B.E. DEGREE EXAMINATIONS: APRIL/MAY 2011

Sixth Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U07ECE07: Telecommunication and Switching Networks

Time: Three Hours   **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. FDM divides available bandwidth into

    (a) Large number of narrower bands   (b) Large number of time periods

    (c) Large number of amplitudes   (d) Large number of phase angles.

2. Bipolar coding solves problem of dc wander by choosing

    (b) 1 level to encode binary data   (b) 2 level to encode binary data

    (c) 3 level to encode binary data   (d) 4 level to encode binary data

3. Maximum size of the No. 4 ESS uses

    (a) 32 decorrelators   (b) 64 decorrelators   (c) 128 decorrelators   (d) 256 decorrelators

4. When digital switches are installed in an analog environment, analog interfaces are

    (a) Changed   (b) Not changed   (c) Not required   (d) Not Compatible

5. Pulse stuffing uses fixed length master frames with each channel allowed to stuff

    (c) 1 bit   (b) 2 bit   (c) 3 bit   (d) 4 bit

6. Plesiochronous uses clocks of

    (a) High accuracy   (b) High frequency   (c) Low frequency   (d) Multi polarity

7. The main advantage of PCM modem is

    (a) It has extremely high data rate   (b) Eliminates equalization noise

    (c) It does not depend upon digital network   (d) It does not use D/A converter

8. Direct satellite service has become a viable alternative to

    (a) Telephony   (b) Internet   (c) Telegraphy   (d) TV service

9. In a delay system, when all servers are busy, incoming calls are

    (a) Placed in queue   (b) Forwarded   (c) Rejected   (d) Accepted

10. The average waiting time for a single server with constant service time is

    (a) $\bar{t} = \frac{t_m}{2(1-\rho)}$ (b) $\bar{t} = \frac{\rho t_m}{2(1-\rho)}$ (c) $\bar{t} = \frac{\rho}{2(1-\rho)}$ (d) $\bar{t} = \frac{\rho+t_m}{2(1-\rho)}$

PART B (10 x 2 = 20 Marks)

11. What are advantages of Digital Biphase?

12. Differentiate bit-interleaving and word-interleaving for time division multiplex frames.

13. What is a two dimensional switching?

14. What is automated test Access?

15. What are main sources of clock instability?

16. What are slips in timing inaccuracies?

17. What is fiber in the loop?

18. Give any four significance aspects of the S/T interface.

19. Draw probability graph for end-to-end blocking analysis and label it.

20. What is time congestion?

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain time division multiplexing with the help of block diagram. (10)

    (ii) What is need of equalization? (4)

(OR)

   b) What are SONET rings? Explain different types of SONET rings with the help of neat diagrams. (2+6+6)

22. a) (i) What is space division switching? What are its applications? (2+2)

    (ii) Explain two wire switching matrices for square and triangular structures. (10)

(OR)

   b) Explain STS Switching structure with the help of Diagram. Derive expression for implementation complexity of an STS switch. (8+6)

23. a) How the timing recovery is made for synchronizing receiver clock with transmitter clock using PLL? Explain with the help of circuit diagram.

(OR)

   b) Draw circuit for measuring timing jitters and explain. Derive relationship between *rms* power of phase detector and *rms* phase Jitter.

24. a) Explain hybrid fibre coax system configuration with neat diagrams.

(OR)

   b) (i) What do you understand by digital loop carrier systems? Explain. (7)

    (ii) Explain universal and integrated digital loop carriers. (7)

25. a) (i) Assuming each of 10000 subscribers lines originate one call per hour, how often do two calls arrive with less than 0.01 second between them? (8)

(ii) Briefly explain loss systems. (6)

(OR)

b) (i) Explain over flow traffic. With the help of figure, explain bursty characteristics of over flow traffic. (10)

(ii) What factors does waiting time depend upon? (4)

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