

A-level

COMPUTER SCIENCE

Paper 2

7517/2

Insert

**FIGURE 3 and source information for use in answering
Question 3**

TABLE 2 and TABLE 3 for use in answering Question 7

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FIGURE 3

PLAINTEXT

CIPHERTEXT

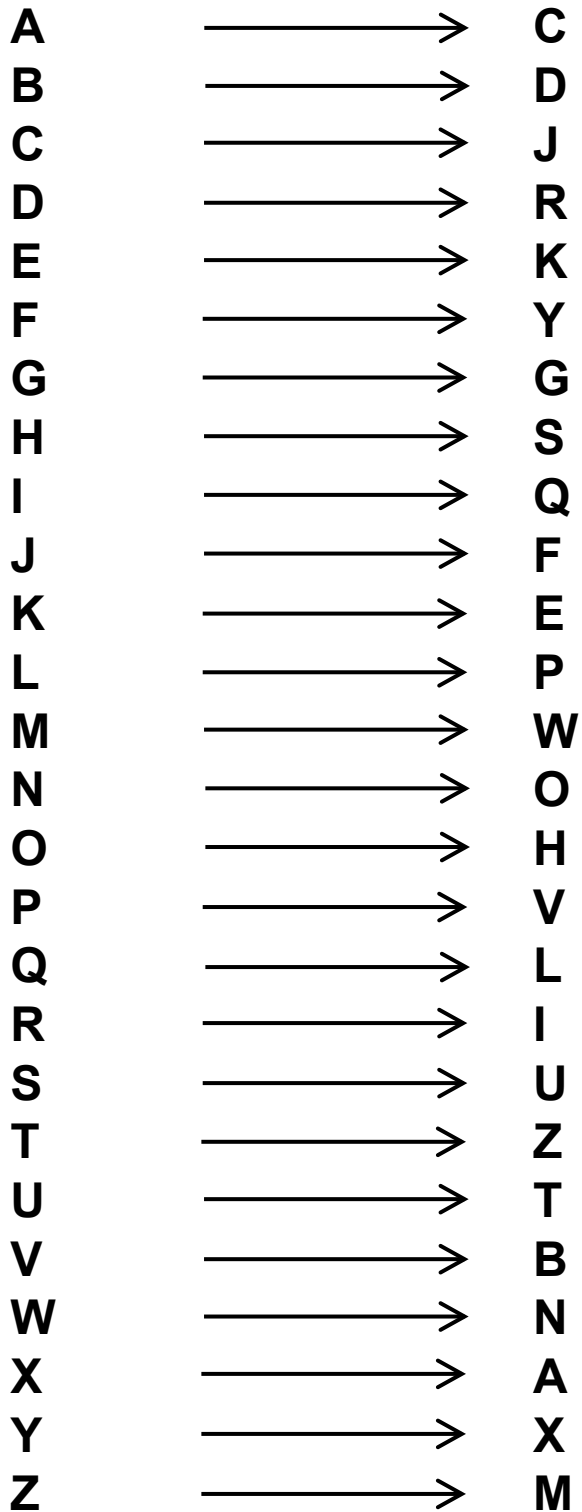


TABLE 2

ASCII CODE		
DIGIT	DECIMAL	BINARY
0	48	0110000
1	49	0110001
2	50	0110010
3	51	0110011
4	52	0110100
5	53	0110101
6	54	0110110
7	55	0110111

ASCII CODE		
DIGIT	DECIMAL	BINARY
8	56	0111000
9	57	0111001
A	65	1000001
B	66	1000010
C	67	1000011
D	68	1000100
E	69	1000101
F	70	1000110

[Turn over]

TABLE 3

This table is included so that you can answer question parts 07.1, 07.2 and 07.3.

TABLE 3 Standard AQA assembly language instruction set

LDR Rd, <memory ref>	Load the value stored in the memory location specified by <memory ref> into register d
STR Rd, <memory ref>	Store the value that is in register d into the memory location specified by <memory ref>
ADD Rd, Rn, <operand2>	Add the value specified in <operand2> to the value in register n and store the result in register d
SUB Rd, Rn, <operand2>	Subtract the value specified by <operand2> from the value in register n and store the result in register d
MOV Rd, <operand2>	Copy the value specified by <operand2> into register d
CMP Rn, <operand2>	Compare the value stored in register n with the value specified by <operand2>
B <label>	Always branch to the instruction at position <label> in the program.

B<condition> <label>	Branch to the instruction at position <label> if the last comparison met the criterion specified by <condition>. Possible values for <condition> and their meanings are: EQ: equal to NE: not equal to GT: greater than LT: less than
AND Rd, Rn, <operand2>	Perform a bitwise logical AND operation between the value in register n and the value specified by <operand2> and store the result in register d
ORR Rd, Rn, <operand2>	Perform a bitwise logical OR operation between the value in register n and the value specified by <operand2> and store the result in register d
EOR Rd, Rn, <operand2>	Perform a bitwise logical XOR (exclusive or) operation between the value in register n and the value specified by <operand2> and store the result in register d

TABLE 3 continues on the next page

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MVN Rd, <operand2>	Perform a bitwise logical NOT operation on the value specified by <operand2> and store the result in register d
LSL Rd, Rn, <operand2>	Logically shift left the value stored in register n by the number of bits specified by <operand2> and store the result in register d
LSR Rd, Rn, <operand2>	Logically shift right the value stored in register n by the number of bits specified by <operand2> and store the result in register d
HALT	Stops the execution of the program.

LABELS: A label is placed in the code by writing an identifier followed by a colon (:). To refer to a label, the identifier of the label is placed after the branch instruction.

Interpretation of <operand2>

<operand2> can be interpreted in two different ways, depending on whether the first character is a # or an R:

- **# – use the decimal value specified after the #, eg #25 means use the decimal value 25**

- R_m – use the value stored in register m , eg R_6 means use the value stored in register 6

The available general-purpose registers that the programmer can use are numbered 0–12

END OF SOURCE MATERIAL

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