MODULE E NETWORKS · E9

Protocols and standards: mark scheme

21 marks · OCR J277 spec 1.3.2 (standards; common protocols TCP/IP, HTTP, HTTPS, FTP; encryption)

How to use. One mark per bullet up to the maximum shown. **/** separates alternatives. Words in (brackets) are not needed for the mark. Email protocols (POP, IMAP, SMTP) and layers are tested in E10 and E11.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.3.2	A set of rules for transferring data / for communication (between devices)	**1**	Must have "rules". Do not accept "a way of sending data" alone.
1(b) J277 1.3.2	A standard is a set of (agreed) rules / specification (for an area of computing) All manufacturers follow the same standard / rules So hardware / software from different manufacturers is compatible / can interact / work together	**2**	Max 2. Knowledge of individual standards is not required; naming one earns no extra mark.
2(a) J277 1.3.2	Sending files to the web server: FTP Paying by card: HTTPS Requesting opening times: HTTP / HTTPS Packets, addresses, routing: TCP/IP	**4**	One mark per row. Row 2: do not accept HTTP (the S is required). Row 3: accept either. If an abbreviation is inaccurate, check whether it is written out in full.
3(a) J277 1.3.2	TCP splits the image / data into packets TCP numbers the packets / adds a sequence number IP adds (source / destination) IP addresses to each packet IP routes the packets (across the network / internet) Packets may take different routes / arrive out of order TCP reorders / reassembles the packets (using the numbers) TCP checks for errors / missing packets // asks for packets to be resent	**4**	Max 4. If TCP and IP are not separated (all credited to "TCP/IP"), max 3. Do not credit IP for error checking or reordering. Layer names not required.
4(a) J277 1.3.2	HTTP data is not encrypted If (HTTP) data is intercepted, the username / password can be read / understood HTTPS encrypts data (between the browser and the server) If intercepted, encrypted data is meaningless / cannot be understood (without the key) So customers' accounts / order details are kept secure / cannot be accessed by others	**3**	Max 3. Do not accept "more secure" or "safer" alone. Do not accept "HTTPS stops data being intercepted". Accept SSL / TLS encryption.

QUESTION	ANSWER	MARKS	GUIDANCE
4(b) J277 1.3.2	The address / URL begins with https(://) A padlock (symbol) shows in the address bar	**1**	Either. Do not accept "the website looks professional".
5(a) J277 1.3.2	The browser / client sends a request (for the page) to the web server The web server responds / sends back the page / HTML / files The browser displays the page	**2**	Max 2.
5(b) J277 1.3.2	To transfer / upload / download files (between computers / to and from a server) (over a network)	**1**	Do not accept "transfers data" alone, or "for web pages" alone.
6(a) J277 1.3.2	Different protocols for different purposes: True HTTPS stops interception: False HTTP and HTTPS both request / send web pages: True	**3**	One mark per correct row. A row with both boxes ticked scores 0.

Total: 21 marks