2018

M.Sc. 1st Seme. Examination

COMPUTER SCIENCE

PAPER—COS-103

Full Marks : 50

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Computer Networks

Group–A

1. Answer any *five* questions :   5×2

(a) A signal travels through an amplifier and its power is increased ten times. Calculate the power gain in decibel.

(b) Differentiate between synchronous and asynchronous transmission.

(c) What is bit padding in time division multiplexing ?

(d) Why jam signal is used in CSMA/CD ?

(e) What is the purpose of piggybacking in ARQ techniques ?

(f) Given the IP address 201.14.78.65 and the subnet mask 255.255.255.224, find the subnet address.

(g) What do you mean by adaptive routing algorithm ? Give example.

(h) Find the minimum bandwidth for an FSK signal transmitting at 10,000 bps. Transmission is in half-duplex mode and the carriers are separated by 5000 Hz.

Group-B

2. Answer any *four* questions :   4×5

(a) With suitable diagram, briefly describe how pulse amplitude modulation and pulse code modulation techniques work.

(b) Draw a 16-QAM constellation diagram using four amplitudes and eight phases. If this signal has baud rate of 2000 bauds/S, compute the bit rate.

(c) With the help of an example, describe when Longitudinal Redundancy Check (LRC) method fails to detect an error.

(d) Why the size of the sender sliding window should not be more than 2^{m-1} in selective repeat ARQ technique ?

(e) Briefly describe the control field of HDLC supervisory frame.

(f) Generate the chip sequences for four stations in CDMA using Walsh table.

Group–C

3. Answer any *one* question : 1×10

(a) Define default mask with an example. What is subnetting ? Why congestion occurs in a subnet ? Describe how congestion can be controlled using token *bucket* algorithm.   2+2+2+4

(b) Write short notes (any *two*) :

    (i) Amplitude modulation,

    (ii) TCP,

    (iii) SMTP.   2×5

Internal Assessment — 10

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