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A

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**THIRD SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2017**

**ELECTRONICS AND COMMUNICATION ENGINEERING**

1. **Microwave and Television Engineering**
2. **Signal Processing**

**01EC7213 - Secure Communication**

Answer *any two full* questions from *each* part

Limit answers to the required points.

Max. Marks: 60

Duration: 3 hours

**PART A**

1. a. Discuss different computational complexity classes with examples. (5)  
Describe relation among classes.
- b. Discuss Fermat's little theorem. Find  $3^{31} \bmod 7$  (4)
2. a. Differentiate between Ring and Field with examples. (4)
- b. What is modular multiplicative inverse? Find multiplicative inverse of 10 under mod 17. (5)
3. a. Solve the linear congruence  $12x \equiv 6 \bmod 7$  (4)
- b. Find remainder  $16^{50}$  when is divided with 7. (5)

**PART B**

4. a. Draw a PN sequence generator with feedback connection governed by  $1+x+x^2+x^5$ . (3)
- b. Discuss Diffie Helman Key Exchange with an example. (3)
- c. Use Affine ciphering technique to encrypt the plain text "cryptography" using function  $E(x) = 5x+8$ . (3)
5. a. Use Hill cipher to decipher a cipher "BEST OF LUCK" created with key matrix 
$$\begin{bmatrix} 1 & 1 \\ 0 & 2 \end{bmatrix}$$
 (5)
- b. Discuss RSA choosing 11 and 3 as prime numbers to start with. (4)

6. Discuss AES. (9)

**PART C**

7. a. Discuss Linear and Differential Cryptanalysis. (8)  
b. What is modular exponentiation? (4)
8. a. Discuss different Primality Tests with examples (12)
9. a. Discuss Integer Factorization Techniques with examples (12)

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