A1 $x \rightarrow 1$ mark
$y \rightarrow 1$ mark
$f \rightarrow 1$ mark.
} if the output at any instant is wrong, then award zero marks for particular output.

A2. Truth table - 1 mark.
Expression for A - 1 mark.
—ıl— B - 1 mark.
C - 1 mark.
Circuit diag. - 1 mark.

A3. First expression for Y - 1 mark.
Simplified expression - 1 mark.

B1 1 mark for each correct output.

B2 $(N^2 + 0N + 5) - (4N + 0) = 5N + 5 \Rightarrow$ 2 marks

$N = 9 \Longrightarrow$ 2 marks

B3 Identifying the inputs at NOR gate $\Rightarrow$ 2 marks.

Output of NOR gate is 1 $\Longrightarrow$ 1 marks.

Identifying ~~that~~ actual inputs of adder (110, 101) & $C_0 = 1$ — 2 marks.

Final answer $C_3 = 1$ $S_2 = 1$ $S_1 = 0$ $S_0 = 0$ ⇒ 2 marks

C1 :- Truth Table :- 4 marks (0.25 to each row)

2 - K maps :- 4 marks (2 marks each)

K-map expressions :- 2 marks (1 mark each)

Nand gate expressions :- 4 marks (2 marks each)

Circuit :- 1 mark.

C2 :- Truth table :- 2 marks.

L_1, L_2 L_3 expressions :- 3 marks (1 mark each)

C3 :- a) K-map — 2 marks
expression — 1 mark.

b) 1 mark for every 3 minterms.

c) K-map — 2 marks.
expression — 1 mark.