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**Question Paper Code : 21366**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fifth Semester

Electrical and Electronics Engineering

EC 2311/EE 54/10144 EE 501 – COMMUNICATION ENGINEERING

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. An AM transmitter is modulated by three sources of audio with  $m_1=0.5$ ,  $m_2=0.7$ ,  $m_3=0.4$ . The Unmodulated carrier power is 50 kw. Calculate the modulated power output.
2. Compare NBFM and WBFM.
3. Why is FSK preferred over ASK? Give reasons.
4. What is meant by slopeoverload distortion?
5. Define quantization error.
6. State the significance of source coding.
7. Mention the advantages of SDMA Technique.
8. For a total transmit power  $P_t$  of 1000w, determine the energy per bit ( $E_b$ ) for a transmission rate of 50 Mbps.
9. Define apogee, perigee and geocenter.
10. Why is single mode propagation impossible with graded index fibers?

PART B — (5 × 16 = 80 marks)

11. (a) Explain with a neat circuit, generation of AM wave. For an AM DSBFC modulator with carrier frequency  $f_c = 100\text{KHz}$  and a maximum modulating signal  $f_m = 5\text{KHz}$ , determine Bandwidth and sketch the output frequency spectrum.  
Or
- (b) Draw the block for an Armstrong indirect FM generation and describe its operation. Compare FM and PM. (10+6)
12. (a) Explain the concept and method of generating of PWM. What are the advantages and application of PTM?  
Or
- (b) Explain DPCM technique with neat block diagram. For minimum line speed with an 8 bit PCM for speech signal ranging upto 1volt. Calculate the resolution and quantization error. Calculate the coding efficiency for a resolution of 0.01 volt with the 8 bit PCM.
13. (a) (i) Explain Bandwidth –SNR trade off in source coding. (8)  
(ii) Discuss various types of Leni coding techniques. (8)  
Or
- (b) (i) Explain the concept of noiseless coding theorem and state its significance. (8)  
(ii) Discuss about error control codes and their applications. (8)
14. (a) (i) Discuss in detail about FDMA and TDMA Techniques with a neat diagram. (10)  
(ii) Compare various multiple access techniques. (6)  
Or
- (b) Explain with a neat block diagram the SDMA technique and discuss its applications in wire and wireless communication.
15. (a) (i) Explain Kepler's law and how they relate to satellite communication. (8)  
(ii) Describe significance of satelite link budgets s and how they are calculated. (8)  
Or
- (b) (i) Explain the operation of an injection laser diodes and mention its characteristics. (8)  
(ii) Discuss power line carrier communication with suitable example and diagram. (8)