Spring 2020 Semester final exam

DataCom(CSE 209)

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| 1 | Analog Transmission: ASK, FSK, PSK, and QAM with problems and figures |
| 2 | AM, FM, and PM with problems and figures Multiplexing-FDM, TDM, CDMA |
| 3 | Transmission Media: Cable media: Twisted pair cable, coaxial cable, and fibre-optic cable |
| 4 | Wireless media: radio wave, microwave, and infrared |

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| 5 | Error detection and correction: Types of errors |
| 6 | Error detections: parity check, cyclic redundancy check |
| 7 | Checksum |
| 8 | Error correction: retransmission, forward error correction-Hamming code |
| 9 | Multiple access protocol: Random access: CSMA |
| 10 | CSMA/CD , CSMA/CA |
| 11 | Controlled access: Polling, reservation, and token passing |
| 12 | Multiple access protocol continued |
| 13 | Ethernet: Traditional Ethernet, Fast Ethernet, Gigabit Ethernet |
| 14 | Connecting devices: Repeaters, Hubs, Bridges |
| 15 | Switches and Routers |
| 16 | Data Link control: Flow control and error control |
| 17 | Stop-and-Wait ARQ, Go-back-N ARQ |
| 18 | Selective repeated ARQ |
| 19 | HDLC |
| 20 | Congestion control and QoS: Data traffic, Congestion Control |

DB(CSE 207)

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| **Entity Relationship Model:** Entity set, relationship set, cardinality constraints, participation constraint, ER diagram, Degrees of relationship set, |
| Attribute types, mapping cardinality, Entity Roles, Weak entity set, Reduction to relational model, Specialization, Generalization, Aggregation |
| **Overview** of **design**, **build** and **test** real life database design |
| **Overview** of **design**, **build** and **test** real life database design |
| **Relational Database Design:** Atomic attribute, Decomposition, Functional dependency. |
| Closure set, Determine keys( Super key, Candidate key, Primary key) from closure set. |
| **Determine** canonical cover fromFunctional dependency using closure set |
| Normalization and Database Design:1st ,2nd |
| Normalization and Database Design: 3rd Normal form and Boyce-Codd Normal Form (BCNF) |
| Determine NF, Normalize database, De-normalization. |
| **Indexing and Hashing:** Search key, index file, ordered indices, dense indices, sparse indices, introduction to Hash indices, index evaluation metric, |
| Introduction to multilevel index: B+ tree, construction and insertion in B+ tree |
| Introduction to multilevel index: B+ tree, update, delete operation of B+ tree |
| Hashing: Hash function, bucket, static hashing, handling of bucket overflow. |
| Dynamic hashing, overview of extendible hash structure. |
| **Transactions:**  Transaction Concept, A Simple Transaction Model. |
| **Transactions:** State diagram of Transaction, ACID properties of Transaction. |
| Storage Structure, Transaction Atomicity and Durability |
| Transaction Isolation and Atomicity, Isolation Levels, |
| **Information Retrieval:** Ranking, indexing documents, Retrieval effectiveness and measurement |

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| Floating point representation, floating point addition |
| Basic MIPS, clocking methodology, Data path |
| Pipelining, Hazards, data path and control |
| Data Hazard, Control hazard |
| Memory hierarchy, Caches |
| Designing memory system, Cache performance |
| Reducing cache miss |
| Virtual memory |
| Page, Page faults |
| Virtual machines |
| I/O, Disk storage |
| Interfacing |

ComArch(CSE 215)