

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2080 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

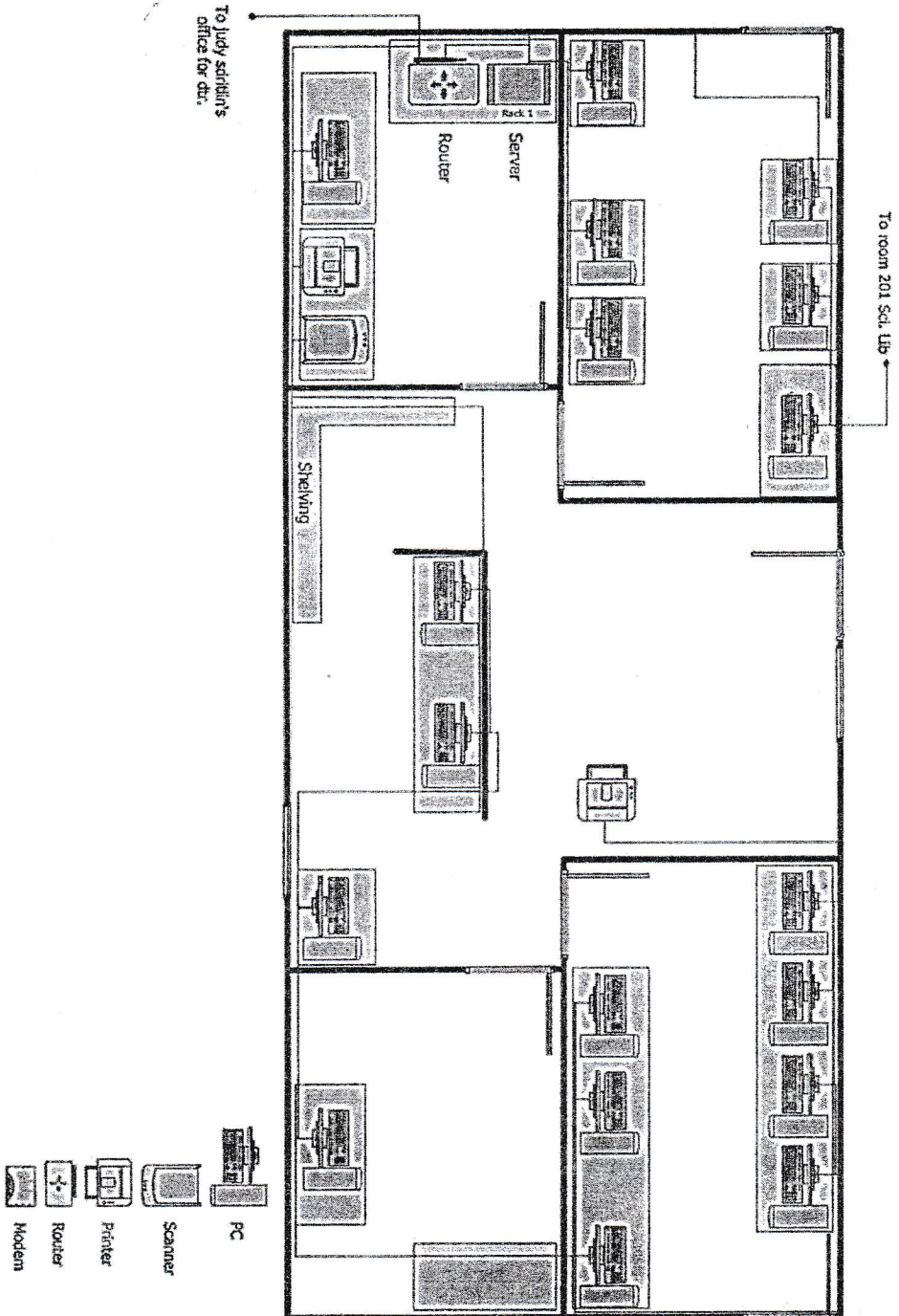
Subject: - Internet and Intranet (CT 754)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Necessary figures is attached herewith.
- ✓ Assume suitable data if necessary.



1. What are the major components/organization of internet ecosystem? Is internet backbone cabling - Submarine Cable applicable for the landlocked country Nepal? [4+4]
2. Draw the IPv6 header structure and compare this header with IPv4 header in terms of Routing and Quality of Service. If a Machine's MAC address is 02:1A:23:B2:45:A4, then Find the following IPv6 address. [4+6]
 - a) 64-bit Interface ID
 - b) Link local
 - c) Unique Local address
 - d) Solicited Node Multicast Address
3. What is ISP tiered architecture? How to implement N-Tier architecture? Explain. Describe PGP services for secure email communication. [4+6]
4. List the virtual hosting approaches for the Web server services. Critically Compare HTTP1.1 Vs HTTP2.0 Vs QUIC protocol for internet communication. [3+3.5+3.5]
5. What are the problems of DNS round robin? How CARP works for load balancing? Describe the use of RADIUS server. [2+5+3]
6. Consider Figure 1 (Floor Planning), perform the following [3+4+5]
 - a) Provide Logical IPv6 Address block to cover all the wired and wireless networking devices and servers/routers etc.
 - b) Develop the Bill of Quantity (BoQ) for all the associated equipment listed in the figure in addition with network rack, cable managers, CAT 6 cable trunk, dual port information outlet etc for complete and secure intranet deployment.
 - c) Draw the logical network deployment diagram showing the connections of server, routers, and firewalls up to wired and wireless stations.
7. Explain the VoIP operation with its types. Critically explain the legal issues and economic aspects of IP interconnection. [5+3+3]
8. Write Short Notes on (Any Three) [3×3]
 - a) Unified Messaging System
 - b) RFC and their types
 - c) Roles Packet of Clearing House and Data Center Setup Requirement
 - d) xDSL

Figure 1: Floor Planning



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1. How does the IANA help for internet management in this world? Explain with some example. Compare the optical backbone with marine cables. [4+4]
2. Explain along with a well illustrated diagram the difference between IPV4 and IPV6 header in terms of routing and fragmentation. [8]
3. HTTP is stateless. Justify this statement. What are the features of HTTP 2.0? [4+4]
4. Do Ajax applications always deliver a better experience than traditional Web Applications? Explain in brief. Explain the superior features of Laravel framework. [4+4]
5. How does CARP method help for load balancing? Explain with a suitable example. How can a firewall protect the IT infrastructure inside your organization? [6+4]
6. Differentiate between the internet, intranet and extranet on the basis of benefits and drawbacks. How does CMS help in intranet system development? [5+4]
7. What do you think is the most challenging part of being a VOIP? Explain in brief. Compare H323 with SIP for VOIP communication. [4+4]
8. Suppose Nepal Government purchased an IP 180.5.6.32/16 from APNIC and you have a chance to be an IT consultant for network management in Kathmandu Metropolitan city. Design the redundant/loop free intranet logical and physical network for Kathmandu Metropolitan city which has proposed for six sections with two departments (Administration and Operational) block and a Server room. Server room contains DNS, Email, WEB and Database servers and each department has 10 computers with wireless devices. Propose appropriate tools (L1, L2, L3, Firewalls, WAP), physical links for intranet network and also prepare the BOQ. [12]
9. Write short notes on: (Any Three) [3×3]
 - a) Packet Clearing House
 - b) Browser as a rendering engine
 - c) FTP
 - d) Quic protocol

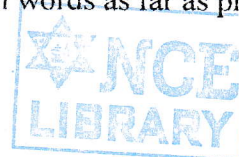
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1. How is internet governed? Discuss the role of IANA in regulation of the internet. Explain the IPV6 Address distribution plan of IANA. [5+5]
2. If "We Have Enough Addresses Today". Then, why should we bother implementing Ipv6? Differentiate the fragmentation process among the IPv4 and IPv6 address. Suppose a data packet has 4000 bytes and MTU of 1500 bytes, find the no of fragments and packet size of each fragment for IPv4. [3+3+4]
3. What is PGP? Explain the operation of PGP for authentication and confidentiality with necessary diagrams. [2+8]
4. What is web server? How is web server different to web site? Discuss in brief. What does different HTTP status codes signify? Explain with few common codes. [5+5]
5. To manager server for load balancing, which technique will you use and how? Write down the steps to configure the IP based and Name based virtual hosting in apache server. [4+4]
6. Provide IT infrastructure details for a government school with 4 departments including ISP department which are around 500 meters apart from each other. Three departments have 5 labs each with around 24 computers in each room. ISP contains server farm with server like DNS, DHCP, E-mail, FTP and webserver and the main internet router which will be connected to upstream provider. Propose appropriate equipment (L1, L2 and L3) and physical wires for the network design. [12]
7. What is VoIP and IP interconnection? Explain the features of STP. [2+4+4]
8. How does RFC help in the development and distribution of internet? What are the CDNs based approach on the content cached and refreshed? Explain with clean diagram. [3+3]
9. Write short notes on: (Any Two) [2×2]
 - a) AJAX
 - b) Digital Business vs Internet Commerce
 - c) Group communication

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***Subject:** - Internet and Intranet (CT 754)*

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1. Explain ISPs and how they are interconnected and also explain distinguishing feature of a tier 1, tier 2 and tier 3 ISPs. [4+6]
2. Describe the IPV6 header to justify the statement "IPV6 have better header format to support real time applications like: video conferencing". Describe IP datagram fragmentation process in IPV6. [5+5]
3. What do you think are the features that a web browser needs to incorporate? Compare and contrast among HTTP, SMTP and PGP. [8]
4. Explain different type of virtual hosting with an example. Write down the major steps while configuring named based virtual hosting. [3+5]
5. Describe how content distribution network reduces the delay in receiving a requested object. Will content distribution reduces the delay for all objects requested by a user? Explain your answer with appropriate figure. [8+2]
6. Design the redundant network for IOE Pulchowk campus with 4 departments including ISP which are around 300m apart from each other. Three departments have 4 labs each with 24 computers in each room. ISP contains server farm with server like DNS, DHCP, Email, FTP, NMS and webserver and the main internet router which will be connected to upstream provider. Propose appropriate equipment (L1, L2 and L3) and physical wires for the network design. [10]
7. Define the terms internet, intranet and extranet and explain the role each plays in e-business. [8]
8. What is an electronic payment system? What are the advantages of having e-commerce over extranets? What are its types and advantages? [2+2+6]
9. Write short notes on: (Any Two) [2×3]
 - a) WYSIWYG
 - b) DHCP
 - c) AJAX

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Bhadra

Exam.	Regular / Back		
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Year / Part	IV / II	Time	3 hrs.

Subject: - Internet and Intranet (CT 754)

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- Discuss briefly about the IANA responsibilities? Explain the internet number management hierarchy with diagram. Describe the necessity of internet backbone in the internet connection with examples? [3+3+2]
- Compare the IPv4 and IPv6 header format with diagram. What are the relationship between TCP and IP? How fragmentation process is done in IPv6? Explain with a suitable example. [4+2+4]
- Explain what conditional GET is and also explain the role of conditional GET in web browsing? What are the essential components of 3-tier client/server architecture? [4+4]
- Clarify "Browser as a rendering engine" with suitable example? Mention the benefits of AJAX. [4+4]
- What is Fair Use Policy? Describe the use of RADIUS server in different ISPs controlling the FuP limit. How is CHAP integrated with RADIUS for authentication? [4+6]
- Differentiate between the internet and intranet on the basis of benefits and drawbacks. Explain about the VPN methods. Why CMS is important in intranet system development?[3+3+2]
- What is VoIP? A friend of yours uses an ADSL network to use the internet: he wants to communicate to you using ISP cloud for VoIP. Explain the necessary network diagram for the communication. [2+8]
- Design intranet network provided with primary and secondary link for IOE with constituent campus (Eastern Campus, Western Campus, Thapathali Campus and Pulchowk Campus), that are located in different location. IOE having a control department that contain DNS, DHCP, EMAIL, WEB and DB Server. Assume the each campuses have 50 computers and 10 wireless devices. Propose appropriate tools (L1, L2, L3, Firewalls, WAP), physical links for intranet network and also make the BOQ. [12]
- Write short notes on: (*Any Two*) [3×2]
 - Cookies
 - Unified Messaging System
 - Firewall and DMZ
