(IT-452) Information Technology Applications

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<td>4</td>
<td>1</td>
<td>100</td>
<td>25</td>
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**Unit-1**
History of IT, Basic Information Technology Concepts. Human-Computer Interface, Social Implication of IT, privacy and Security

**Unit-2**

**Unit-3**
SAP, SAP past present and future, The integrated R/3 repository, Enterprise and modeling with R/3, Object of R/3 data dictionary, Customizing R/3 : Concepts and techniques

**Unit-4**
Multi Client Server Solution – Open Technology- User Interface- Applications Integration Basic architectural Concepts, The System Control Interface, Services-Presentation Interface-Database Interface

**Books Recommended:**
1. Jost Antonio Fernandz - The SAP R/3 Hand Book TMH New Delhi
2. V.K. Garg and N. K. Venkita Krishna, Enterprise Resource planning Concepts and Practice

**Note:** These will be 8 questions in all. Two questions will be set from each unit. Students are required to attempt five questions selecting at least one question from each unit.
(IT-454) MOBILE COMMUNICATION

L  T       Exam   Sessional Duration
4  1        100       25   3Hrs.

Unit-1
Introduction:
Introduction cell mobile system, tuning efficiency, mobile radio environment, frequency reuse, co channel interface reduction, and handoff mechanism cell site and mobile antennas, noncochannel interface. Frequency spectrum utility and management channel management, type of handoff and dropped call rate, cell splitting. Analog and digital modulation techniques, performance of various modulations, spectra efficiency, and error rate, GMSK, GFSK, DQPSK modulation technique in wireless system comparison of various modulation techniques.

Unit-2
Point to point model propagation over terrains, Losses, Power requirements, Smart Antennas, antennas at site, gain and pattern relationship mobile antennas, tilting effect, parasitic elements usage, diversity techniques.

Unit-3
Digital technology, digital speech, digital mobile telephony, GSM, Multiples access techniques, north TDMA, American TDMA (ISI36), Japauer cellular TDMA (DDC), CDMA, ISFS North American CDMA standards, PCS, PHS, Advanced system, GPRS, UMTS, IMT, WAP.

Unit-4
Satellite system architecture, satellite orbit and constellations, LEO and MEO system, GPS Information, Iridium, MSAT, VSAT, DBS, Orbcomm satellite service, use of mobile communication networks, concepts, advanced mobile communication system using satellite,

Book Recommended
2. GSM, CDMA & 3G System-steel Lee and Gluis, JW.
3. K.FEHER-Wireless Digital engineering

Note: Examiner will set 8 questions in all, at least two questions from each unit. Students are required to attempt five questions selecting at least one question from each unit.
## Books and References:

12. RFCs and Internet Drafts, available from Internet Engineering Task Force.
Articles in various journals and conference proceedings.
Note: Examiner will set 8 questions in all, at least two questions from each unit. Students are required to attempt five questions selecting at least one question from each unit.
UNIT-1
Introduction, Essentials of crypto, essentials of network mg and the internet, setting realistic security objectives, appropriate communication security, legal restrictions encryption basic building blocks, how crypto system fail, choosing between strong and weak crypto. Security objectives, example in line encryptor, deployment example, point-to-point encryption, IP routed configuration, key recovery and escrowed encryption, Basic issues in secret key management, random key generation, automatic rekeying, and manual key distribution centers, maintaining keys and system security.

UNIT-2
Security at IP Layer and VPN: Basic issues with using IPSEC. Cryptographic checksums, Ip security protocol, IPSEC key management, other TCP/IP network security protocols, virtual private networks (VAN), basic issues IPSEC proxy cryptography, IPSEC encrypting roater, and site-to-site encryption. IPSEC and Public key crypto, basic issues with IPSEC clients.

UNIT-3
IPSEC client to server site remote access, Internet firewalls, IPSEC firewall, a VAN with a firewall, public key cryptography, secret key exchange with RSA crypto, Secure socket layer (SSL) Internet security and public key certificates: Basic issues in internet transaction security, transaction world wise Web, security alternatives for web form, web browser with SSI,

UNIT-4
Web server with server with SSL, vending with exportable encryption, basic issue with email security, technology- offline message keying digital signatures, secure E-mail client distribution public keys, Public key certificates, certificates distribution centralized distribution, centralized certification authority hierarchical certification authority.

Book Recommended:

Revise: Examiner will set 8 questions in all, at least two questions from each unit.
Students are required to attempt five questions selecting at least one question from each unit.
(IT-470) Data Warehousing and Data Mining

UNIT-1

UNIT-2
Unlocking the Data Asset for end users (The use of Business Information): Designing business information warehouse, populating business information warehouse, user access to information, information data in context. Implementing the Warehouse (Managing the project and environment): Obstacles to implementation, planning your implementation, justifying the warehouse, organizational implications of data Warehousing, the data warehouse in your organization, data warehouse management, looking to the future.

UNIT-3
Introduction of Data Mining: Motivation, importance, data mining, kind of data, functionalities, interesting patterns, classification of data mining system, major issues. Data warehouse and OLAP technology for data mining: data warehouse, operational database systems and data warehouse architecture, implementation, development of data cube technology, data warehousing to data mining, data warehouse usage.

UNIT-4
Data Preparation: Preprocess, data cleaning, data integration and transformation, data reduction, discrimination and concept hierarchy generation. Data Mining Primitives, languages and system architectures, graphical user interfaces. Concept Description: Characterization and comparison data generalization and summarization based characterization, analytical characterization, and analysis of attribute relevance, mining class comparison, and mining descriptive statistical measures in large databases. Mining association rules in large databases, mining single dimensional Boolean association rules from transactional databases, mining multi-dimensional association rules from relational databases and data warehouses, from association to correlation analysis, constraint based association.

Books and Reference:
1. J. Han & M. Kanber, Data Mining: Concepts and Techniques, Morgan Kaufmann/Elsevier, India, 2001
3. Recent literature from ACM SIGMOD, VLDB, IEEE Trans. Knowledge & Data Engg, Data Mining & Knowledge Discovery, ACM SIGKDD, IEEE ICDM, SIAM, Data Mining, ICML.
5. C. Seidman, Data Mining with Microsoft SQL Server 2000 Technical Reference
Note: Examiner will set 8 questions in all, at least two questions from each unit.
Students
are required to attempt five questions selecting at least one question from each unit.
UNIT-I

UNIT-II

UNIT-III
Shared data and transactions – client server- fault tolerance and recovery transactions- nested transactions. Concurrency control- locks- optimistic concurrency control- timestamp ordering. Distributed transactions- atomic commits protocols concurrency control distributed deadlocks- transactions with replicated data.

UNIT-IV

Text Books and References:
5. George Tel, “Introduction to Distributed Algorithms”, Cambridge University Press, 1994 6)
10. Distributed operating system, “P.K. Sinha”, PHI
11. Advance operating system, “Mukesh Singhal”, TMH
12. Advance database system, “Raghu Rama Krishan”

Note: Examiner will set 8 questions in all, at least two questions from each unit. Students are required to attempt five questions selecting at least one question from each unit.
UNIT-I
CPU Architecture and programming: Embedded System Revolution, ARM Controller, architecture, addressing mode, Instruction Set, Special features – Analog DSP controllers Texas

UNIT-II
Embedded software: Examples of embedded system, their characteristic and their typical hardware components, embedded software architectures, round robin, round robin with interrupts, Function queue scheduling and real time operating system, selection. Real time operating system: Tasks and task states, tasks and date shard data and reentrancy, semaphores and shared data use of semaphores, protecting shard data.

UNIT-III
Features of Real Time Operating System: Messages, queues, mailboxes and paper, time function, events, memory management, interrupt basic system design using an RT (OS design principles, interrupt routines, task structures and priority.)

UNIT-IV
Examples of and embedded system design: Problem specification, resolving timing problem, use of an RTOS, work division into tasks dealing with shared data, encapsulating semaphores and queues, saving space and power.

Text Books and References:
1. AN Embedded Software Primer, David E. Simon Pearson Education Asia Publication
2. Frank vahid and Tonoi Givargis- Embedded system Design
3. Wayne Wolf Computers as Components Principles of Embedded Computing system Design
4. John B peatman Embedded Design pict 18f452
1. Observe the Modulation and demodulation using internal generation of 2047 bit PN sequence as modulator input and Bit error rate measurement with PRBS-11 data (2047 bits).

2. Study of home networking using combination of CDMA, BLUETOOTH, infrared Ethernet & various sensors like fire, gas air conditioning. Use at least five sensors

3. Understanding RF environment & study of GSM network by actually connecting to the GSM environment by any services provide SIM like airtel, idea, RPG ect.

4. Real time study of various GSM commands like Network registration, call control, call setting, call information, phone book commands & commands related to network information about number of cells and there strength etc.

5. To understanding the concept of GPS and establishing link between GPS Satellite & GPS Trainer.

6. To establish audio & video combined link & data communication between transmitters, receiver satellite transponder simulated in a lab.

7. To study and observe the difference in uplink & downlink frequency.

8. To establish PC-to-PC communication using satellite communication link.

9. To calculate antenna gain and antenna beam width.

10. Study and observe the Wave Modulation and Demodulation

11. To plot the radiation pattern of micro strip antennas.

12. Study and observe the antenna matching and antenna radiation with distance.

Note: Students should perform at least 10 experiments from the list