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**Question Paper Code : 75544**

5 Year M.Sc. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fourth Semester

Software Engineering

XCS 244/10677 SW 404 – PRINCIPLES OF DATA COMMUNICATION

(Common to 5 Year M.Sc. Information Technology/M.Sc. Computer Technology)

(Regulation 2003/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the advantages of pulse amplitude modulation?
2. Define quantization error.
3. Write any two properties of entropy.
4. What is meant by convolution coding?
5. What are the various most significant transmission impairments?
6. List the various applications of coaxial cables.
7. Differentiate data element and signal element.
8. Define delta modulation.
9. What is meant by cyclic redundancy check?
10. Draw the 8 bit control field format of HDLC frame structure.

PART B — (5 × 16 = 80 marks)

11. (a) With a neat sketch explain briefly about the any one type of FM modulator and demodulator.

Or

- (b) Explain the following modulation schemes briefly.

(i) Amplitude Modulation. (8)

(ii) Pulse Modulation. (8)

12. (a) (i) A source emits one of four symbols  $s_0, s_1, s_2$  and  $s_3$  with probabilities  $1/3, 1/6, 1/4$  and  $1/4$  respectively. The successive symbols emitted by the source are statistically independent. Calculate the entropy of the source. (8)
- (ii) Explain briefly about channel capacity. (8)

Or

- (b) (i) Discuss briefly about the various decoding techniques. (8)
- (ii) Explain briefly about the basic concept of algebraic coding method. (8)
13. (a) Describe briefly about the data transmission concept of analog and digital data.

Or

- (b) Describe briefly about the synchronous and asynchronous transmission.
14. (a) (i) Explain briefly about the scrambling technique and also explain the advantages of scrambling technique compare to biphase coding technique. (12)
- (ii) Discuss shortly about modulation rate. (4)

Or

- (b) (i) Explain FSK and PSK with necessary diagrams and equations. (8)
- (ii) Explain briefly about PCM with block diagram and example. (8)
15. (a) Write short notes on :
- (i) Sliding window flow control. (8)
- (ii) Stop and wait ARQ. (8)

Or

- (b) (i) Explain HDLC operation with one example. (8)
- (ii) Discuss about Frequency Division Multiplexing briefly. (8)