

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE – SEMESTER – VI (OLD).EXAMINATION – WINTER 2016**

**Subject Code: 160702**

**Date: 26/10/2016**

**Subject Name: Information Security**

**Time: 02:30 AM to 05:00 PM**

**Total Marks: 70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) 1. What is the difference between a block cipher and a stream cipher? **02**  
2. What is the purpose of the S-boxes in DES? **05**  
(b) 1. What is the difference between an unconditionally secure cipher and a computationally secure cipher? **02**  
2. What are the essential ingredients of a symmetric cipher? **05**
- Q.2** (a) What is the limitation of Electronic Codebook Mode (ECB)? How it is overcome by Cipher Block Chaining (CBC) mode? Also explain CBC mode in detail. **07**  
(b) 1. What is the difference between differential and linear cryptanalysis? **02**  
2. Why is it important to study the Feistel cipher? **05**  
**OR**  
(b) 1. What are the problems with one-time pad? **02**  
2. Encrypt the following message using playfair cipher. **05**  
Message: COMSEC means communications security  
Keyword: Galois
- Q.3** (a) 1. How many keys are used in triple encryption? **02**  
2. What are differences between RC5 and blowfish? **05**  
(b) Discuss different techniques for public-key distribution. **07**  
**OR**
- Q.3** (a) 1. Define session key and master key. **02**  
2. Discuss decentralized key distribution approach. **05**  
(b) Explain public-key cryptosystem in detail. **07**
- Q.4** (a) What is message authentication code? What are the requirements for MACs? Briefly discuss MAC based on DES. **07**  
(b) Discuss the possible approaches to attack the RSA algorithm. Also discuss various mathematical and timing attacks for RSA algorithm. **07**  
**OR**
- Q.4** (a) What characteristics are needed in secure hash function? Explain the concept of simple hash function. **07**  
(b) What are the five principal services provided by PGP? Why does PGP generate signature before applying comparison? **07**
- Q.5** (a) What are the requirements of digital signature? Explain the concept of arbitrated digital signature. **07**  
(b) What are the benefits from IPsec? Mention the most important documents of IPsec along with their significance. **07**  
**OR**
- Q.5** (a) What are the limitations of Diffie-Hellman algorithm? Which are the features of Oakley algorithm? **07**  
(b) Explain SSL architecture. **07**

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