Set 4 Expanded Mark Scheme – PLCs

Q	Expanded Answer Guidance	Marks
1a	Programmable Logic Controller (accept minor wording variations)	1
1b	Other PLC types: • Modular PLC • Rack-mounted PLC Accept equivalents	2
1c	Unitary PLC: • All components in one unit • Fixed I/O • Compact and low cost Compared to others: • Modular/rack systems allow expansion • More flexible I/O configuration • Easier maintenance and upgrades Accept: • Clear comparison	6
1d	Advantages of modular/rack PLCs: • Expandable I/O • Flexible configuration • Easier fault replacement • Suitable for large systems Accept: • Any valid industrial advantage	4
2a	Any 5: • CPU • Power supply • Input module • Output module • Memory • Communication interface Accept equivalents	2

2b	CPU: • Executes program • Processes inputs • Controls outputs • Performs logic operations Accept: • Description of control role	3
2c	• RAM • ROM / Flash / EEPROM Accept equivalents	2
2d	RAM: • Volatile • Temporary storage ROM/Flash: • Non-volatile • Stores program permanently Accept: • Clear comparison	4
3a	Either: • Normally open contact (NO) • Input contact	1
3b	• Address (e.g. I0.0) • Identifies input/output location Accept: • Tag/address explanation	2

3c	Band 1 (1–2): • Basic description Band 2 (3–4): • Explains logic flow Band 3 (5–6): • Full explanation of operation • Includes example application (e.g. motor control, conveyor) Accept: • Clear sequence of operation	6