USN ☐☐☐☐☐☐☐☐☐☐                                    **10EC832**

# Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
## Network Security

Time: 3 hrs.                                                          Max. Marks:100

**Note:** *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

## PART – A

1  a. What are security attacks, security mechanisms and security services? Briefly explain.
                                                                          **(06 Marks)**
   b. Explain Active and Passive attacks with their categories.          **(08 Marks)**
   c. Encrypt the message "Network Security" using key 5 3 1 4 2 6 using double transposition technique.                                                         **(06 Marks)**

2  a. Encrypt and decrypt the message "FRIDAY" using Hill cipher given $K = \begin{bmatrix} 7 & 8 \\ 19 & 3 \end{bmatrix}$ **(10 Marks)**

   b. With a neat diagram, explain single round of DES encryption.       **(10 Marks)**

3  a. Write RSA algorithm perform encryption and decryption using RSA given p = 5, q = 11, e = 3, M = 9.                                                      **(10 Marks)**
   b. Explain Deffie-Hellman key exchange algorithm. Find shared key and public keys of 2 users A and B if q = 11, $\alpha$ = 5, $X_A$ = 3 and $X_B$ = 2.            **(04 Marks)**
   c. Explain public key authority technique for public key distribution.  **(06 Marks)**

4  a. With neat diagram, discuss the basic uses of hash function.        **(12 Marks)**
   b. Write the Digital Signature Algorithm (DSA). Explain signing and verification functions.
                                                                          **(08 Marks)**

## PART – B

5  a. Explain SSL (Secure Socket Layer) with its important concepts and parameters.  **(10 Marks)**
   b. Describe the sequence of events that are required for a transaction is Secured Electronic Transaction (SET).                                                  **(10 Marks)**

6  a. Explain Distributed intrusion detection.                           **(10 Marks)**
   b. With neat diagram explain UNIX password scheme.                     **(10 Marks)**

7  a. Give the taxonomy of malicious programs. Explain.                  **(08 Marks)**
   b. List and explain the phases that virus goes through during its life time.  **(08 Marks)**
   c. Write a note on Macro viruses.                                      **(04 Marks)**

8  a. Give the capabilities and limitations of firewalls.               **(08 Marks)**
   b. Explain the different types of firewalls with neat sketch.          **(12 Marks)**

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# Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
## GSM

Time: 3 hrs.                                                                 Max. Marks:100

*Note: Answer any FIVE full questions, selecting at least TWO questions from each part.*

## PART – A

1  a. Explain the frequency band and time division system characterized in GSM. **(06 Marks)**
   b. With neat diagram, explain the GSM subsystems. **(08 Marks)**
   c. Name the Common Control Channels (CCCH). Explain each. **(06 Marks)**

2  a. What are the advantages and disadvantages of discontinuous transmission in GSM system? **(06 Marks)**
   b. Explain the implementation schemes of slow frequency hopping used in Base Stations. **(06 Marks)**
   c. Discuss the two basic classes of Smart Antenna. **(08 Marks)**

3  a. Explain the five different types of GSM bursts. **(10 Marks)**
   b. With flow diagram, explain the paging procedure of GSM system. **(04 Marks)**
   c. Explain the types of location registration supported by GSM system. **(06 Marks)**

4  a. Explain the attributes of speech coder. **(08 Marks)**
   b. Explain the time domain waveform coding with the help of A-law and μ-law. **(06 Marks)**
   c. Summarize the parameter and bits/frame of GSM half-rate vocoders. **(06 Marks)**

## PART – B

5  a. With illustration, explain the message flow diagram for GSM call release. **(08 Marks)**
   b. Explain SMS, in brief with relevant figures. **(06 Marks)**
   c. Explain pure and slotted ALOHA scheme with their throughput. **(06 Marks)**

6  a. With a block diagram, explain the file structure of SIM card. **(08 Marks)**
   b. Explain the three security algorithms for GSM in detail. **(06 Marks)**
   c. Explain the token-based authentication process in detail. **(06 Marks)**

7  a. Explain the application of a fluid flow model. **(08 Marks)**
   b. Using the following data for a GSM system. Calculate:
      (i) Average busy-hour traffic per subscriber
      (ii) Traffic capacity per cell
      (iii) Required number of BSs per zone and the hexagonal cell radius for the zone
      • Subscriber usage per month = 120 minutes    • RF channel width = 200 kHz, full rate
      • Days per month = 24                          • Capacity of a BTS = 32 Erlangs
      • Busy hours per day = 5                       • Subscribes in the zone = 60,000
      • Allocated spectrum = 5 MHz                   • Area of the zone = 500 km$^2$
      • Frequency reuse plan = 4/12                                           **(08 Marks)**
   c. What are the factors considered for design of a wireless system? **(04 Marks)**

8  a. Explain the TMN management services in detail. **(10 Marks)**
   b. With a neat block diagram, explain the GSM containment tree. **(10 Marks)**