Set -1

1. Perform encryption and decryption using the RSA algorithm: 2

      $p = 3; q = 11, e = 7; M = 5$

2. In a public-key system using RSA, you intercept the ciphertext $C = 10$ sent to a   3
user whose public key is $e = 5, n = 35$. What is the plaintext M?

3. In an RSA system, the public key of a given user is $e = 31, n = 3599$. What is the   3
private key of this user?

4. Evaluate the following: 2

      i) 15 mod 4 = ?   ii) -15 mod 4 = ?

Set -2

1. Perform encryption and decryption using the RSA algorithm: 2

      $p = 5; q = 11, e = 3; M = 9$

2. In a public-key system using RSA, you intercept the ciphertext $C = 12$ sent to a   4
user whose public key is $e = 7, n = 55$. What is the plaintext M?

3. In an RSA system, the public key of a given user is $e = 31, n = 3599$. What is the   3
private key of this user?

4. Evaluate the following: 1

      i) 39 mod 4 = ?

Set -3

1. Perform encryption and decryption using the RSA algorithm: 2

      $p = 7; q = 11, e = 17; M = 8$

2. In a public-key system using RSA, you intercept the ciphertext $C = 10$ sent to a   4
user whose public key is $e = 3, n = 55$. What is the plaintext M?

3. Encrypt the message block $M = 2$ using RSA with the following parameters: 3

      $e = 23$ and $n = 233 \times 241$.

4. Evaluate the following: 1

      i) -51 mod 5 = ?

Set-4

1. Perform encryption and decryption using the RSA algorithm: 2

      $p = 11; q = 13, e = 11; M = 7$

2. In a public-key system using RSA, you intercept the plaintext $M = 89$ sent to a   4
user whose public key is $e = 3, n = 3127$. What is the ciphertext C?

3. Encrypt the message block $M = 19$ using RSA with the following parameters: 3

      $e = 23$ and $n = 233 \times 241$

4. Evaluate the following: 1

      i) $\varphi (185) = ?$