S/C

Paper Code: MIW-601	L	P	C
Paper: Applied Cryptography	4	0	4

INSTRUCTIONS TO PAPER SETTERS:

Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT 1

Security Taxonomy, Domain of information security, Security goals, security attacks, threats Vulnerabilities, Malicious Softwares, Virus, Trojan, Worms, spywares, vulnerabilities, Buffer and Stack over flow, Phishing etc, Security services and Mechanism.

(10 Hrs)

UNIT 2

Mathematics of Cryptography, Integer Arithmetic, modular arithmetic, Linear congruence, Algebraic structures, GF(2n) Traditional Symmetric Key ciphers, Substitution, Transposition, Stream and Block Ciphers , Some Classical systems , Stream ciphers, Block ciphers, Key exchange, Diffie Hellman Key Exchange and Man- In- Middle attack

UNIT 3

(10 Hrs)

Modern Block Ciphers – DES and variant, modes of use of DES, Advanced Encryption Standard Transformations, Key expansion, Public Key Cryptography, Mathematics of Asymmetric Key , Primes, Primality Testing, Factorisaton, RSA algorithm and its application

UNIT 4

(10 Hrs)

Message Integrity and message authentication, Cryptographic Hash Functions, SHA-512, Basic Protocols: key exchange, Authentication, Formal analysis of Authentication and Key exchange protocols, Secret Splitting, Secret Sharing

(10 Hrs)

Text Books

1. Behrouz A. Forouzan , "Cryptography and Network Security", 3rd Edition, 2015, The McGraw-Hill Education
2. William Stallings, "Cryptography and Network security Principles and Practices", 4th edition, 2005, PHI
3. Bruce Schneier, Applied Cryptography, 2nd edition, 1996, Wiley

References:

1. J. Richard Burkle, "Network Management Concepts and Practice : A hands on approach", 3rd Edition, 2000, Pearson education
2. Gollmann, Dieter, "Computer Security", 2nd edition, 2005, John Wiley & Sons Ltd.
3. Micki Krause, Harold F. Tipton, "Handbook of Information Security Management", 6th edition, 2011, Auerbach Publications
4. C P Pfleeger, S L Pfleeger, "Security in Computing", 4th edition, 2006, PHI
5. Ankit Fadia, " Network Security A Hackers Perspective", 2nd edition, 2002, Mc-Millan Publishing

6/C

Paper Code: MCW -603
Paper Title: Wireless Networks

L	P	C
4	0	4

Maximum Marks : 60

INSTRUCTIONS TO PAPER SETTERS:
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Introduction: Introduction to ad-hoc networks – definition, characteristics features, applications. Characteristics of Wireless channel, Ad-hoc Mobility Models:- Indoor and outdoor models.
MAC Protocols: design issues, goals and classification. Contention based protocols- with reservation, scheduling algorithms, protocols using directional antennas. IEEE Standards: 802.11a, 802.11b, 802.11g, 802.15. HIPERLAN. (10 Hours)

UNIT II

Network Protocols: Routing Protocols: Design issues, goals and classification, Proactive Vs reactive routing, Unicast routing algorithms, Multicast routing algorithms, hybrid routing algorithm, Energy aware routing algorithm, Hierarchical Routing, QoS aware routing, Integration of ad-hoc with Mobile IP networks.
Transport Layer And Security: Issues in designing Transport Layer, Transport layer classification, ad-hoc transport protocols. Security issues in ad-hoc networks: issues and challenges, network security attacks, secure routing protocols. (10 Hours)

UNIT III

Wireless Mesh Networks: Necessity for Mesh Networks, MAC enhancements, IEEE 802.11s Architecture, Opportunistic Routing, Self Configuration and Auto Configuration, Capacity Models, Fairness, Heterogeneous Mesh Networks, Vehicular Mesh Networks (10 Hours)

UNIT IV

Wireless Sensor Networks: Introduction, Sensor Network architecture, Data Dissemination, Data Gathering, MAC Protocols for sensor Networks, Location discovery, Quality of Sensor Networks, Sensor Network Platforms And Tools, Evolving Standards, Security Issues, Recent trends in Infrastructure less Networks. (10 Hours)

Text Books:

1. C.Siva Ram Murthy and B.S.Manoj, "Ad hoc Wireless Networks Architectures and Protocols", 2nd edition, Pearson Education.
2. Charles E. Perkins, "Ad hoc Networking", Addison – Wesley.
3. Holger Karl & Andreas Willig, " Protocols And Architectures for Wireless Sensor Networks", John Wiley.

Reference Books:

1. Stefano Basagni, Marco Conti, Silvia Giordano and Ivan Stojmenovic, Mobile Adhoc Networking, Wiley-IEEE press.
2. A survey of integrating IP mobility protocols and Mobile Ad hoc networks, Fekri M. Abduljalil and Shrikant K. Bodhe, IEEE communication Survey and tutorials, v 9,no.1 2007.
3. Feng Zhao and Leonidas Guibas, "Wireless Sensor Networks", Morgan Kaufman Publishers.
4. C.K.Toh, "Adhoc Mobile Wireless Networks", Pearson Education.
5. Thomas Krag and Sebastin Buettrich, "Wireless Mesh Networking ",O' Reilly Publishers.
6. Feng Zhao & Leonidas J. Guibas, "Wireless Sensor Networks- An Information Processing Approach", Elsevier.
7. Kazem Sohraby, Daniel Minoli, & Taieb Znati, "Wireless Sensor Networks- Technology, Protocols, And Applications", John Wiley, 2007.

7

L C

Paper Code :MEW-605 4 4

Paper Title: Microcontrollers and Applications

Maximum Marks :60

INSTRUCTIONS TO PAPER SETTERS:

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 10 marks.

UNIT I

Binary data representation: decimal system, binary system, octal system, hexadecimal system, binary coded decimal system, decimal conversion, decimal to Hexadecimal, binary addition and subtraction, binary multiplication and division, binary coded decimal addition, signed numbers, twos complement arithmetic, hexadecimal arithmetic, digital logic gates, MCS51 Micro controller – difference between micro controller and microprocessor, criteria for choosing a microcontroller, internal architecture of MCS51 microcontroller and its family [10H]

UNIT II

8051 assembly language programming: instruction set-arithmetic, logical, data transfer branching and Flag manipulation Instructions, addressing modes, 8051 timer/counter, serial communication programming, interrupts structure, interrupt programming, usage of C programming to 8051 family [10H]

UNIT III

Real word interfacing: Analog to Digital converter, Digital to Analog converter, Mechanical switches, keypads, LEDs, seven segment display, LCDs, keyboard, DC motor, stepper motor, PWM, External Memory Interface. [10H]

UNIT IV

Microcontroller Applications: C programming of Podium timer, microcontroller based menu card, chimney sentinel, counting cars, anonymous voting, efficient lighting using microcontroller, I2 C interface with serial EPROM, reading a PWM waveform using microcontroller, 8051 based pick and place robot [10H]

Text Books:

1. Mazidi, "The 8051 micro controller and embedded system", Pearson education., 2002
2. Han-way Huang, "Using the MCS-51 microcontroller", Oxford University Press, 2009.
3. Ajay V Deshmukh, "Microcontrollers (Tuning and applications)", The McGraw Hill publications, 2007.
4. Parab, Shekale, Kamat & Naik, "Exploring C for Micro controllers: A hands on approach", Springer Verlag Publications, 2007.
5. Kenneth Hintz and Daniel Tabak, "Microcontrollers architecture, Implementation and programming", TMH, 2005
6. A. K. Stiffler, "Design with microprocessors for Mechanical Engineers", McGraw Hill, 1992