

Paper 2A

Marks

1. (a)

ROUTE	RID+SN / RID+SID	SID
SPOT	SID	N/A

1x3
- (b) (i) It can be calculated by the number of records in ROUTE. 1
- (ii) It can save computational time in queries. (faster in execution) 1
- (c) (i) In ROUTE, it is redundant to store the name of the route in several relevant records as RID is already stored in the table and it can denote RNAME. 1+1
 ⓐ Observation (RNAME/DIFF) ⓑ Explanation
- (ii) SPOT (SID, SNAME) 1
 ROUTE (RID, RNAME, DIFF) 1
 PATH (SID, RID, SN) 1
- (d) (i) It is a form because it is mainly used for collecting data from users. 2*
 ⓐ
- (ii) ⓐ choice of sightseeing spots 3
 ⓑ Creation of a route comprehensively
 ⓒ layout design (user-friendly, logical & easy-to-input)
2. (a) UPDATE EW 1
 SET AMT = AMT + 100 1
 WHERE ENO IN (SELECT ENO FROM TRANS 1
 WHERE TNO BETWEEN 1 AND 1000)
- Alternatives: TNO >= 1 AND TNO <= 1000
 TNO >= '1' AND TNO <= '1000'
- (b) size of a record = 32+16+8+4+8 = 68 bytes 2*
 number of records
 = 1 MB / 68 bytes ⓐ
 = 15,420 ⓑ
- (c) (i) EW ⓐ TRANS ⓐ 1, 1
- (ii) When the record with ENO = 'E2' is firstly removed from EW, the corresponding records with ENO = 'E2' in TRANS cannot refer to the records with ENO = 'E2' in EW. As ENO in TRANS is a foreign key of EW, the corresponding records in TRANS should exist in EW. Hence there will be a referential integrity problem. 2*
- (d) The DROP command deletes an entire table instead of rows (records) of a table. 1
 The DELETE command will only delete records and the table structure is still there. The records that are removed by the DELETE command can be rolled back. 1
- (e) Filter out the relevant records of the customers. 1
 Find the trend/pattern/association/relationship (statistical function ✕) such as the sales volume and products sought compared with the other cohorts. 2*

Marks

3. (a) SELECT TITLE, TNAME } ①
FROM PTASK, TEAM } ①
WHERE TEAM.TID = PTASK.FAST ①

2

(b) SELECT COUNT(*) } ①
FROM PTASK } ①
WHERE TITLE LIKE '%sort%' (or '*') ①

2

(c) SELECT TITLE, TNAME, MARK FROM TEAM A, PTASK B, RESULT C ①
WHERE A.TID = C.TID AND B.PID = C.PID ①
AND MARK > 50 ①
ORDER BY TITLE ASC, MARK DESC ①

4

(d) SELECT TNAME } ①
FROM TEAM } ①
WHERE TID IN } ①
(SELECT FAST FROM PTASK GROUP BY FAST HAVING COUNT(*) > 1)
① ① ①

4

Alternative: SELECT t.tname } ①
FROM team t } ①
where 1 < (select count(*) from ptask p where t.tid=p.fast)
① ①

① all correct

(e) (i) S010
S008 (Writing the identity code in order is not necessary)

2

(ii) Check whether a team captain is a member of another team.

1

4. (a) (i) (1) Eva
(2) Peter

1
1

- (ii) (1) Database/application design
(2) Testing / coding / maintenance

1
1

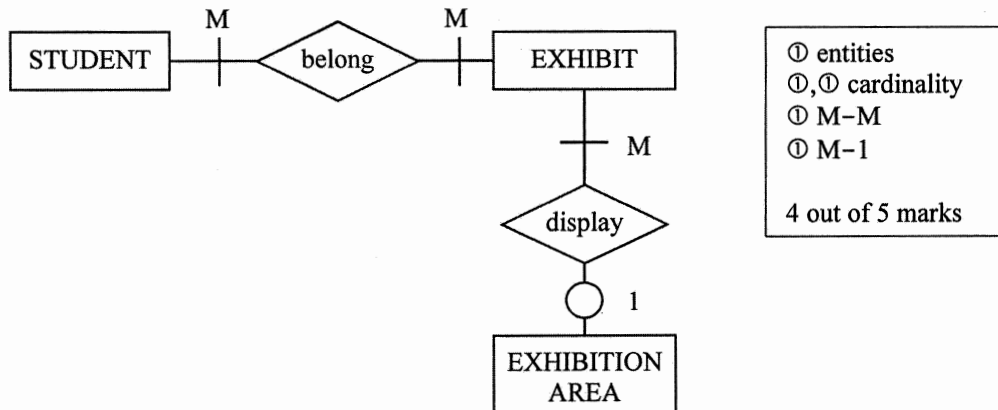
(b)

End users	Understanding of the operations
Developers	maintenance & testing

1x3

- (c) (i)

4



- (ii) Theme and identity code (name) of the exhibition area
 ✗ location of exhibition area, number of exhibits

1, 1

- (d) Challenges related to:
 storage size for the multimedia elements, shared memory/storage issue, concurrency/integration control, bandwidth for transferring multimedia elements, processing time for video streaming

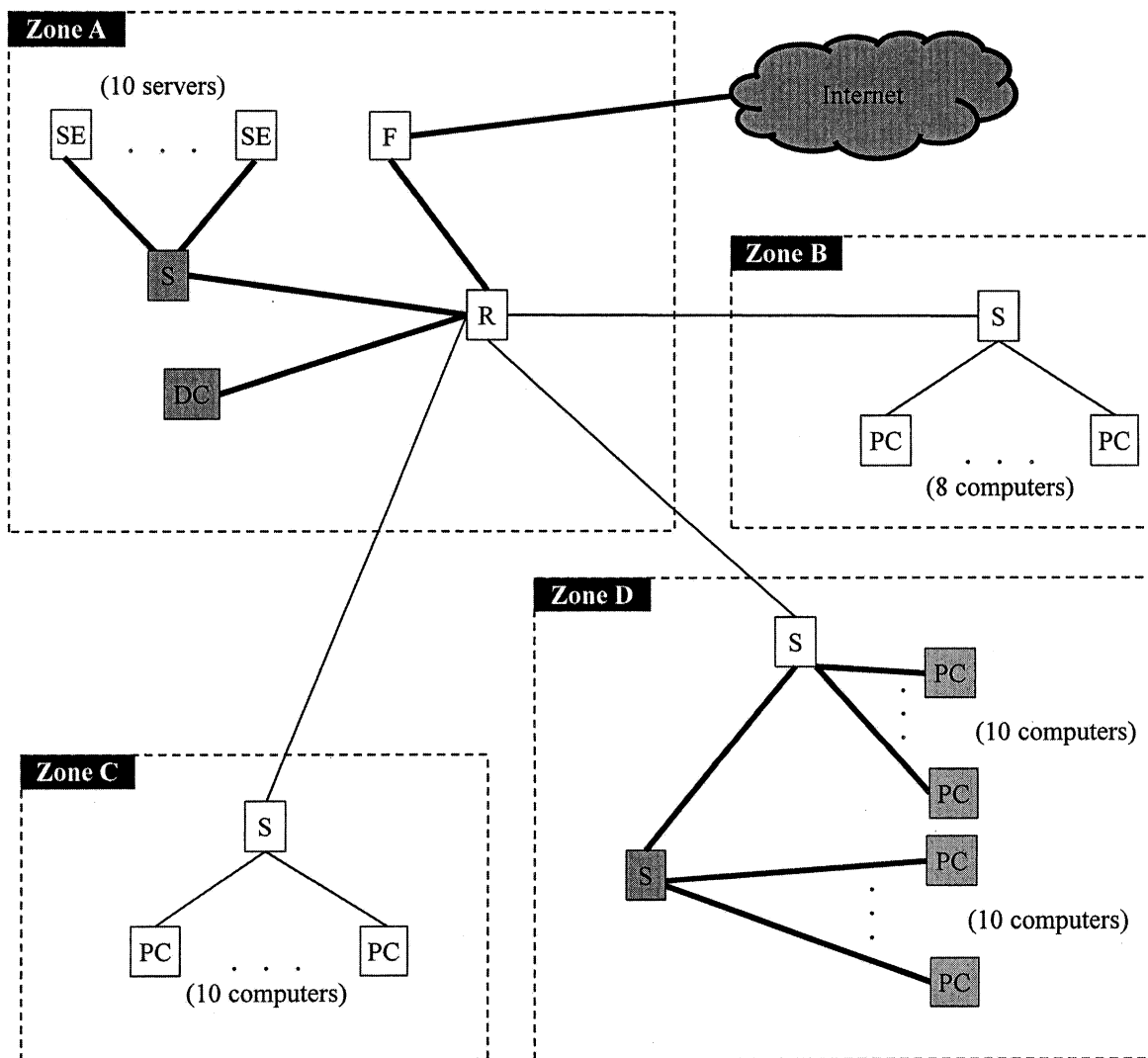
1x3

* Marking criteria

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

		Marks
3.	(a) (i) ① understanding of duplex communication mode ① advantage (simultaneous communication)	1 1
	(ii) ① understanding of synchronous transmission ① advantage (lower overhead/higher throughput)	1 1
	(iii) ① understanding of circuit switching ① advantage (a dedicated connection)	1 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) $256/4 - 2$ $= 62$	1 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



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