

Start here for  
 Question Number: **22**

a. A thin client is a node or client that relies solely on the server to perform all of its processing. It has no separate software and is unable to run or perform unless it is connected to the server (often used in remote access situations). A fat client, on the other hand, is a client that has separate software components to the server and, while still relying on the server to carry out some processing functions, is able to perform some processes by itself.

b. i.

Field name	Data type	Field size
Student ID	Numeric	5
Last name - surname	Text	20
First name	Text	20
Date of payment	Date	10
Fees paid	logical boolean	1

ADD IN → \* continued on last page →

ii. After the message is created at the application level, the data that is entered by the home computer is organized into 'packets', i.e. the text is formed into the traditional ASCII format, which is generally 8 bits,

and can include parity and extra start/stop bits. This allows the data to be transmitted effectively and reduces risk of error - allows digital data to be transmitted. Then, at the communication channel and addressing level, they are assembled (data packets) to be sent, a connection with the school servers is then established and maintained so that the data can be sent. This, as seen in the transmission level, is done over the internet connection, as the school provides an internet-based payment system. Thus, using the ADSL modem, the digital data is ~~re~~ encoded to analogue form so that the modem can connect to the internet via the telephone line. Thus, then, the data packets are transmitted, before being demodulated by the receiver (ADSL modem) after the internet provider allows transmission, reassembling the data back into its original digital format so it can be processed by the server.

iii. The most suitable error detection technique would be the use of the cyclical redundancy check. This is the most accurate

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form of error detection as it performs a division calculation (extremely long and complicated) on the data packet being sent after combining their values of the overall data packet. Then it attaches this number to the end of the data package. Then, the receiving server (school server in this scenario) will perform the same and check the two numbers. This is most suitable as it detects 99.99% of issues, and as the process is dealing with large sums of money and confidential information it needs to be securely checked and regulated. Thus, it is necessary to provide the most secure data check to put parents at ease, and make sure the data received is accurate.

(B) continued

field name	data type	field size
Payment Type	Text	10
Expiry Date	Date	10
Parent Lname	Text	20
Parent Fname	Text	20
Credit Card No	Text	20

