MODULE A SYSTEMS ARCHITECTURE · A1

What a computer system is and what the CPU does: mark scheme

~25 minutes · 20 marks · OCR J277 spec 1.1.1

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative words; **//** separates alternative statements for the same mark. Words in (brackets) are not needed for the mark. Credit any other valid answer that shows the same understanding.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.1.1	Central Processing Unit	**1**	All three words needed. Do not accept "Central Processor Unit" / "Computer Processing Unit".
1(b) J277 1.1.1	To process data and instructions // to run programs // to fetch and execute instructions // to work out the charge from the data entered	**1**	Max 1. Do not accept "to process information" alone (NE). Do not accept "to store data / programs".
1(c) J277 1.1.1	Keypad: Input CPU: Processing Ticket printer: Output Solid state drive: Storage	**4**	1 mark per correct row. 2+ ticks in a row = 0 for that row.
2(a) J277 1.1.1	Main memory (RAM)	**1**	2+ ticks = 0 marks.
2(b) J277 1.1.1	instruction memory carried out repeats	**4**	1 mark per correct word, in order. Correct answer only.
3 J277 1.1.1	An instruction / data is fetched from (main) memory / RAM The instruction is decoded // the CPU works out what the instruction means The instruction is executed / carried out The cycle repeats (for the next instruction) // continues until the program ends	**3**	1 mark per bullet, max 3. Do not accept "programs are fetched" or "information is processed" (NE). Register-level detail is not needed (covered in A4), but credit correct detail, e.g. address of the next instruction held in the PC.
4 J277 1.1.1	A hard disk drive is part of the CPU: False Fetch-execute cycle repeated continuously: True CPU processes data and instructions to run programs: True	**3**	1 mark per correct row. 2 ticks in a row = 0 for that row.

QUESTION	ANSWER	MARKS	GUIDANCE
5 J277 1.1.1	The app / its instructions (and data) are copied / loaded from secondary storage into RAM (While it runs) the app's instructions / data are held in RAM The CPU fetches the instructions (and data) from RAM The CPU decodes and executes the instructions ... one after another / repeatedly (in the fetch-execute cycle)	**3**	1 mark per bullet, max 3. Do not accept "the CPU stores the app" or that the CPU runs the app directly from secondary storage. Do not credit mention of buses (not required for J277).

Total: 20 marks