CSET 150

# NETWORK DESIGN AND MANAGEMENT

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Week # 1

CSET 150 AND CSEL 150

# NETWORK DESIGN AND MANAGEMENT

| | | | |
|---|---|---|---|
| **Total Marks** | | **75** | |
| Exam | 70% | 52.5 | 26.25 Part A & B |
| Class Test | 20% | 15 | |
| Attn. | 10% | 7.5 | |
| | | 75 | |

| | | | |
|---|---|---|---|
| Lab | | | |
| Total Marks | | 25 | |
| Practical | 60% | 15 | |
| Quizz/Viva | 30% | 7.5 | |
| Attm. | 10% | 2.5 | |
| | | 25 | |

# NETWORK DESIGN AND MANAGEMENT

**Network Design:** Design Principles, Determining Requirements, Analyzing the Existing Network, Preparing the Preliminary Design, Completing the Final Design Development, Deploying the Network, Monitoring and Redesigning, Maintaining, Design Documentation, Modular Network Design, Hierarchical Network Design, The Cisco Enterprise Composite Network Model.

PART A

**Technologies - Switching Design:** Switching Types, Spanning, Tree Protocol, Redundancy in Layer 2 Switched Networks, STP Terminology and Operation, Virtual LANs, Trunks, Inter VLAN Routing, Multilayer Switching, Switching Security and Design Considerations, IPv4 Address Design, Private and Public Addresses, NAT, Subnet Masks, Hierarchical IP Address Design, IPv4 Routing Protocols, Classification, Metrics, Routing Protocol Selection.

**Network Security Design:** Hacking, Vulnerabilities, Design Issues, Human Issues, Implementation Issues, Threats, Reconnaissance Attacks, Access Attacks, Information Disclosure Attacks, Denial of Service Attacks, Threat Defense, Secure Communication, Network Security Best Practices, SAFE Campus Design.

**Wireless LAN Design:** Wireless Standards, Wireless Components, Wireless Security, Wireless Security Issues, Wireless Threat Mitigation, Wireless Management, Wireless Design Considerations, Site Survey, WLAN Roaming, Wireless IP Phones, Quality of Service Design, QoS Models, Congestion Avoidance, Congestion Management.

PART B

**Network Management:** ISO Network Management Standard, Protocols and Tools, SNMP, MIB, RMON NetFlow, Syslog, Network Management Strategy, SLCs and SLAs, IP Service-Level Agreements, Content Networking Design, Case Study, Venti Systems.

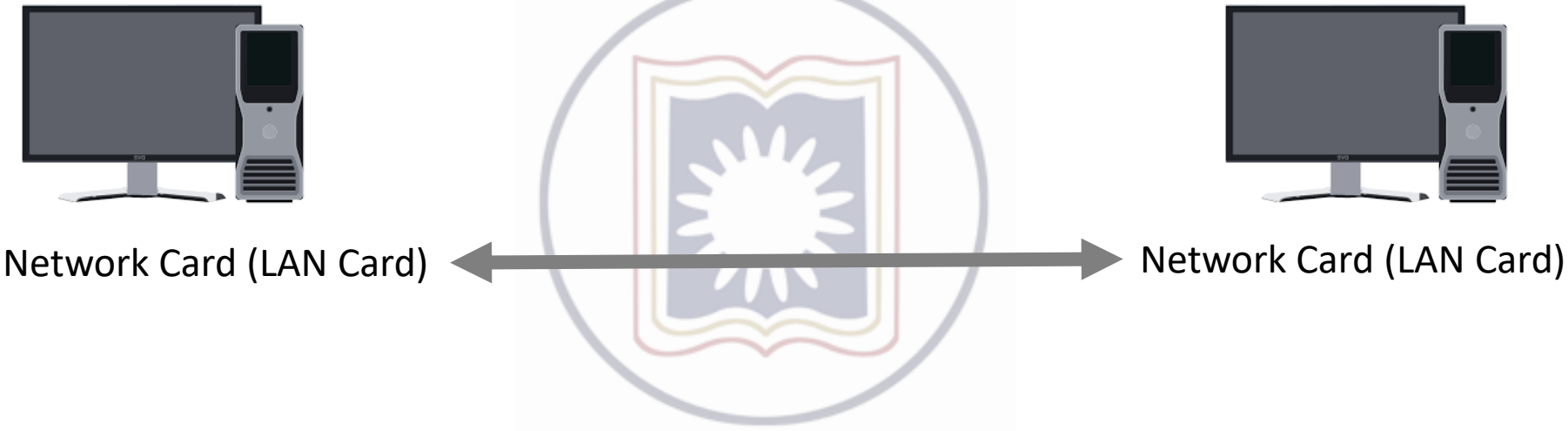
**References:**


| | | | |
|---|---|---|---|
| 1. | D. Tiare and C. Paquet | : | **Campus Network Design Fundamentals,** *Pearson Education*. |
| 2. | Craig Zacker | : | **The Complete Reference: Upgrading and Troubleshooting Networks,** *Tata McGraw-Hill.* |
| 3 | D. L. Spohn, T. Brown and S. Grau, | | **Data Network Design,** McGraw-Hill. |
| 4. | William Stallings | : | **Wireless Communications and Networks**, *Prentice Hall* |
| 5. | T. S. Rappaport | : | **Wireless Communications**, *Pearson Education* |
| 6. | M. L. Liu | : | **Distributed Computing: Principles and Applications,** Pearson Education. |
| 7. | R. Orfail, D. Harkey | : | **Client/Server Programming with Java and CORBA,** John Wiley and Sons, Inc. |

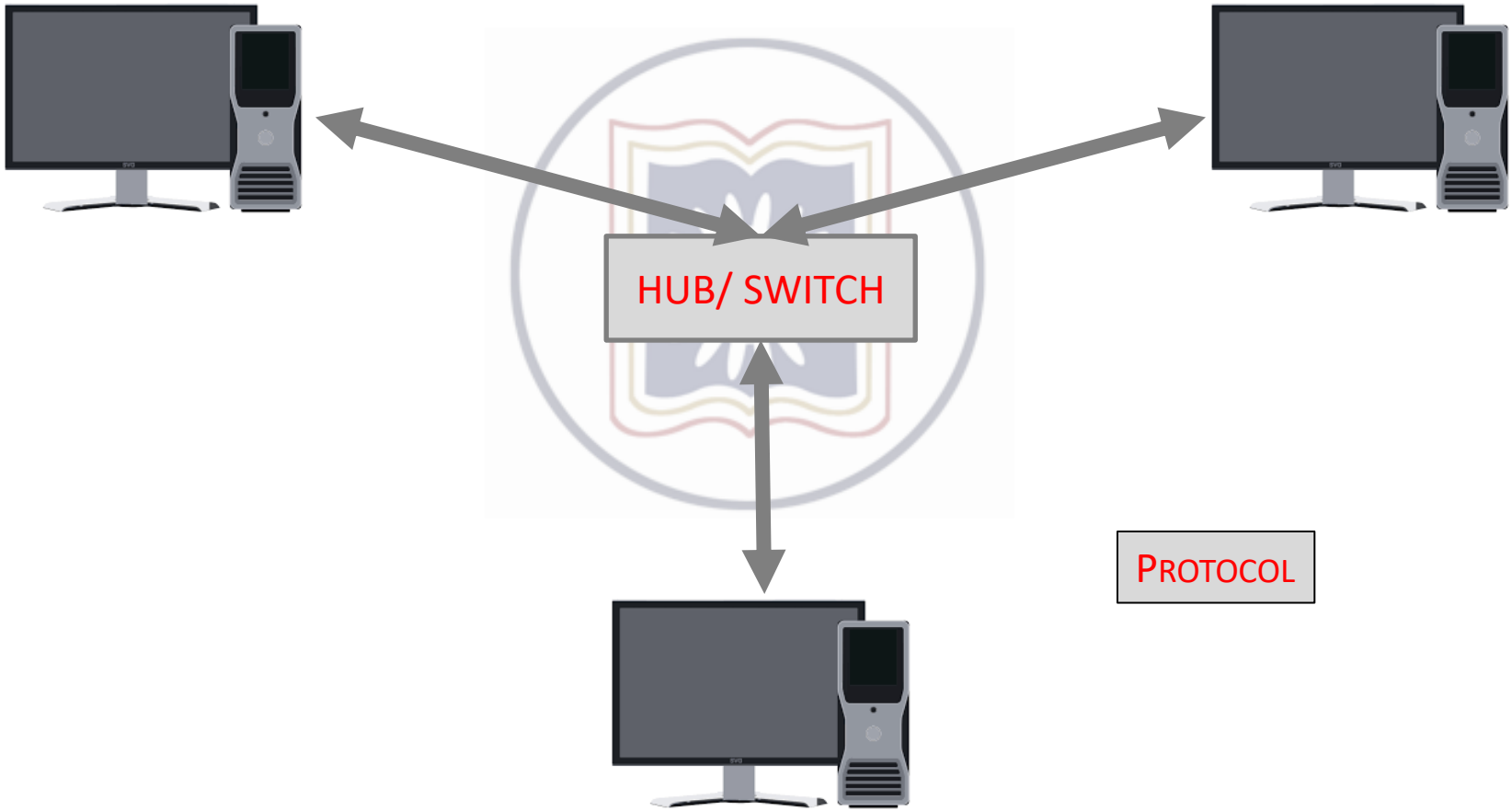

**Application Layer:** Internet and intranets, Internet services and goals, DNS, SMTP, FTP, Telnet, HTTP, World Wide Web (WWW), DHCP and BOOTP.

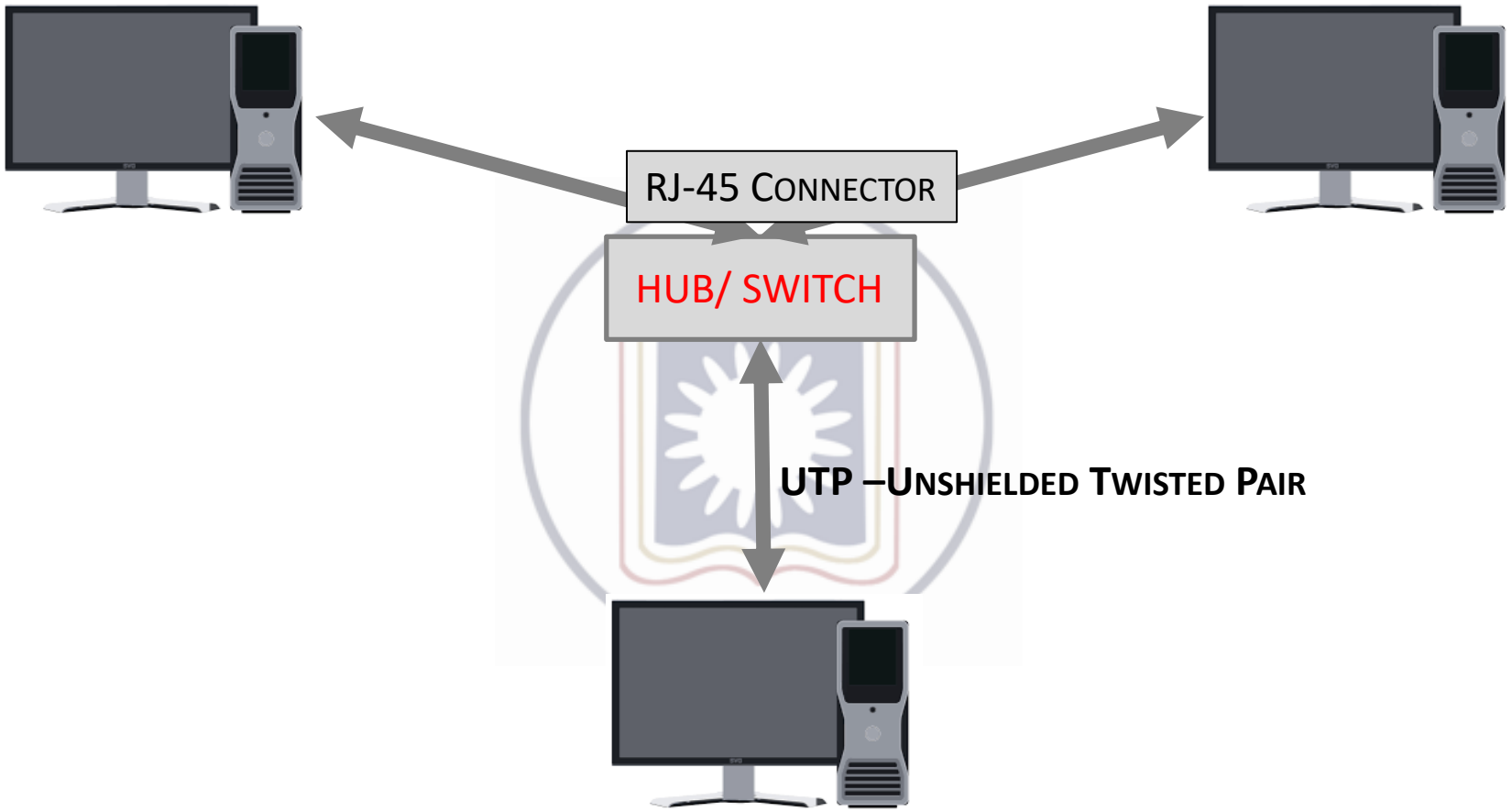
**Networking in Practice:** Designing LAN, Cabling, Establishing Client- Server network, Configuring: Directory Server, Proxy server, FTP server, E-mail server, web server, DB server, Firewall, Network troubleshooting, network maintenance, network monitoring, Network programming.

# FUNDAMENTAL IDEA

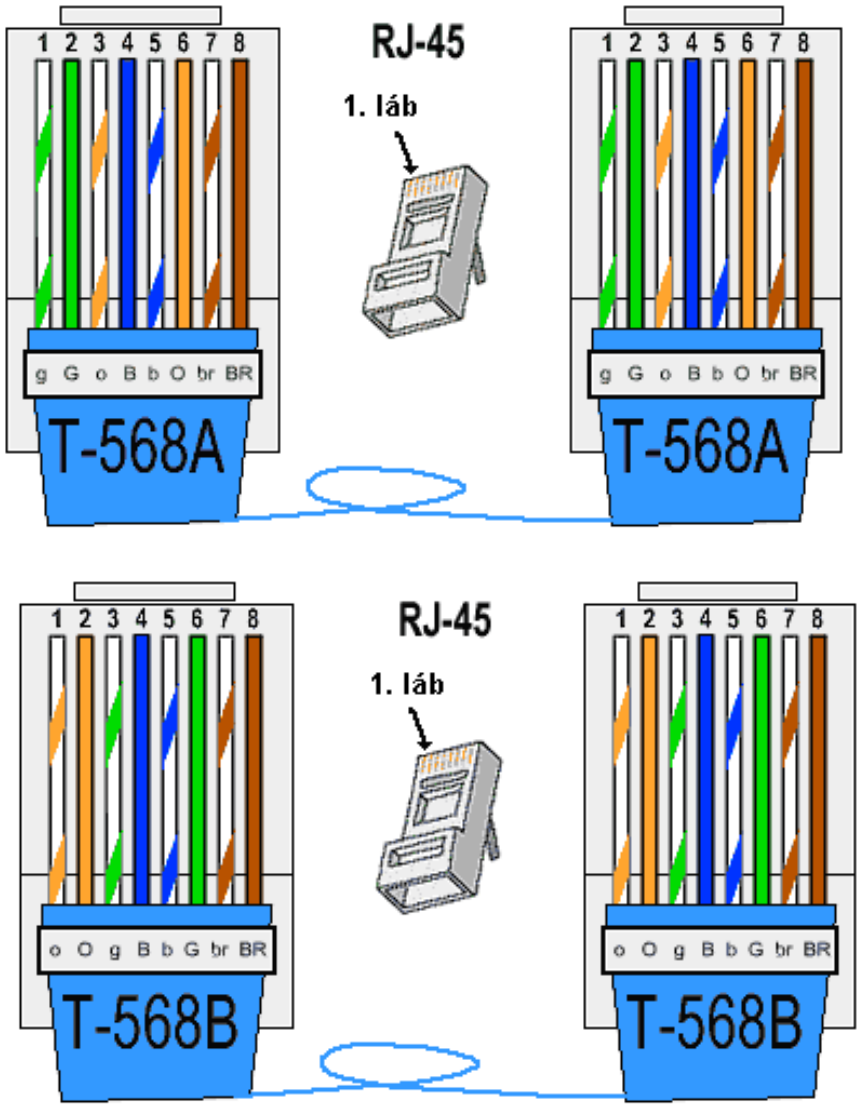


# FUNDAMENTAL IDEA




RJ-45 CONNECTOR
HUB/ SWITCH
UTP –UNSHIELDED TWISTED PAIR

# Lab Work


RJ-45
1. láb
1 2 3 4 5 6 7 8
g G o B b O br BR
T-568A
1 2 3 4 5 6 7 8
g G o B b O br BR
T-568A
RJ-45
1. láb
1 2 3 4 5 6 7 8
o O g B b G br BR
T-568B
1 2 3 4 5 6 7 8
o O g B b G br BR
T-568B