 × 2 = 20 Marks)*

1. What are the number of cable links required for a mesh and star topology for 20 devices in a network?

2. Differentiate between synchronous transmission and asynchronous transmission.

3. What is Wavelength-Division Multiplexing?

4. Consider 4 input connections with 56 Kbps, 60 Kbps, 60 Kbps, 60 Kbps data rates. What type of multiplexing is used to design a multiplexer with an output of 240 Kbps.

5. What kind of error is undetectable by the checksum?

6. Write down three protocols for noisy channels.

7. Compare data rates of Fast and Gigabit Ethernet.

8. What is the relation between a switch and a bridge?

9. Differentiate between piconet and scatternet.

10. Define virtual LAN.

Part-B *(5 × 10 = 50 Marks)*

11. a) What is topology? Categorize the four basic topologies in terms of line configuration. [5]

    b) Represent the graphs for the bit stream 00110011 using the following encoding schemes. [5]
Assume last signal level has been positive.
i) NRZ-L   ii) NRZ-I   iii) AMI

12. a) What is frequency division multiplexing? Explain frequency division multiplexing and de-multiplexing process with an example. [5]

    b) A multiplexer combines four 100 Kbps channels using a time slot of 2 bits. Show the output with 4 arbitrary inputs. [5]
    i) What is the frame rate?   ii) What is the frame duration?
    iii) What is the bit rate?   iv) What is the bit duration?

13. a) How is Go-back N ARQ different from Selective Reject ARQ? Explain with the help of diagrams. [5]

    b) Consider the data items 25, 12, 15, 32, 45, 20 and 36 to be sent from the sender to receiver. Use checksum method to generate the checksum at the sender and verify the correctness of data at the receiver. [5]

14. a) What access mechanism is used in a Standard Ethernet LAN? Explain with the help of a flow chart. [6]

b) What are the consequences if a connection fails in a scenario when 10 devices are [4]
arranged in a Bus LAN network? Are there any disadvantages? Justify your answer with
appropriate reasons.

15. a) Discuss about five categories of connecting devices. [6]

    b) Explain about three types of mobility in a wireless LAN. [4]

16. a) Describe OSI model. [4]

    b) Explain in detail about circuit switching with the help of a diagram. [6]

17. Write short notes on any *two* of the following:

    a) Cyclic code analysis [5]

    b) MAC sublayer [5]

    c) Gateway [5]

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