Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– 6 EXAMINATION – Summer 2015

Subject Code: 160702 Date:04/05/2015

Subject Name : Information Security

Time:10.30AM-01.00PM 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)

(i) Encrypt the message "Exam" using the Hill cipher with the key $\begin{bmatrix} 9 & 4 \\ 5 & 7 \end{bmatrix}$. **04**

(ii) Write the subkey and S-Box generation in Blowfish. **03**

(b)

(i) Explain cipher feedback mode of operation. **04**

(ii) Given the seed to be 101355, generate first five bits of random number with the help of blum blum shub generator. **03**

Q.2 (a)

(i) Perform encryption using the RSA algorithm. **04**

p=3,q=11(two random numbers).
e(encryption key)=7
M(plaintext message)=5

(ii) Evaluate Euler's totient function $\Phi(37)$. **03**

(b) Explain Elliptic curve algorithm. **07**

OR

(b) Explain Diffie – Hellman key exchange. **07**

Q.3 (a) Explain the steps involved in International data encryption standard algorithm. **07**

(b) How message authentication code can be used to achieve message authentication and confidentiality? **07**

OR

Q.3 (a) Explain scheme for DES encryption. **07**

(b) Which techniques are used for the distribution of public keys? **07**

Q.4 (a)

(i) Write the benefits of IPSec. **04**

(ii) When an encryption scheme is said to be unconditionally secure and computationally secure? **03**

(b) Write cast -128 encryption algorithm. **07**

OR

Q.4 (a)

(i) Write the properties of hash functions. **04**

(ii) Explain the fields included in ESP(Encapsulating security payload) packet. **03**

(b) Explain pretty good privacy. **07**

Q.5 (a)

(i) Why E-commerce transactions need security? **04**

(ii) Explain the use of firewall. **03**

(b) Write MD5 algorithm. **07**

OR

Q.5 **(a)**

(i) Which type of substitution is called monoalphabetic substitution cipher? **01**

(ii) Which two principal methods are used in substitution ciphers to lessen the extent to which the structure of the plaintext survives in the ciphertext? **02**

(iii) Use playfair algorithm with key "monarchy" and encrypt the text "jazz". **04**

(b) Define SSL session and SSL connection. Which parameters define session state and connection state. **07**

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