

**GUJARAT TECHNOLOGICAL UNIVERSITY**MCA- V<sup>th</sup> SEMESTER-EXAMINATION –JUNE - 2012**Subject code: 650002****Date: 12/06/2012****Subject Name: Network Security (NS)****Time: 02:30 pm – 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. Briefly explain the terms: a) Message Confidentiality b) Message Integrity c) Message Authentication d) Non Repudiation e) Denial of Service [05]
  2. Differentiate between Security Threat and Security Attack. [01]
  3. Differentiate between Security Mechanism and Security Service. [01]

- (b)**
1. Explain giving examples Active Attacks and Passive Attacks. [06]
  2. What is meant by the term “Hacking”? [01]

- Q.2 (a)**
1. Mention and very briefly explain any three design features/parameters considered while designing a symmetric block cipher. [03]
  2. Mention the two major reasons why AES was introduced even though Triple DES was already there. [02]
  3. “Arrival of Asymmetric key cryptography has made Symmetric key cryptography obsolete.” State True/False with reason. [02]

- (b)**
1. What is meant by: a) Session Key b) Permanent Key? [02]
  2. Mention and briefly explain any five properties necessary for a hash function to be useful for message authentication. [05]

**OR**

- (b)**
1. Mention and very briefly explain any five fields/elements of the format of X.509 Public Key Certificate. [05]
  2. Just by using a schematic diagram, show how authentication can be achieved in public key cryptography. Assume that confidentiality is not required. [02]

- Q.3 (a)**
1. Briefly explain the functionality of Tunnel mode for AH, ESP (encryption only) and ESP (encryption and Authentication) [06]
  2. What is the reason for having IPSEC even though SSL is already there? [01]

- (b)**
1. Show in a tabular format different security services which are available in ESP (Encryption + Authentication) protocols in IPSEC. [06]
  2. Briefly explain “Security Association” in IPSEC. [01]

**OR**

- Q.3 (a)**
1. Mention and briefly explain the services available in PGP. [05]
  2. Which algorithms are used for compression and email compatibility in PGP? [02]

- (b)**
1. Briefly explain the structure/format indicating the different fields of Private Key Ring in PGP. [05]
  2. Mention any one algorithm used in PGP for digital signature and message encryption. [02]

- Q.4 (a)**
1. Briefly explain different categories of intruders. [03]
  2. Briefly explain the different metrics useful for profile based intrusion detection. [04]

- (b)**
1. Explain: Rule based Intrusion Detection [05]
  2. Write a note on: Honey-Pots [02]

**OR**

- Q.4 (a)**
1. Explain the general format of Intrusion Detection specific audit records. [06]
  2. What do you mean by false positive and false negative in Intrusion Detection System? [01]

- Q.4 (b)**
1. Draw the schematic diagram of SSL protocol stack and briefly explain the purpose of any three SSL protocols. [05]
  2. What is the reason for having SSL even though IPSEC is already there? [02]

- Q.5 (a)**
1. Mention and briefly explain the different parameters/fields based upon which packet filtering is normally done. [06]
  2. Between default discard and default accept policy in packet filtering firewalls, which one is better and why? [01]

- (b)
1. Briefly explain Access Control List and Capability List [04]
  2. Briefly explain the “No Read Up” and “No Write Down” rules for Multi-Level Security. [02]
  3. What is a state-full inspection firewall? [01]

**OR**

- Q.5** (a)
1. Draw the schematic diagrams of popular firewall configurations/topologies. [06]
  2. Differentiate between stand-alone/desktop firewall and enterprise firewall. [01]

- (b)
1. Mention the general guidelines for creating a good password. [03]
  2. Just by drawing schematic diagram, show how new password is loaded and existing password is verified in Unix Systems. [04]

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