| | Utech |
|---------------------------|--------------------------------|
| Name : | |
| Roll No.: | A Descript Sandala Sal College |
| Invigilator's Signature : | |

CS/M.Tech (MCNT)/SEM-1/MC-103/2010-11 2010-11

ADVANCED DIGITAL COMMUNICATION & CODING

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

- 1. Write short notes on any *four* of the following: $4 \times 5 = 20$
 - a) Interleaver
 - b) Convolution code
 - c) Asynchronous CDMA
 - d) OQPSK modulation
 - e) QAM modulation
 - f) Viterbi decoder.

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CS/M.Tech~(MCNT)/SEM-1/MC-103/2010-11

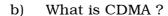
GROUP - B



Answer any *five* questions.

| 2. | a) | What is equalization? What is Nyquist criterion? | 3 |
|----|----|--|----|
| | b) | How does adaptive equalization work? | 3 |
| | c) | Derive LMS algorithm. | 4 |
| 3. | a) | What is matched filter? | 2 |
| | b) | Derive matched filter equation ? | 5 |
| | c) | What is correlator detector? | 3 |
| 4. | a) | Write about DPSK modulator. | 4 |
| | b) | Write about DPSK demodulator. | 4 |
| | c) | What is its BER? | 2 |
| 5. | a) | What is MSK? | 2 |
| | b) | Write about MSK modulator. | 4 |
| | c) | Write about MSK demodulator. | 4 |
| 6. | a) | What is spread spectrum? What are its advantages are | ıd |
| | | disadvantages ? | 3 |





2

What is the decorrelating detector for 3 synchronous c) user? Derive.

5

7. a) What is FHSS? 2

How to implement FHSS? Give a drawing. b)

4

Draw a schematic diagram for FHSS. c)

4

2

Let $a(x) = x^3 + x + 1$ and $b(x) = x^2 + x + 1$ be defined over 8. a) GF(2). What will be $\frac{a(x)}{b(x)}$ the quotient and residue. 3

Consider the ring $F(x)/(x^2+x+1)$ defined over GF(2). b) What will be its elements ? Find addition and 5 multiplication table.

Is $F[x]/(x^2 + x + 1)$ a field?