Q.P. Code : 20234

[Time: 2:30 Hours] [Marks:75]

Please check whether you have got the right question paper.

N.B:
1. All questions are compulsory.
2. Figures to the right indicate marks.
3. Illustrations, in-depth answers and diagrams will be appreciated.
4. Mixing of sub-questions is not allowed.

Q.1. Attempt the following (any THREE): **(15)**

A) Discuss different types of Data flow between two nodes

B) Define / Explain the following terms in one line
- Network
- Distributed Processing
- Protocol
- OSI Model
- LAN

C) List and explain task of presentation layer in detail.

D) The period of a signal is 100 ms. What is its frequency in kilohertz?

E) In a digital transmission, the receiver clock is 0.1 percent faster than the sender clock. How many extra bits per second does the receiver receive
- If the data rate is 1 Kbps?
- If the data rate is 1 Mbps?

F) Explain the working of Quadrature Phase shift keying in detail.

Q.2. Attempt the following (any THREE): **(15)**

A) Discuss the process of Interleaving with an example.

B) Write a short note on Direct Sequence Spread Spectrum

C) Explain the physical characteristics of Twisted-pair cable with its advantages and disadvantages

D) Design a three-stage, 200 x 200 switch (N = 200) with k = 4 and n = 20.

E) What is a switch? With neat labeled diagram explain working of a banyan switch.

F) Four data channels (digital), each transmitting at 1 Mbps, use a satellite channel of 1 MHz. Design an appropriate configuration, using FDM.

Q.3. Attempt the following (any THREE): **(15)**

A) What is single bit error? How one can detect it and correct it?

B) What is hamming distance? Give the minimum hamming Distance for the following pair of words.
- d(000,011)
- d(10101,1110)
- d(01111,10101)
- d(1110,10101)

C) Discuss byte stuffing and unstuffing with an example.

D) How does stop and wait ARQ differs from stop and wait protocol.

E) List and discuss different frames in HDLC with its frame format.
F) Write a short note on Point to Point Protocol with its transition states.

Q.4. Attempt the following (any THREE): **(15)**

A) Define ALOHA. Explain working of Slotted ALOHA.
B) What is hand shaking mechanism? How it helps in hidden station problem.
C) What do you mean by frequency reuse pattern? Explain which reuse pattern is better and Why?
D) What are backbone networks? Discuss star backbone with multiple LANs.
E) How bridges uses their bridge table for sending and receiving data across network.
F) What is an Orbit? How many orbits we have? Explain each one with its specifications.

Q.5. Attempt the following (any THREE): **(15)**

A) If a periodic signal is decomposed into five sine waves with frequencies of 100, 300, 500, 700, and 900 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 10 V.

B) State and Explain different Propagation modes and its importance.
C) Discuss the working of Selective Repeat ARQ. How it is better then Go Back N ARQ.
D) Write a short note on
- Piconet
- Scatternet

E) Discuss the Frequency modulation process with a neat labeled diagram.
F) How forwarding and blocking helps in Spanning tree algorithm?

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