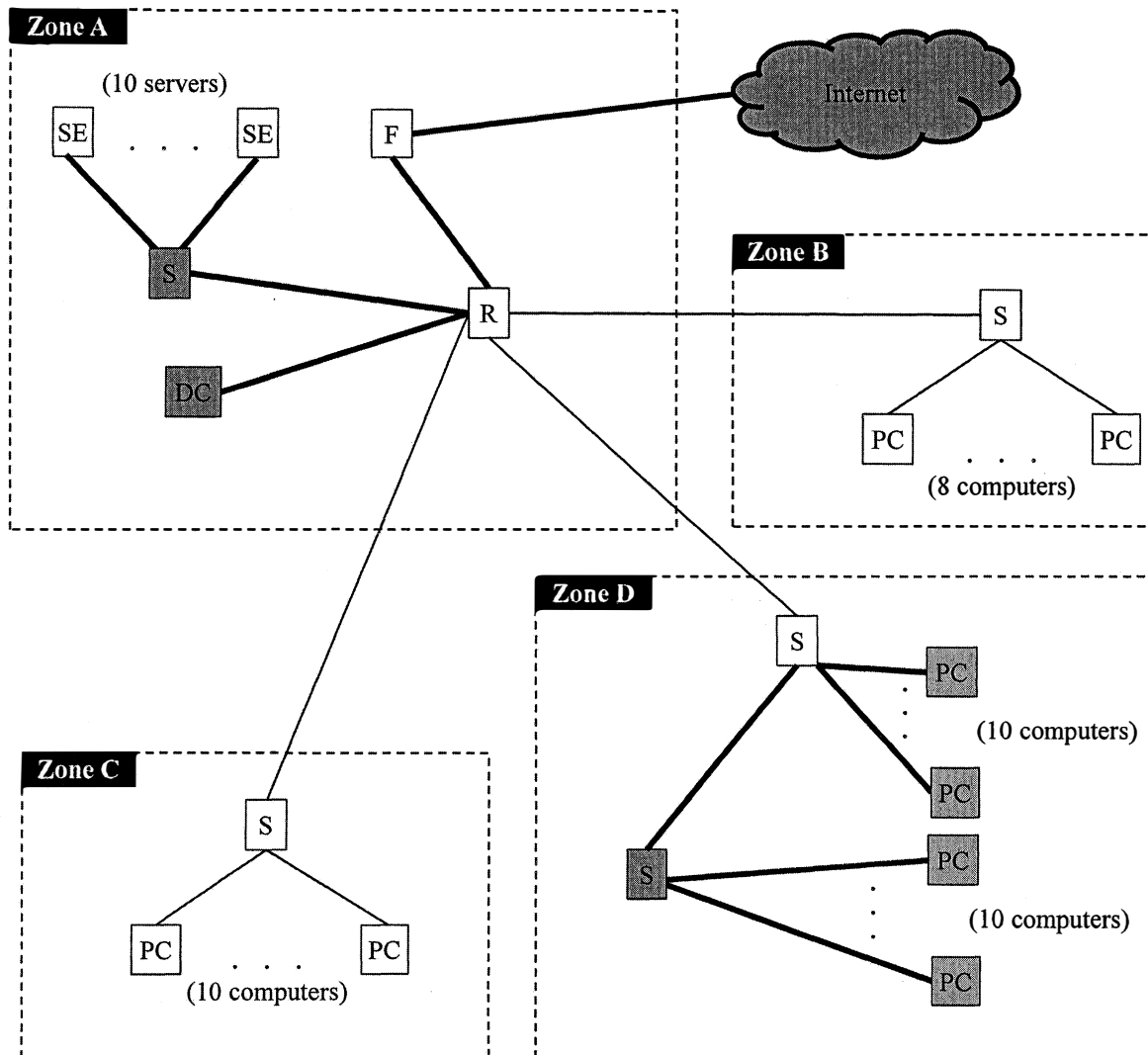


Paper 2B

	Marks
1. (a) It is fibre optics because it supports the transmission for a very long distance.	1+1
(b) (i) X – switch Y – router Z – firewall	1×3
(ii) Block unauthorised access from the Internet. / Prevent hacking.	1
(c) Hardware control (NIC) / MAC filtering	1
Software control (single login)	1
(d) Set the same SSID.	1
Set the same security method/password.	1
(e) (i) Provide temporary power supply for the server.	1×2
Provide a steady power supply for the server.	
(ii) Database server	1
(iii) Mr Li should create backup of important data. / Mr Li should shut down the server/database services properly.	1
2. (a) (i) $500 \times 8 / 50$ ①	2*
= 80 s	
(ii) $1024 \times 8 / 100$ ①	2*
= 82 s (or 80 s)	
(b) There is a network interruption/interference in the coffee shop.	1×3
A maximum bandwidth is set.	
More than one device are connected to the network.	
Alternatives: Overheads /	
Poor reception of the network signal due to an unstable connection /	
Network devices in a location with poor reception / obstacles	
(c) (i) (1) Staff computer	1
(2) Staff computer and home computer	1
(ii) VPN channel / Encryption	1
✕ Anti-eavesdropping device	
(d) (i) Design A: The router can first scan through the incoming message so as to ①	2
reduce the loading of the proxy server. ①	
Or	
Design B: The proxy server can hide the IP addresses of the devices ①	
so as to provide higher security level for the network. ①	
(ii) It temporarily stores some web pages once a network user has visited. (recently visited) When	2*
other network users visit the web pages, they can directly access those stored in the proxy server	
rather than downloading the web pages through the Internet again, leading to saving time on	
download. (speed of access)	
(iii) Filter indecent web sites. / Record browsing history.	1

		Marks
3.	(a) (i) ① understanding of duplex communication mode	1
	① advantage (simultaneous communication)	1
	(ii) ① understanding of synchronous transmission	1
	① advantage (lower overhead/higher throughput)	1
	(iii) ① understanding of circuit switching	1
	① advantage (a dedicated connection)	1
(b)	(i) source address, destination address, length of the packet, checksum, identification tag, priority (Quality of Service), hop count/TTL (Time to live), port number	1×3
	(ii) A checksum will be calculated for error checking. The data packets are reassembled in the correct order.	1 1
(c)	(i) $1024 - 40 = 984$ bytes	1
	(ii) $2 \times 1024 \times 1024 / 984 = 2132$ packets	2
	(iii) $(2132 \times 1024 \times 8) / (1000 \times 1000) = 17.5$ s	2
4.	(a) (i) There are fewer hosts in a LAN. / The coverage of a LAN is smaller. / The complexity of a LAN is simpler.	1
	(ii) Provide a better routing control between zones. / Connect the four different subnets.	1
(b)	Network logon, access control	1×2
(c)	(i) $256/4 - 2$	1
	= 62	1
	(ii) 255.255.255.192	1

- (d)
- ② the switch in Zone A, connecting to the router and the 10 servers *
 - ② a domain controller in Zone A, connecting to the switch *
 - ② the firewall in Zone A, connecting to the Internet and the router *
 - ① two switches in Zone D
 - ① all 20 computers well connecting to the switches



* Marking criteria

- ② Illustrate a comprehensive and logical answer
- ① Illustrate a relevant answer