COURSE CODE(CREDITS): 18B1WEC845(3)

COURSE NAME: Satellite Communications

MAX. MARKS: 25

COURSE INSTRUCTOR: Salman Raju Talluri

MAX. TIME: 1 Hour 30 min.

Note: (a)All questions are compulsory.(b)Marks are indicated against each question in square brackets.(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

1. Derive the RF Link/Free Space Link equation for the satellite communication. [4m CO-2]

2. What do you mean by noise figure? Find the overall noise figure for the below system. [4m CO-3]

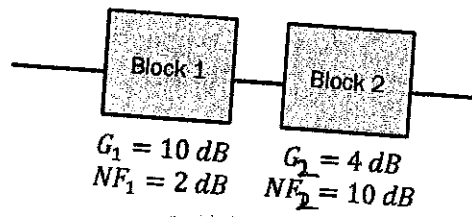$G_1 = 10\,dB$ $G_2 = 4\,dB$
$NF_1 = 2\,dB$ $NF_2 = 10\,dB$

Figure 1: System

3. What do you mean by multiple access? Compare three different types of MA techniques that are used in satellite communication. [4m CO-3]

4. What are the basic elements present in analogue Satellite Communication Signal Processing? Draw the diagram and explain. [4 m CO-4]

5. What do you mean by Satellite Switched TDMA? Draw a neat diagram to explain the use of this technique. [4m CO-4]

6. Explain the following terms very briefly. [5m CO-1]

   (a) RZ and NRZ encoding of baseband data

   (b) Up-Conversion and Down-Conversion

   (c) SNR and SINR values for best and worst systems

   (d) Filter and Combiner applications

   (e) Amplifier and Attenuator