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B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Sixth Semester

Electronics and Instrumentation Engineering

EC 6651 — COMMUNICATION ENGINEERING

(Common to Electrical and Electronics Engineering/Instrumentation and Control Engineering)

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Narrowband FM.
2. What is the difference between VSB and SSB modulations?
3. State any two advantages of MSK.
4. State Sampling theorem.
5. A Discrete Memoryless source emits 5 symbols, each with probability 0.2. Compute the entropy of the DMS.
6. What is error control coding?
7. What is CDMA?
8. What is the most critical requirement of TDMA technique?
9. What are the different types of fiber? Which type is more preferred?
10. Among LED and LASER, which is more popularly used now? Why?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Derive the frequency spectrum of AM signal. What is the power distribution in the AM signal? (10)
(ii) Describe Armstrong method of FM generation. (6)

Or

- (b) (i) Compare and contrast the three classes of AM, namely Full AM, DSB/SC and SSB. (8)
(ii) Compare and contrast FM and PM. (8)

12. (a) (i) Describe the pulse modulation schemes of PAM, PPM, PWM and PTM. (12)
(ii) Sketch slope overload error and explain how that error could be minimized. (4)

Or

- (b) (i) Compare and contrast QPSK and QAM. (8)
(ii) Describe the GMSK scheme. (8)

13. (a) (i) What are line codes? Describe any two line codes and their salient features. (8)
(ii) Bring out the Bandwidth- SNR tradeoff present in a communication channel. (8)

Or

- (b) (i) What is source coding? Discuss source coding procedure, with an example source code. (8)
(ii) Describe mBnB codes. (4)
(iii) What is a convolutional code? When is it used? (4)

14. (a) (i) Describe the procedures in SDMA. (8)
(ii) Describe FDMA scheme. (8)

Or

- (b) Discuss in detail the multiple access techniques that are used in wireless communications. What difference is taken into account here as the channel is now wireless?

15. (a) (i) Discuss in detail, a satellite communication system. Also list out typical frequency spectrum used in this communication. What is the relation between the uplink frequency and the downlink frequency in a satellite link? Which one is higher? Why? (10)
(ii) Describe the technique of SCADA. (6)

Or

- (b) (i) Describe a fiber optic communication system. State the major merits of an optical fiber system. If there are so many compelling reasons for opting this type of communication, why is it not used everywhere? (10)
(ii) Describe power line carrier communications. (6)