

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
 TEST - 1 EXAMINATION- 2018
 B.Tech 6th Semester (ECE)

COURSE CODE: 10B11EC611

MAX. MARKS: 15

COURSE NAME: Telecommunication Networks

COURSE CREDITS: 04

MAX. TIME: 1 HR.

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated against each question. CO indicates the Course Outcome.

- Q1.** Draw and discuss the four basic network topologies. Discuss their advantages and disadvantages. Also discuss the number of cable links required for each topology. **CO-1 (3)**
- Q2(a).** Draw the TCP/IP protocol suite and show the protocols at various layers of this model. **CO-1 (1.5)**
- Q2(b).** How does spreading achieve bandwidth utilization? Discuss with the help of frequency hopping spread spectrum (FHSS) and direct sequence spread spectrum (DSSS). **CO-2 (1.5)**
- Q3.** We need to use synchronous TDM and combine 20 digital sources, each of 100 kbps. Each output slot carries 2 bits from each digital source, but one extra bit is added to each frame for synchronization. Answer the following questions:
- What is the size of an output frame in bits?
 - What is the output frame rate?
 - What is the duration of an output frame?
 - What is the output data rate?
 - What is the efficiency of the system (ratio of useful bits to the total bits)?
- CO-2 (0.5+0.5+0.5+0.5+1=3)**
- Q4(a).** Compare and contrast a circuit-switched network and a packet-switched network. **CO-3 (2)**
- Q4(b).** Define blocking in a switched network. **CO-3 (1)**

Q5. We need a three-stage space-division switch with $N=100$. We use 10 crossbars at the first and third stages and 6 crossbars at the middle stage.

a). Draw the configuration diagram.

b). Calculate the total number of crosspoints.

c). Find the possible number of simultaneous connections.

d). Find the possible number of simultaneous connections if we use one single crossbar
(100×100).

e). Find the blocking factor, the ratio of the number of connections in c. and in d. **CO-3**

$$(1 + 0.5 + 0.5 + 0.5 + 0.5 = 3)$$

JUIT TEST-1 EXAMINATION- FEB 2018