**Quiz # 1 (Marks 6+2+2) Time allowed 30 min**

**(Question # 1)** The satellite transmitting effective isotropic radiated power of 37 dBw. The signal attenuated in space by 200 dB; the C band LNB gain is 64 dB, if the cable length is 10m and cable attenuation per meter is 2 dB then find:

1. The received signal strength at the receiver. Consider the gain of the transmitting antenna is 39 dB.
2. What should be the length of the cable if to ensure -90dBw at the receiver?

**(Question # 2)** Write an expression that relates the close in reference power with the received power. Also explain the path loss exponent.

**(Question # 3)** What do you mean by SE-ME-WE?

**Quiz # 2 (Marks 5+3+2) Time allowed 30 min**

**(Question # 1)** Prove that for a hexagonal geometry, the co-channel reuse ratio is given by Q = sqrt (3N), where N = i2+ ij + j2.

**(Question # 2)** Write an expression of the received signal y(t) at the receiver when x(t) is transmitted. Also explain the ideal channel in time and frequency domain.

**(Question # 3)** distinguish between bit rate and baud rate

**Quiz # 3 (Marks 3+4+3) Time allowed 30 min**

**(Question # 1)** How many kinds of frequency allocation techniques, briefly explain each one.

**(Question # 2)** Exercise in trunking (queuing) theory:

1. What is the maximum system capacity (total and per channel) in Erlangs when providing a 2 % blocking probability with four channels, with 20 channels, with 40 channels?
2. How many users can be supported with 40 channels at 2 % blocking? Assume H = 105 sec, λ = 1 call / hour.

Find C/I in dB for N=7, 12, and 19, where n = 4

**(Question # 3)** Draw the constellation diagram for “8 PSK”. If bit rate is 8 Kbps, find the baud rate.