SHAHEED BHAGAT SINGH STATE TECHNICAL CAMPUS, FEROZEPUR

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# B.Tech. || ECE || 8th Sem

# Satellite Communication

## Subject Code: BTEC-910

## Paper ID:

**Time allowed: 3 Hrs** **Max Marks:60**

**Important Instructions:**

- **All questions are compulsory**
- **Assume any missing data**

### PART A (10x 2marks)

Q. 1. Short-Answer Questions:

a) What do you mean by orbital spacing?
b) What is meant by Beam Hopping?
c) Define TDMA frame efficiency.
d) What can you say about pointing error in optical satellite link?
e) What do you mean by noise figure? What is its importance?
f) Discuss the effect of orbital inclination.
g) What are interference effects on complete link design?
h) Downlink frequency is kept different from uplink frequency, why?
i) What are polar satellites?
j) Name the photo detectors being used in optical satellite communication.

### PART B (5×8marks)

Q. 2. a) Discuss the orbital aspects of satellite communication. COa
b) Differentiate between active and passive Satellite?

OR

Draw and explain block diagram of satellite Transponder. COa

Q. 3. Derive the general link equation. Give the expressions for C/N and G/T ratio. COb

OR

A Satellite is moving in a circular orbit at a height of 150 Km above the surface of earth. If the radius of earth is 6360 Km, determine the orbital velocity and orbital period of the satellite. ($G=6.67\times10^{-11}$ $Nm^2/kg$, $M=5.98\times10^{24}$ kg) COb

Q. 4. Write short notes on following: COc
a) DA-TDMA.
b) Erlang call congestion formula.

OR

Compare TDMA and FDMA used in satellite communication system. COc

Q. 5. Discuss the application of satellite for weather forecasting and military applications. COd

OR

(a) Describe VSAT. COd
(b) What do you know about mobile satellite service.

Q. 6. Explain optical fiber CATV system. Also explain block diagram of earth station. COe

OR

Explain why it is not possible to have a direct optical communication link between earth station and communication satellite. What are the various atmospheric attenuations that comes in optical communication link? COe