(c) Ten 9600-bps lines are to be multiplexed using TDM ignoring overhead bits in the TDM frame, what is the total capacity required for synchronous TDM ? Assuming that we wish to limit average link utilization of 0.8 and assuming each link is busy 50%, what is the capacity required for statistical TDM ?

6

OR

4 (a) Draw TDMA burst structure. Explain the different fields in brief.

8

(b) Draw the schematic of DS-1 frame. List the differences when DS-1 is used for (i) voice transmission and (ii) Digital data service.

8

UNIT - V

5 (a) Explain working of FHSS. What are its advantages ?

3

(b) In an FHSS system for the generation of hoping frequencies, a 3-bit pseduo number code generator is used. The carrier frequency is 8 KHz and the frequency spacing is 0.5 KHz. corresponding to code pattern 000, the frequency is 9.75 KHz. Find all the hoping frequencies. Show all the frequencies on the frequency time plane.

4+3=7

(c) An FHSS system employs a total bandwidth of W_s = 400 MHz and an individual channel bandwidth of 100 Hz. What is the minimum number of PN bits required for each frequency nop ?

3

(d) An FHSS system using MFSK with M=4 employs 1000 different frequencies. What is the processing gain ?

3

OR

5 (a) Describe direct sequence spread spectrum technique. Compare it with FHSS.

3+3=6

(b) Define orthogonal codes. Show that the following set of codes is orthogonal

C1 = 1, -1, -1, 1, -1, 1
C2 = 1, 1, -1, -1, 1, 1
C3 = 1, 1, -1, 1, 1, -1

4

(c) Define 'Hands-off'. List the difficulties in carrying out hand-offs in CDMA systems. Explain approaches of hand-off.

6