

B.E. (EXTC) Csem -VIII (CBCGS) (R-2019)

Duration: 3hrs

[Max Marks: 80]

- N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR [20]
 - a Explain earth eclipse of satellite [5]
 - b Why is uplink frequency higher than and also why it is different from downlink frequency? [5]
 - c Compare centralized and distributed control of demand assignment [5]
 - d Explain different types of tracking system used in satellite earth stations [5]
 - e Explain 3-axis stabilization. [5]
- 2 a Explain AOCS in detail. [10]
 - b Describe the significance of carrier to noise ratio, carrier to noise density ratio and bit energy to noise density ratio. [10]
- 3 a What do you understand by orbital perturbations? Give main causes of orbital perturbation. [10]
 - b With the help of block diagram explain transmit receive type of earth station. [10]
- 4 a Explain SPADE system and SCPC of FDMA. [10]
 - b A multiple carrier satellite circuit operates in the 6/4 GHz band with the following characteristics. Uplink: Saturation flux density -67.5 dBW/m^2 ; input BO 11 dB; satellite G/T -11.6 dB/K . Downlink: Satellite saturation EIRP 26.6 dBW; output BO 6 dB; free-space loss 196.7 dB; earth station G/T 40.7 dB/K . For this example, the other losses may be ignored. Calculate the carrier-to-noise density ratios for both links and the combined value. [10]
- 5 a Explain Limits of Visibility with its derivation. [10]
 - b Derive an expression for combined uplink and downlink C/N ratio Calculate over all C/N Ratio for satellite if $[C/N]$, uplink = 25db & $[C/N]$, downlink = 15db. [10]
- 6 a Explain INMARSAT mobile satellite services in detail [10]
 - b Explain GPS in detail. [10]