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**B.E./B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APR/MAY 2013
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH**

67

EIGHTH SEMESTER

EC 9031- SATELLITE COMMUNICATION

(REGULATIONS 2008)

Duration: 3 Hours

Max.marks: 100

Answer ALL questions

PART-A

(10x2=20 Marks)

- 1.Distinguish between elevation and azimuth of a satellite.
- 2.Define Hohmann transfer.
- 3.Why is uplink design easier than downlink design in most cases?
- 4.Why are 250 MHz transponders proved unsatisfactory?
- 5.Define base band voice signal.
- 6.Why is differential modulation more error prone?
- 7.Why does DAMA increase the system cost?
- 8.Draw the transfer characteristics of TDM.
- 9.What does the survey of Indian remote sensing satellites result in?
- 10.List the mechanisms involved in packet reservation schemes.

PART-B

(5x16=80 Marks)

11. Starting from the theory of orbital mechanics, derive the equation of the orbit. (16)
- 12.(a)(i) With diagram and mathematics, explain how to calculate attenuation caused by rain. (8)
(ii) Explain the design aspects of satellite link to achieve a specified performance. (8)
- OR**
- 12.(b)(i) Draw the block diagrams for telemetry system and tele-command system. (6)
(ii) From the calculation of system noise temperature, prove that C/N is directly proportional to G/T ratio. (10)
- 13.(a)(i) Calculate the error probability of a 16-QAM modulation scheme for $E_b/N_0 = 7\text{dB}$. (8)
(ii) List the most basic techniques, merits and demerits of ARQ. (8)
- OR**
- 13.(b) With block diagrams, write the mathematical substantiation for BPSK demodulator and QPSK demodulator. (16)
- 14.(a) Write the design aspects and explain the technical features of TDMA frame structure. (16)
- OR**
- 14.(b) List the ways of implementing a CDMA system and explain. (16)
- 15.(a)(i) List the more commonly heard military applications. What does weather satellite provide? (6)
(ii) Draw a typical set-up of international telephone service via satellite. Explain the function of each block of VSAT mini hub network configuration. (10)
- OR**
- 15.(b).(i) With block diagram explain the working principle of DBS-TV receiving system. (8)
(ii) List the factors degrading the GPS signal and write the applications of VSAT. (8)
