

B.E. IT Part IV 7th Sem Exam. , 2012

Subject : Broadband Communications

Code : IT-703

Full marks : 70

Time : 3 hrs

Answer any three questions from each group .
All questions carry equal marks . Four marks
Are reserved for neatness.

Gr. A

1. What is telemetry , tracking and command system of a satellite ? How telemetry data are sent to a satellite ? Describe with a block diagram the tracking function of a controlling earth station .
3+3+5
2. What is TDMA? How loop back synchronization is achieved when a new earth station joins a network of earth stations ? Explain the TDMA frame and burst structure in relation to satellite communications.
2+3+3+3
3. Explain the functioning of a 6/4 and 14/11 Ghz. Bent pipe transponder in satellite communications . What is M for N redundancy used in transponders ?
4+4+3
4. What is DAMA ? Explain the functioning of a DBS-TV receiver with necessary block diagrams .
4+7
5. What are earth stations in connections with satellite communications ? Explain the functioning of the transmitter and receiver used in the earth stations for satellite communications.
3+4+4

GR. B

1. Explain the cellular concepts of Mobile communications system .
What is frequency reuse ? Explain the Okumura model used in signal prediction in urban areas ?
3+3+5
2. What are the factors which influence small – scale fading ? Explain the phenomenon of flat fading and frequency selective fading due to multipath time delay spread.
5+3+3
3. Explain the concepts of microscopic and macroscopic diversity related to small scale and large scale fading respectively. Explain with necessary diagrams , the concepts of feedback diversity.
3+3+5
4. How the user services are categorized in a GSM system ? What is a Subscriber Identity Module ? Explain with necessary block diagrams The GSM system architecture .
3+2+6
5. Explain with necessary block diagrams the fibre optic communication principle . Explain with necessary diagrams the structure of a single mode step index fibre . What are multimode graded index fibres and what are their Bandwidths ?
4+4+3
6. Explain with necessary diagrams, the functioning of avalanche photodiodes. Explain the functioning of a LED for binary digital transmission. Explain with block diagrams , a simple optical receiver circuit for detection purpose .
3+4+4