



IBM

practice problems

**IBM 650 MAGNETIC DRUM
DATA-PROCESSING MACHINE**

For use with 650 Outline for
Customer Training (Form 29-1162-1)

October 1956

Form 22-621

INTRODUCTION

This book of practice problems is offered to the student of the 650 as a means of obtaining practice in problem organization and some basic machine skills. All examples given are elementary and are designed as a practical application of material obtained from the 650 manual and course. Diligent completion of all suggested problems, in addition to the course studies, should adequately prepare the student for programming the 650.

The practice problems fall into three general categories:

1. Operation Code Analysis
2. Block Diagrams
3. Planning Charts

In category 1, the numbers on the upper line of each problem show the conditions of the accumulator, distributor, or a specific drum location prior to the execution of the operation code indicated. The conditions resulting from the execution of the instruction should be written in the space provided.

EXAMPLE:

Instruction		Accumulator		Distributor (8001)	Drum Storage	
Op. Code	Data	Upper (8003)	Lower (8002)		Loc.	Contents
RAU-60	0942	+00000 94321 <i>+00000 00123</i>	00000 04682 <i>00000 00000</i>	+00000 00789 <i>+00000 00123</i>	0942	+00000 00123 <i>+00000 00123</i>

In categories 2 and 3, careful consideration should be given to the completion of all requirements for each problem. The block diagrams are of a simple nature and will be invaluable for actual problem planning. Planning charts showing instructions and data in proper storage locations are equally important. Instructions should be written on 650 planning charts in order to demonstrate the contents of the arithmetic units.

PROBLEM 1. ADD, SUBTRACT, STORE, LOAD

Instruction		Accumulator		Distributor (8001)	Drum Storage	
Op Code	Data	Upper (8003)	Lower (8002)		Loc.	Contents

PART A

LD-69	0001	+00000 94321	00006 05678	-00000 00099	0001	+12345 00000
STD-24	0030	+94321 00000	05678 00000	+00099 00000	0030	-00000 12345

PART B

RAL-65	0001	+00000 94321	00000 05678	+00000 00099	0001	+12345 00000
AL-15	0020	+94321 00000	05678 00000	-00099 00000	0020	+00000 12345
RAU-60	0001	+00000 94321	00006 05678	+00000 00099	0001	+12345 00000
AU-10	0020	+78005 00000	00000 00123	+00099 00000	0020	+10000 00000

PART C

RSL-66	0001	+00000 94321	00006 05678	+00000 00099	0001	+12345 00000
SL-16	0020	+94321 00000	05678 00000	+00099 00000	0020	+00000 12345
RSU-61	0001	+00000 94321	00006 05678	+00000 00099	0001	+12345 00000
SU-11	0020	+94321 00000	05678 00000	+00099 00000	0020	-00000 12345

PART D

STL-20	0030	+94321 00000	05678 00000	+00099 00000	0030	+00000 12345
STU-21	0030	-94321 00000	05678 00000	+00099 00000	0030	+00000 12345

PROBLEM 1. ADD, SUBTRACT, STORE, LOAD
PART E

Instruction		Accumulator		Distributor
Op Code	Data	(Upper 8003)	(Lower 8002)	(8001)
RAU-60	8003	+00000 94321	00000 04682	+00000 00789
RAL-65	8003	-00000 94321	00000 05678	+00000 00099
AL-15	8002	+94321 00000	55678 00000	-00099 00000
RAL-65	8002	+94321 00000	05678 00000	+00099 00000
RSL-66	8002	+00000 94321	00006 05678	+00000 00099
SL-16	8002	-94321 00000	05678 00000	+00099 00000
RAU-60	8002	-00000 94321	00006 05678	+00000 00099
AU-10	8002	+78005 00000	00000 00123	+00099 00000
RAU-60	8001	+94321 00000	05678 00000	+00099 00000
SU-11	8003	+94321 00000	05678 00000	+00099 00000
RSU-61	8002	-00000 94321	00006 05678	-00000 00099
SL-16	8003	+00007 94321	00006 05678	-00000 00099
AU-10	8003	+94321 00000	05678 00000	-00099 00000

PROBLEM 2

A. Calculate a New Balance.

B. Given:

	Memory Address
1. Identifying information	
Part No. 8964	0351
2. Data: Old Balance 573	0352
Issues 92	0353

C. Required:

1. Block diagram of whole procedure.
2. Planning Chart (front) showing instructions and values of data and results.
3. Planning Chart (back) showing instructions, data, and results in proper storage locations.
4. Start in location 0001, and write the instructions necessary to calculate the new balance.
5. Punch following information:
 - (a) Part No.----- Loc. 0927
 - (b) New Balance--Loc. 0928

PROBLEM 3. MULTIPLY AND SHIFT AND ROUND

Instruction		Accumulator		Distributor (8001)	Drum Storage	
Op. Code	Data	Upper (8003)	Lower (8002)		Loc.	Contents

PART A

MULT-19	0135	-00000 00005	00000 00000	+00000 00094	0135	+00000 00125
MULT-19	0135	-00000 50000	00000 00000	+00000 00094	0135	-00000 12500
MULT-19	0135	-00000 50000	00000 00000	+00000 00094	0135	-00125 00000
MULT-19	0135	-00000 50000	87878 00000	+00000 00094	0135	-00125 00000

PART B

SRD 31	0002	+00000 00005	00000 01362	+00000 01362	0002	+00000 00324
SRD 31	0000	-00000 00136	00000 00508	+80000 00500	0000	+80000 00500

PROBLEM 4. MULTIPLICATION WITH DECIMALS

A. Calculate Earnings Amount

B. Given:

1. Identifying information:		Memory Address
Man No.	5528	0201
2. Data: Hours Worked		38.65
	Hourly Rate	1.785
		0202
		0203

C. Required:

1. Block diagram of whole procedure.
2. Planning chart (front) showing instructions and values of data and results.
3. Start in location 0021 and write the instructions necessary to calculate earnings amount. Shift and round result to two decimal places.
4. Punch following information:
 - (a) Man No.----- Location 0527
 - (b) Earnings Amount--- Location 0528
 - (c) Hours Worked ----- Location 0529
 - (d) Hourly Rate ----- Location 0530

PROBLEM 5. DIVIDE AND SHIFT

Instruction		Accumulator		Distributor (8001)	Drum Storage	
Op. Code	Data	Upper (8003)	Lower (8002)		Loc.	Contents

PART A

DIV-14	0135	+06250 00000	00000 00000	+00000 00094	0135	+12500 00000
DIV-14	0135	+62500 00000	00000 00000	+00000 00094	0135	+12500 00000
DIV-14	0135	+00006 25000	00000 00087	+00000 00094	0135	-12500 00000
DIVRU-64	0135	-00006 25000	00000 00087	+00000 00094	0135	+12500 00000

PART B

SRT 30	0004	+00007 00000	00000 86542	+00007 00000	0697	+00000 86542
SLT 35	0003	+00007 00000	00000 86542	+00007 00000	0697	+00000 86542
SLT 35	0002	+12345 00000	00000 06000	+00000 06000	0697	+00000 06000

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PROBLEM 6. DIVISION WITH DECIMALS

A. Calculate Unit Cost

B. Given:

1. Identifying information:		Memory Address
Product Code	8765	0551
2. Data: Total Cost	9,126.55	0552
Quantity	15,381	0553

C. Required:

1. Block diagram of procedure.
2. Planning chart showing instructions and values of data and results.
3. Start instruction in location 0951 and write the instructions necessary to calculate unit cost. Carry result to five decimal places; round in fifth place leaving four places in result.
4. Punch following information:

(a) Product Code	Location 0827
(b) Total Cost	Location 0828
(c) Quantity	Location 0829
(d) Unit Cost	Location 0830

PROBLEM 7. BRANCHING

Loc.	Instruction			I	Accumulator		Distributor (8001)
	Op	D			Upper (8003)	Lower (8002)	
0051 0062	BRNZU 44 RAU 60	0062 8001		0078	+00000 00000	00000 60000	+98000 00000
0078	RAL 65	8001					
0051 0062	BRNZ 45 RAU 60	0062 8001		0078	+00000 00000	00000 60000	+98000 00000
0078	RAL 65	8001					
0051 0062	BR MIN 46 RAU 60	0062 8001		0078	-00000 00000	00000 60000	+98000 00008
0078	RAL 65	8001					
0051 0062	BRD 99 RAU 60	0062 8001		0078	-00000 00000	00000 60000	+89000 00009
0078	RAL 65	8001					
0051 0062	BRD 90 RAU 60	0062 8001		0078	-00000 00000	00000 60000	+89000 00009
0078	RAL 65	8001					

PROBLEM 8. BRANCHING

A. Branching by Type of Card

B. Given:

There are three types of cards. Through control panel wiring, the identifying X has been converted to a digit 8 in word ten of storage entry. The positions are indicated for each card as follows:

- | | |
|----------------|---------------------------|
| 1. Old Balance | X59 (8 in position nine) |
| 2. Receipts | X67 (8 in position seven) |
| 3. Issues | X73 (8 in position three) |

C. Required:

1. Block diagram of branching procedure.
2. Planning chart showing instructions and values of data and results for only the branching aspects of the problem.
3. (a) Start in location 0001 and write the instructions necessary to determine type of card.

(b) If X59 card, branch to location 0121.

(c) If X67 card, branch to location 0463. Use instruction in location 0463 to test if accumulator is plus. If plus, go to location 0487; if not, branch to location 0464.

(d) If X73 card, branch to location 0782. Use instruction in location 0782 to test entire accumulator for zero. If zero, go to location 0783; if not, branch to location 0795.

PROBLEM 11. INSTRUCTION MODIFICATION

Instruction		Accumulator			Distributor (8001)	Drum	
Op	D	Upper (8003)	Lower (8002)	Loc.		Contents	
STDA 22	0652	+22 2222 2222	80 0001 0777	+60 0694 1950	0652	-21 3286 5943	
STDA 22	0652	+00 0000 0000	00 1234 0000	-60 0043 0007	0652	+33 3333 3333	
STIA 23	0652	+00 0000 0000	00 0000 0123	-60 0777 1222	0652	+88 8888 8888	

PROBLEM 12. DISTRIBUTION

A. Distribute labor amount by department

B. Given:

1. Currently active Labor Cost file of cards.
 - a. Fields
 - (1) Department No., 00XXXX, Columns 1-6.
 - (2) Current Labor Amount: XXX.XX, Columns 7-11.
2. Departments included are 0100 to 0157.
3. Cards are arranged in random sequence.
4. Old Balance Labor Amounts are already stored on the drum. They are stored in ascending sequence by department number, in locations 0100 to 0157. Therefore, drum location and department number are the same.

C. Required:

1. Block diagram of procedure.
2. Planning chart showing instructions, data, and results.
3. Start in location 0421 and write the instructions necessary to calculate the new balance labor amount for a department and to store the result back in the proper drum location. Do not punch a card.

PROBLEM 13. PUNCHING COST DISTRIBUTION

A. Punch out cost distribution by department.

B. Given:

1. New balance labor costs for Department 0100 to 0157 are stored on the drum in locations 0100 to 0157.

C. Required:

1. Block diagrams of procedure.
2. Planning chart showing instructions, data, and results.
3. Start in location 0000 and write the instructions necessary to punch out a cost distribution card for each department. Use location 0927 as punch out location. Load 8 in the first position of word 10 to identify each cost card.

00 0100 0000
↓

000157 0000

69 1) x x x x

71 0927 0000

PROBLEM 14. MISCELLANEOUS CODES

PART A

Instruction		Accumulator		Distributor (8001)	Drum	
OP	D	Upper (8003)	Lower (8002)		Loc.	Contents
AABL 17	1775	+00005 00000	00006 00000	+00008 00000	1775	-00007 00000
AABL 17	1775	-00005 00000	00006 00000	+00008 00000	1775	-00007 00000
SABL 18	1775	-00005 00000	00006 00000	+00008 00000	1775	-00007 00000
SABL 18	8001	+00005 00000	00006 00000	-00008 00000	1775	+00007 00000
RAABL 67	8003	-00005 00000	00006 00000	+00008 00000	1775	+00007 00000
RSABL 68	8002	-00005 00000	00006 00000	+00008 00000	1775	+00007 00000
SCT 36	0000	+00005 00000	00006 00000	+00008 00000	1775	+00007 00000
SCT 36	0006	+00005 00000	00006 00000	+00008 00000	1775	+00007 00000
SCT 36	0000	+12345 00000	00042 12333	+00006 54321	1775	+00008 66666
SCT 36	0002	+00001 22222	00000 33333	-66666 54333	1775	-00055 00000
NO OP 00	1002	+12345 67890	00005 00000	+00004 00000	1002	+65003 41100
STOP 01	1002	-55555 89999	00005 00000	-00004 00000	1002	+70005 11003

PROBLEM 14. MISCELLANEOUS CODES

PART B

Loc.	Instruction				I	Accumulator		Distributor (8001)	
	Op	D				Upper (8003)	Lower (8002)		
0050	AU	10	8001		0051	+60000	00000	+70000	00000
0051	BROV	47	0078		0062				
0062	RAU	60	8001						
0078	RAL	65	8001						
0050	SU	11	8001		0051	-60000	00000	+20000	00000
0051	BROV	47	0078		0062				
0062	RAU	60	8001						
0078	RAL	65	8001						

PROBLEM 15. CONSOLE EXERCISES

Use the console exercise sheets and perform the following operations:
(See example)

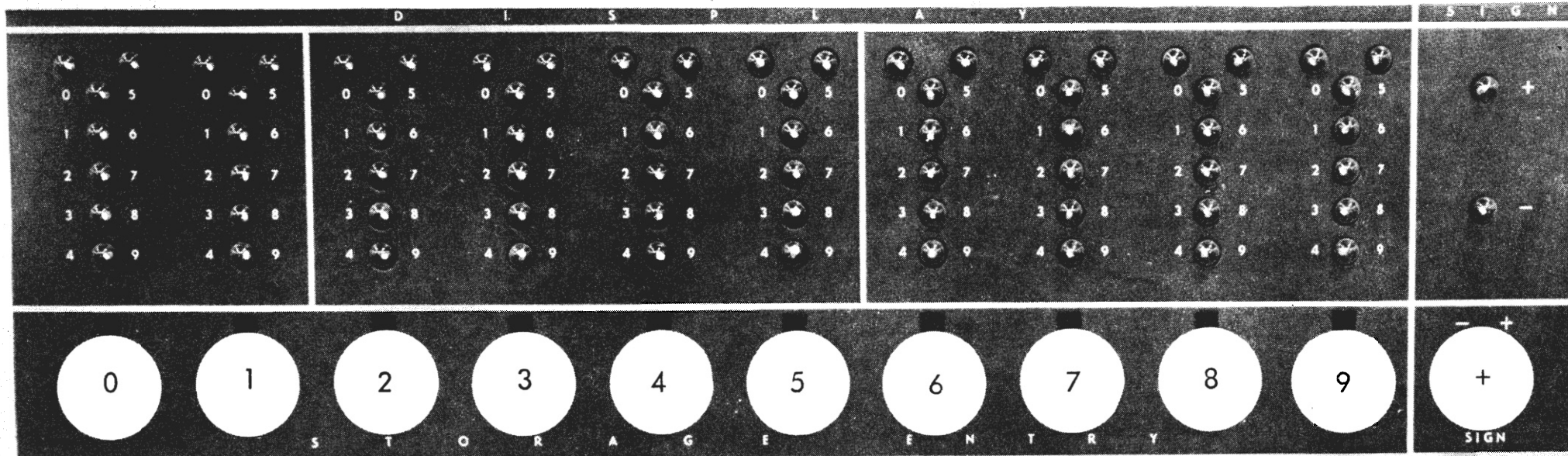
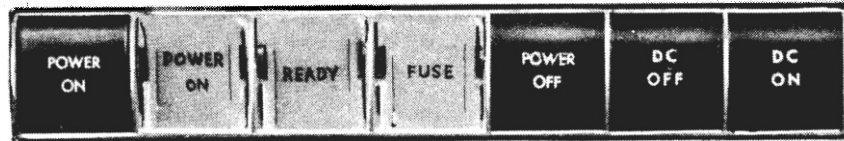
Part 1. Enter the number +1246897651 in location 0300 .

Part 2. Read out the contents of location 1294 .

Part 3. Enter the number -9876543210 in location 0600 .

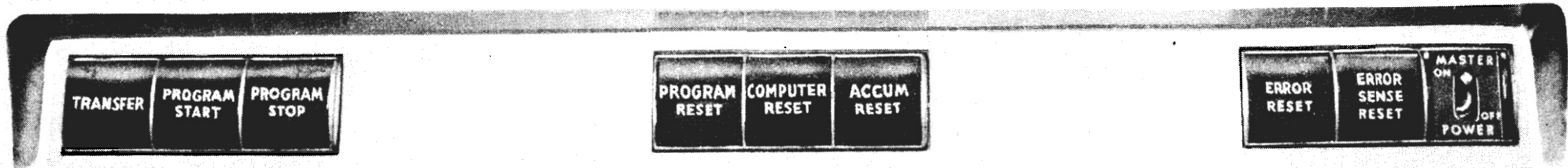
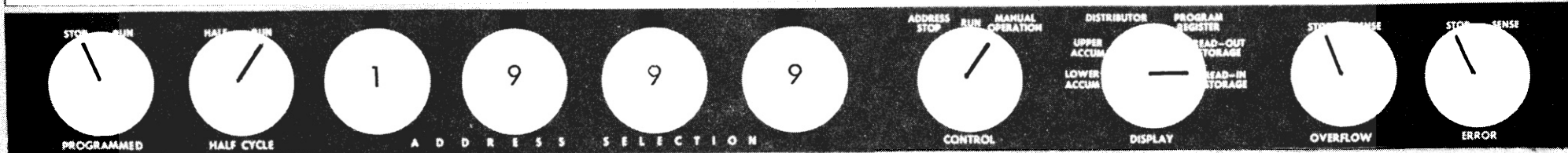
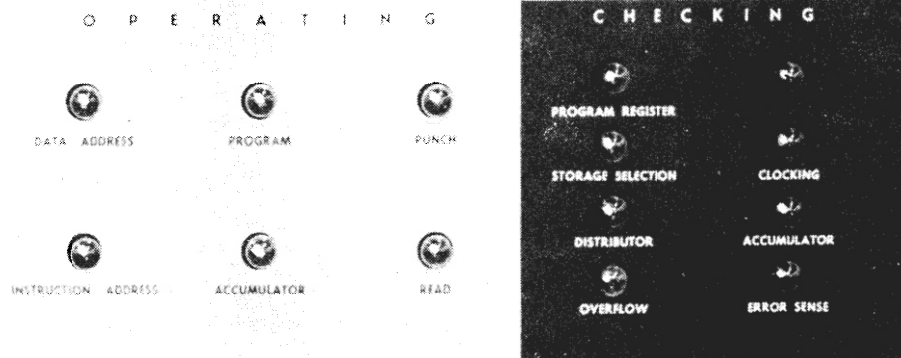
Part 4. Enter instruction 70 0301 0001 in location 0500 .

Part 5. Start the program by securing the first instruction from the address selection switches. The location is 0500 .



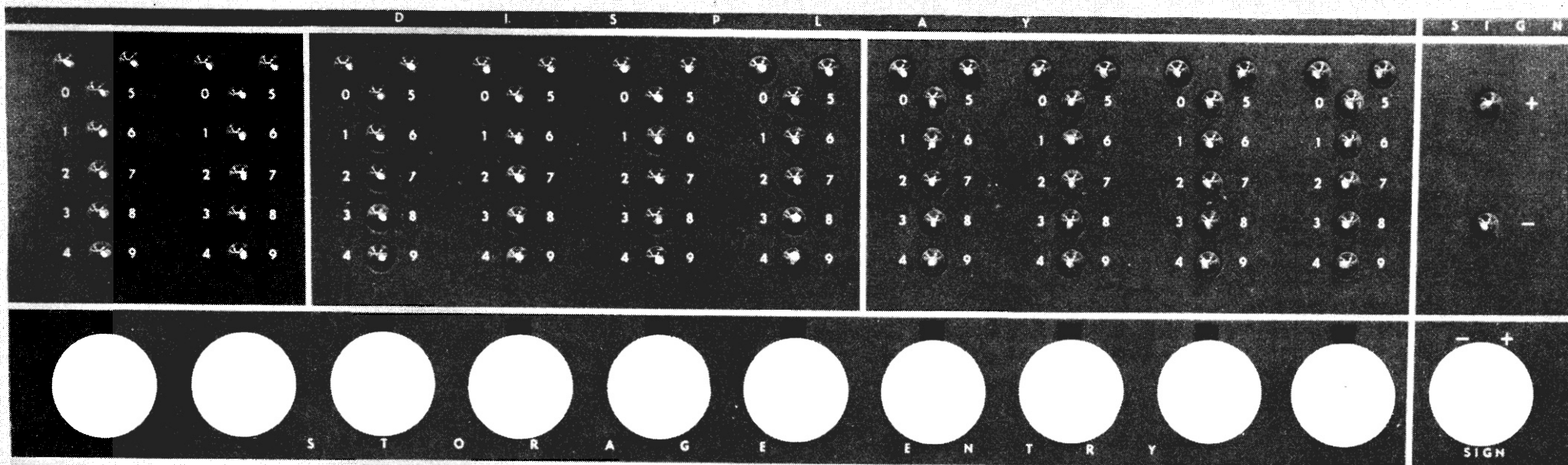
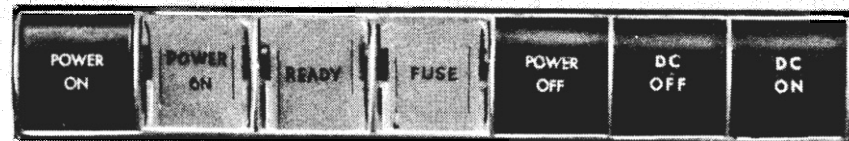
SEQUENCE OF OPERATION

- | | |
|--|-------------------------------|
| 1 <u>Enter no. in stor. entry switches</u> | 6 <u>Transfer button</u> |
| 2 <u>Enter desired add. in add. sel. sw.</u> | 7 <u>Program start button</u> |
| 3 <u>Control switch to manual</u> | 8 _____ |
| 4 <u>Display switch to RI Storage</u> | 9 _____ |
| 5 <u>Computer reset button</u> | 10 _____ |

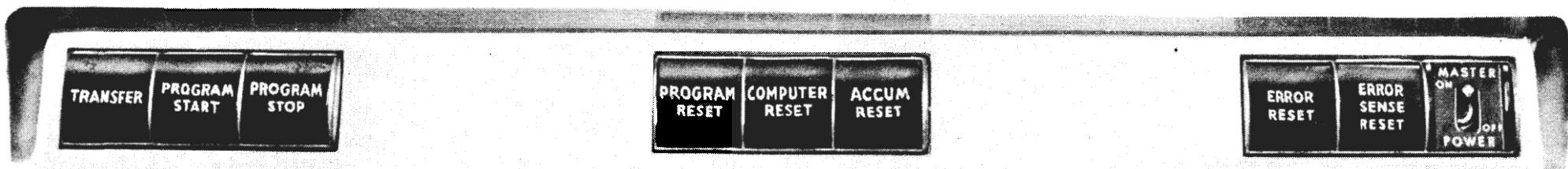
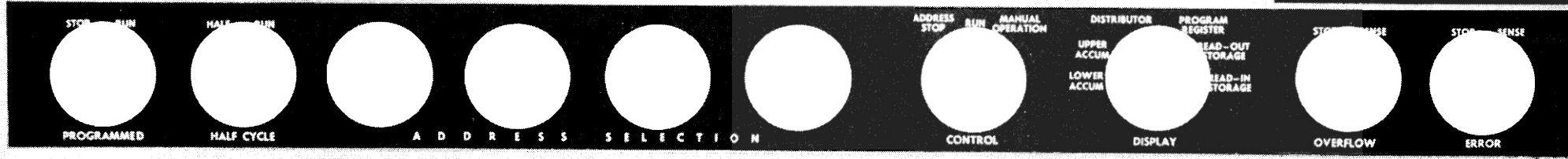


Problem 15, Example. Enter the number +0123456789 in location 1999.

- Instructions:
1. Write sequence of operations in the space provided.
 2. Insert the information as required in the storage entry switches and the address selection switches by writing in the circles that represent these switches.
 3. Indicate the position of programmed, half-cycle, control, display, overflow, and error switches by drawing a line from the center of the circle representing the switch to indicate the position of the switch.

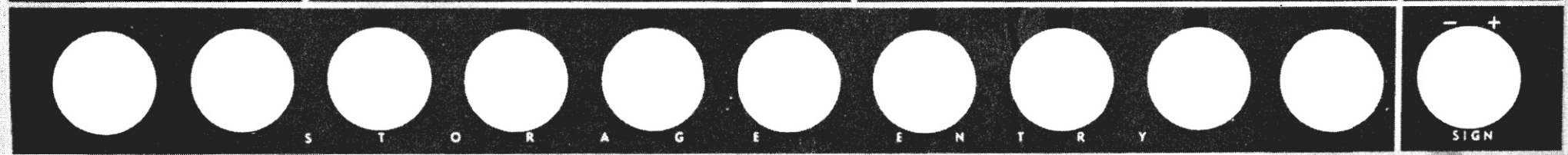
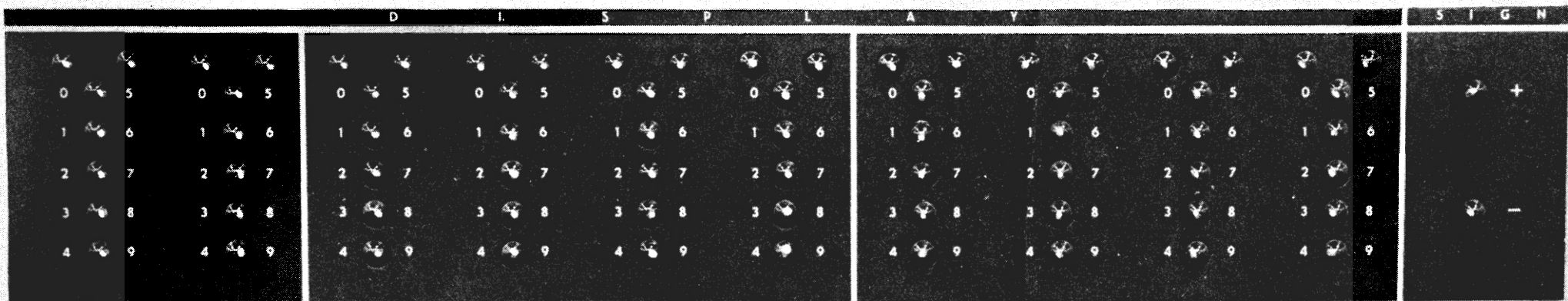
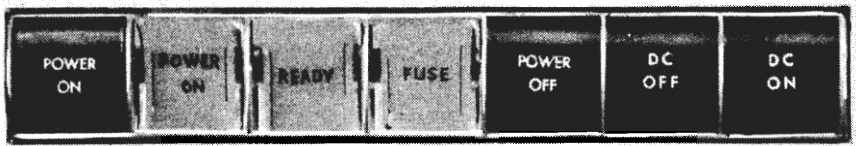


SEQUENCE OF OPERATION		OPERATING			CHECKING	
1	_____	DATA	PROGRAM	PUNCH	PROGRAM REGISTER	CLOCKING
2	_____	INSTRUCTION	ACCUMULATOR	READ	STORAGE SELECTION	ACCUMULATOR
3	_____				DISTRIBUTOR	ERROR SENSE
4	_____				OVERFLOW	
5	_____					
6	_____					
7	_____					
8	_____					
9	_____					
10	_____					



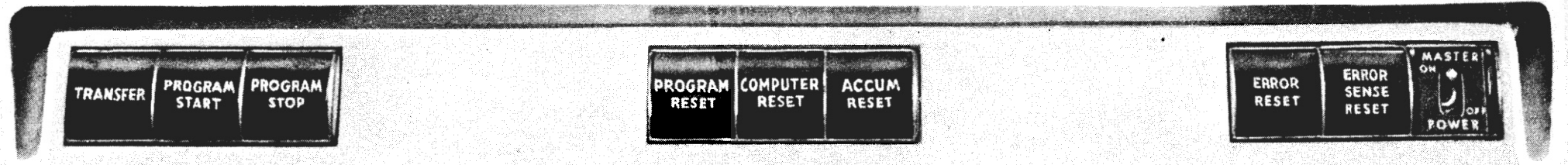
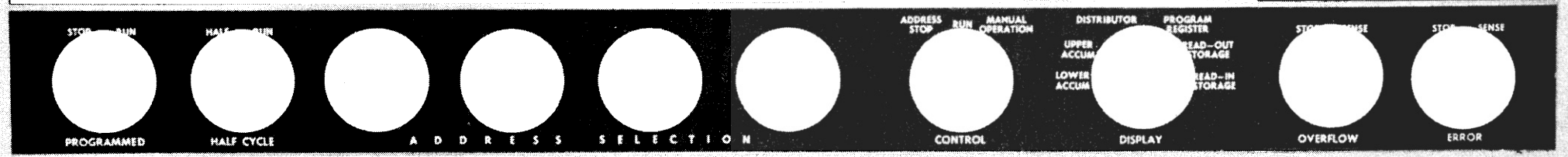
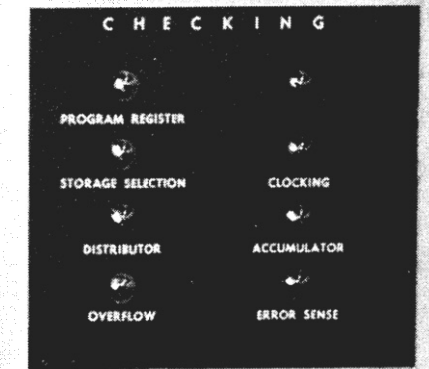
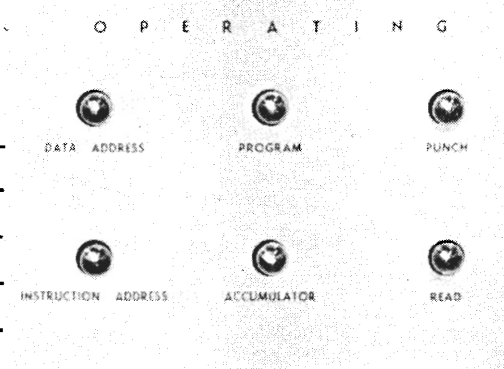
Problem 15, Part 1. Enter the number +1246897651 in location 0300.

1. Write sequence of operations in the space provided.
2. Insert the information as required in the storage entry switches and the address selection switches by writing in the circles that represent these switches.
3. Indicate the position of programmed, half-cycle, control, display, overflow, and error switches



SEQUENCE OF OPERATION

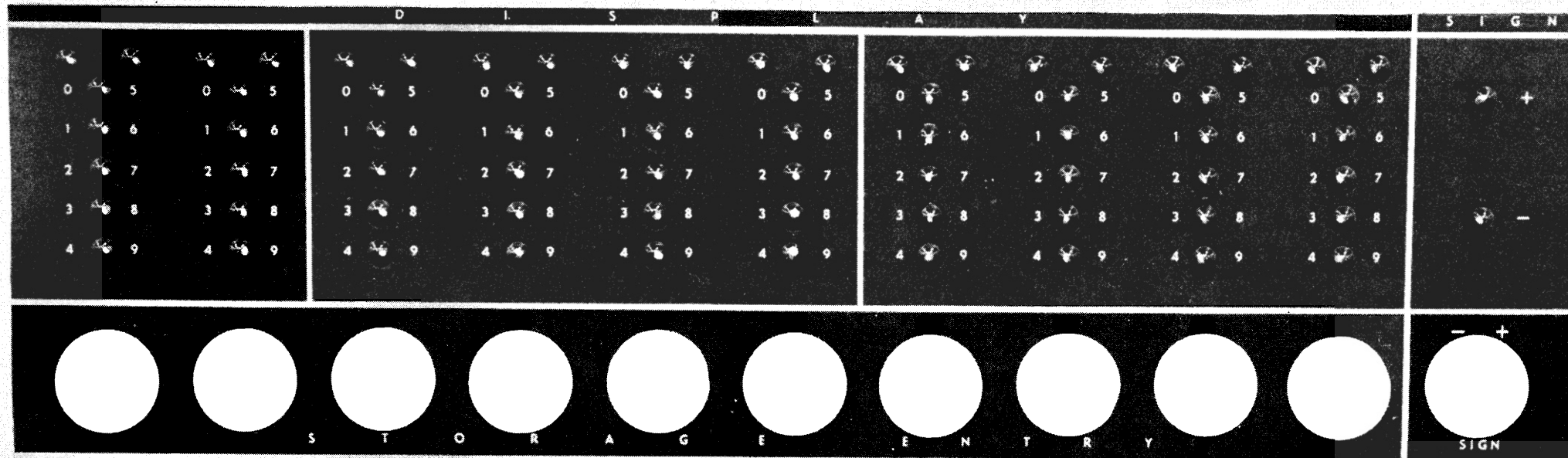
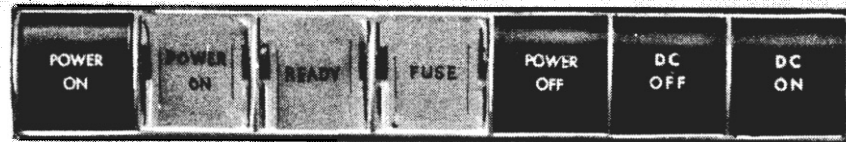
1 _____	6 _____
2 _____	7 _____
3 _____	8 _____
4 _____	9 _____
5 _____	10 _____



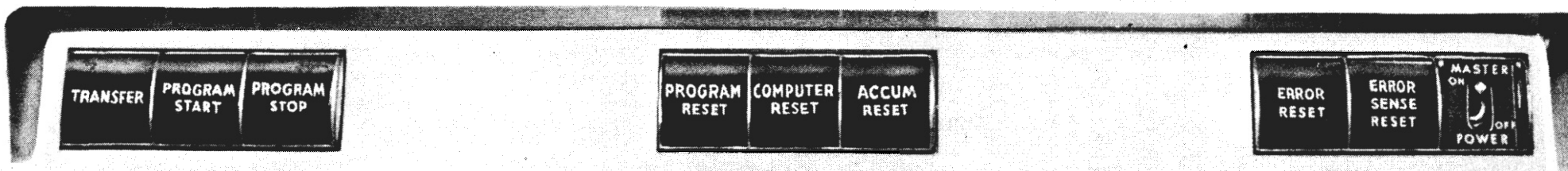
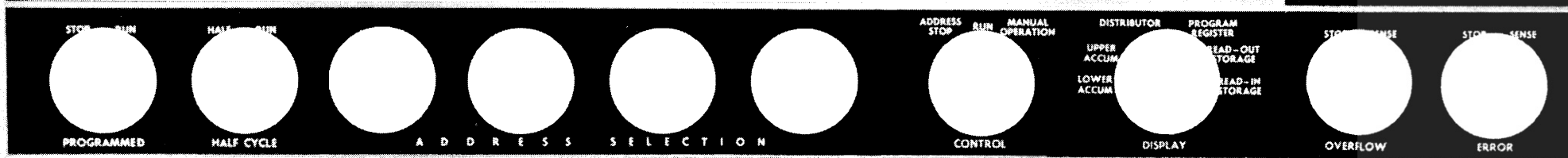
24

Problem 15, Part 4. Enter instruction 70 0301 0001 in location 0500.

- Instructions:
1. Write sequence of operations in the space provided.
 2. Insert the information as required in the storage entry switches and the address selection switches by writing in the circles that represent these switches.
 3. Indicate the position of programmed, half-cycle, control, display, overflow, and error switches by drawing a line from the center of the circle representing the switch to indicate the position of the switch.



SEQUENCE OF OPERATION		OPERATING			CHECKING	
1 _____	6 _____	<input type="checkbox"/> DATA	<input type="checkbox"/> ADDRESS	<input type="checkbox"/> PROGRAM	<input type="checkbox"/> PUNCH	<input type="checkbox"/> PROGRAM REGISTER
2 _____	7 _____	<input type="checkbox"/> INSTRUCTION	<input type="checkbox"/> ADDRESS	<input type="checkbox"/> ACCUMULATOR	<input type="checkbox"/> READ	<input type="checkbox"/> STORAGE SELECTION
3 _____	8 _____					<input type="checkbox"/> CLOCKING
4 _____	9 _____					<input type="checkbox"/> DISTRIBUTOR
5 _____	10 _____					<input type="checkbox"/> ACCUMULATOR
						<input type="checkbox"/> OVERFLOW
						<input type="checkbox"/> ERROR SENSE



Problem 15, Part 5. Start the program by securing the first instruction from the address selection switches. The location is 0500.

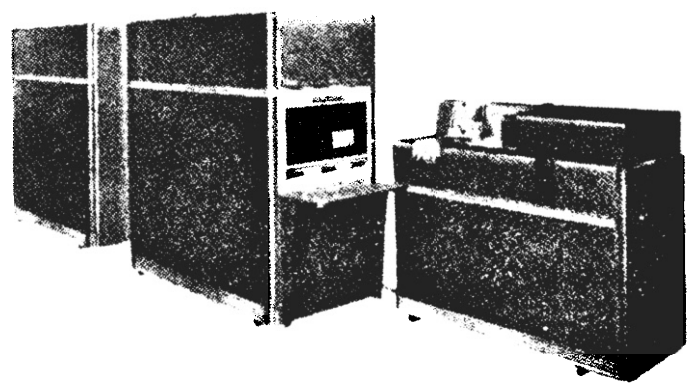
- Instructions: 1. Write sequence of operations in the space provided.
 2. Insert the information as required in the storage entry switches and the address selection switches by writing in the circles that represent the switches.

PROBLEM 16. IBM 533 CONTROL PANEL WIRING PROBLEM

The problem includes a load card, three input cards, and three output cards. Using the IBM 533 control panel diagram, draw in the wiring necessary to complete the problem. All instructions are shown on the individual cards.

INPUT CARD

Instruction. SHOW WIRING NECESSARY TO READ LOAD CARDS.

STAND. LOADING CODE	PROB.	BLOCK	CARD	R	24	LOCATION OF INSTRUCTION	8000	INSTRUCTION TO BE LOADED	OPERATION	REMARKS																																																																					
0	0	0	0	0	0	0	0	0	0	0	<div style="text-align: center;"> <p>650 LOAD CARD</p> <p>ONE INSTRUCTION PER CARD</p>  </div>																																																																				
1	1	1	1	1	1	1	1	1	1	1																																																																					
2	2	2	2	2	2	2	2	2	2	2																																																																					
X	X	X	X	X	X	X	X	X	X	X																																																																					
3	3	3	3	3	3	3	3	3	3	3																																																																					
STANDARD LOADING CODE	PROBLEM	BLOCK NUMBER	CARD NUMBER	R	24	LOCATION OF INSTRUCTION	8000	INSTRUCTION TO BE LOADED	OPERATION ABBREVIATION																																																																						
6	6	6	6	6	6	6	6	6	6	6																																																																					
7	7	7	7	7	7	7	7	7	7	7																																																																					
8	8	8	8	8	8	8	8	8	8	8																																																																					
9	9	9	9	9	9	9	9	9	9	9																																																																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80

INPUT CARDS

Instruction: Show wiring necessary to read these cards.

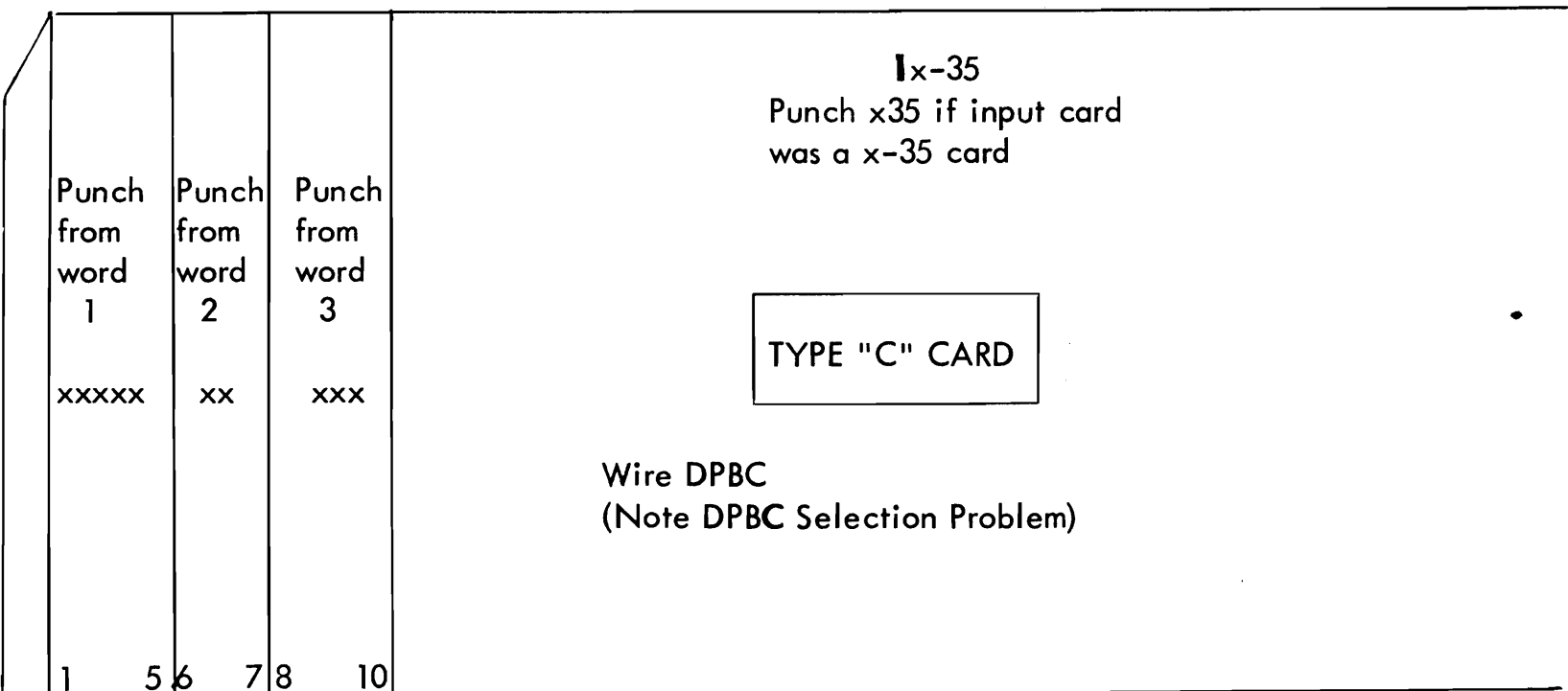
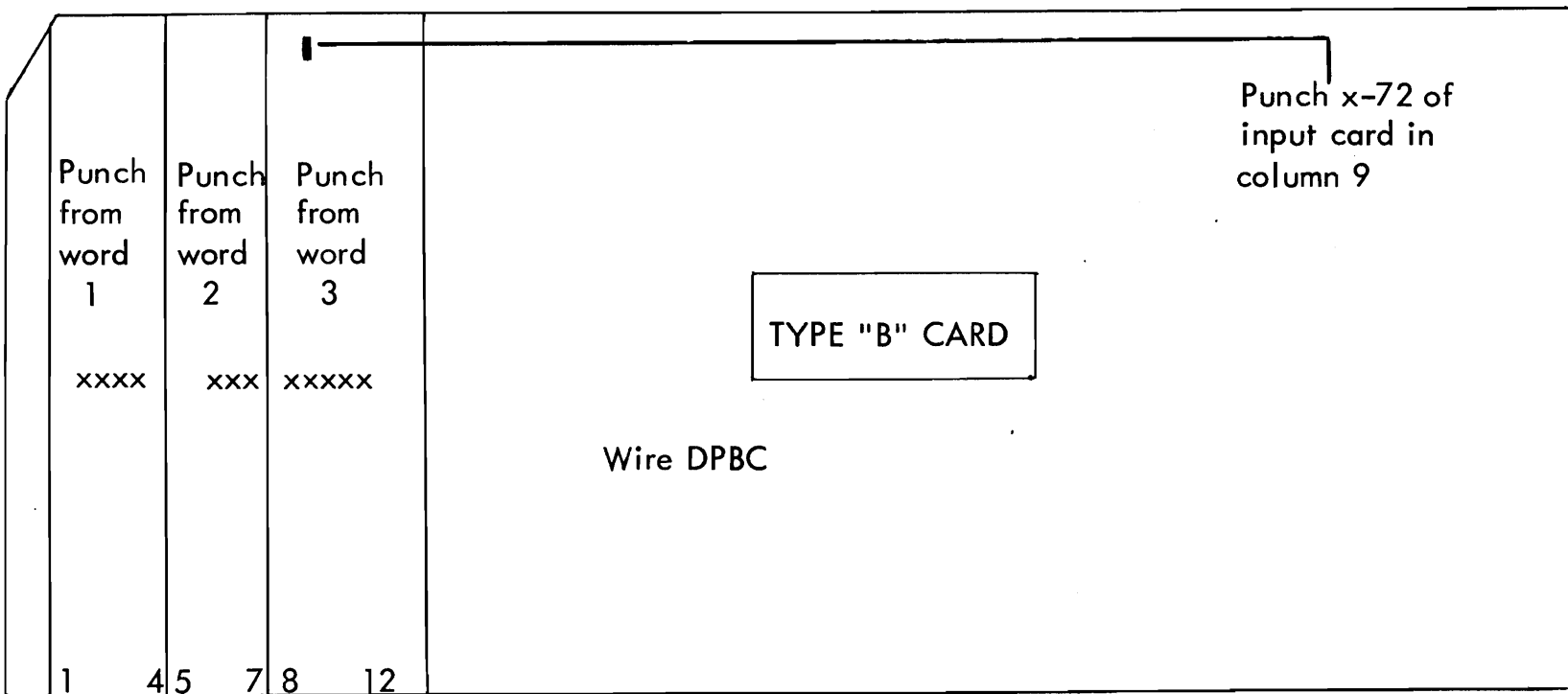
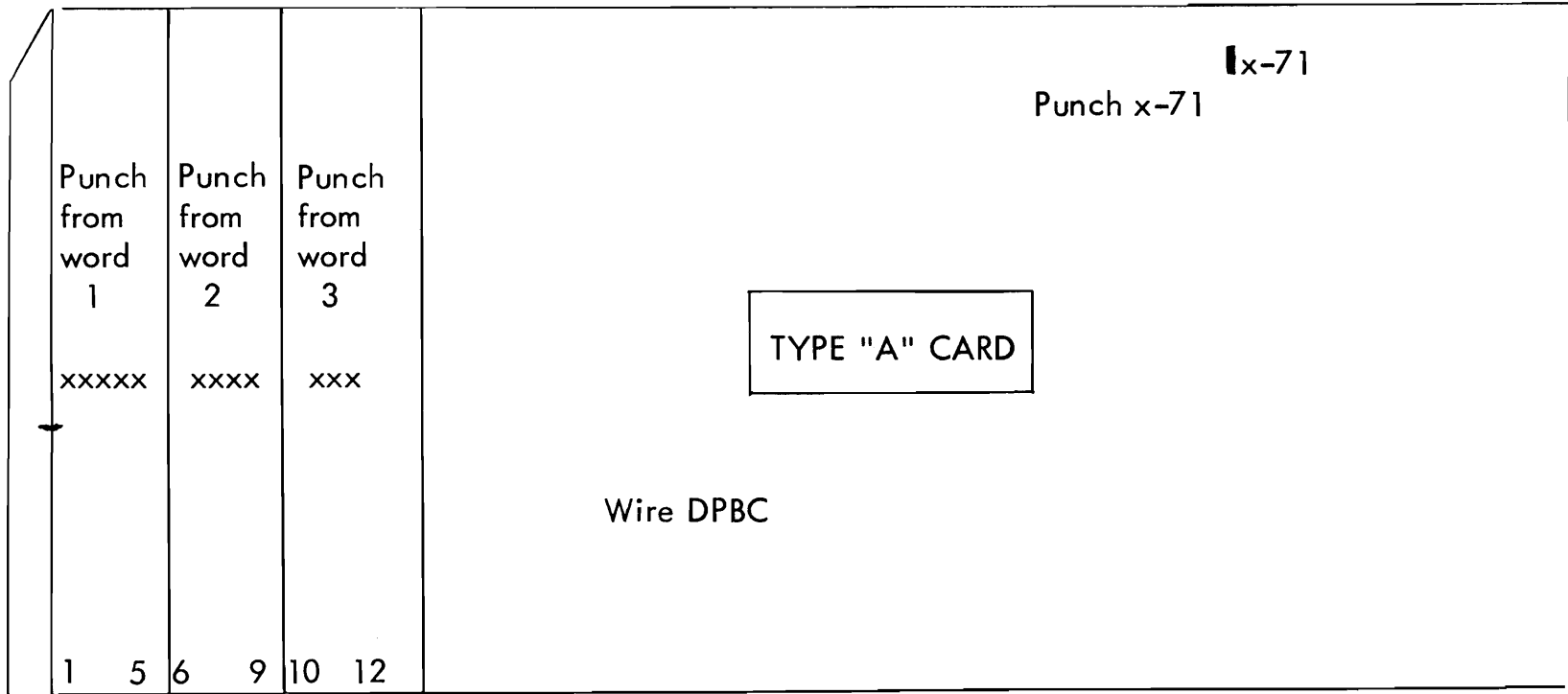
Enter in word 1 xxxxx	Enter in word 2 xxxx	Enter in word 3 xxx	<div style="text-align: right; margin-bottom: 20px;"> x-71 x-71 Identifies Type A Store "X" in 1st position of word 10 to punch </div> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> TYPE "A" CARD </div>
1 5	6 9	10 12	

Enter in word 1 xxxx	Enter in word 2 xxx Enter in high order position of word	Enter in word 3 xxxxx	<div style="text-align: right; margin-bottom: 20px;"> x-72 x-72 Identifies Type B Store "X" in 2nd position of word 10 to punch </div> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> TYPE "B" CARD </div>
1 4	5 7	8 12	

Enter in word 1 xxxxx	Enter in word 2 xx	Enter in word 3 if no x35 xxxxx	Enter in word 3 if x35 xxxxx	<div style="text-align: right; margin-bottom: 20px;"> x35 Read column 8-12 if no x35 Read column 13-17 if x35 Store X in 3rd position of word 10 to punch </div> <div style="text-align: center; border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> TYPE "C" CARD </div>
1 5	6 7	8 12	13 17	

OUTPUT CARDS

Instruction: Show wiring necessary to punch these cards.



PROBLEM 17. 650 INVENTORY CASE PROBLEM

This case problem has been devised to illustrate programming techniques that will be helpful to the beginning student. Therefore, no attempt has been made to use the full capacity of the machine. It is not intended to imply that this is THE way to approach all problems, but simply that it is one way to do this particular job.

A detailed statement of the problem is given in the following pages.

Required

An over-all block diagram is required, together with a detailed diagram of each major block. Optimum programming is not required in developing the planning chart.

Statement of the Problem

The Representative Company manufactures 476 different parts. In order to keep weekly inventory and cost records, three input card forms are used:

X-65 Inventory cards

Columns	1-4	Part number
	5-10	Quantity
	11-15	Average Unit Cost (3 decimals: XX.XXX)
	16-23	Total Cost (2 decimals: XXXXXX.XX)

X-70 Receipt cards

Columns	1-4	Part number
	7-10	Quantity
	11-15	Receipt number
	17-23	Total Cost (2 decimals: XXXXXX.XX)

X-75 Issue cards

Columns	1-4	Part number
	7-10	Quantity
	11-15	Issue number

Output cards will consist of:

X-65 New Balance cards
(same layout as old X-65 Inventory cards)

X-33 Receipt Exception cards
(same layout as X-70 Receipt cards)

X-44 Issue Exception cards
(same layout as X-75 Issue cards)

- After the instructions have been loaded, and the machine tested, all the X-65 Inventory cards are processed, then all the X-70 Receipt cards, and lastly all the X-75 Issue cards. It can be assumed that the groups (i. e. X-65, X-70, and X-75) are in proper sequence. The X-65 Inventory cards have been sorted on part number, the X-70 Receipt cards are in order by Receipt number, and the X-75 Issue cards by Issue number.

The X-65 Inventory cards are the cards that were punched as a result of the previous week's inventory run on the 650. There is one card for each part, and part number, quantity, and total cost are to be loaded on the drum as a table (see Drum Layout, pages 31-32). Part numbers are not necessarily consecutive. Although the Inventory cards have been previously sorted by part number, a routine to insure that the cards are in sequence as they are read into the 650 must be included in the program. Average unit cost punched in these Inventory cards is not to be stored on the drum, as a new up-to-date unit cost will be computed later in the program.

As each X-70 Receipt card is read in, the part number should be located by a TLU operation, and the quantity in the table for this part should be increased by the quantity punched in the Receipt card. The total cost figure for the part should also be increased by the amount punched in the Receipt card. There may be multiple Receipt cards for the same part, and it is possible that a part was manufactured several times during the week, each lot at a different cost. It is also possible that a part may not have been manufactured at all during the past week. If a part number is not on the drum, it is an error, and an X-33 Receipt Exception card should be punched.

When the last X-70 Receipt card has been read, a new average unit cost is to be computed for each part number, and should be stored on the drum for use later in the program.

As each X-75 Issue card is read in, TLU is performed on part number, then reduce the quantity by the amount punched in each Issue card, multiply quantity in each Issue card by the average unit cost, and reduce the total cost by the amount calculated. Some part numbers may have multiple activity while others may have no activity. It can be assumed that Issues will never exceed the quantity on hand for any particular part. If a part number is not in the table, it is an error, and an X-44 Issue Exception card should be punched.

After all the cards have been processed, punch out an X-65 New Balance card for each part number with the new figures from the drum.

The drum layout is as follows:

Locations 0000-0493	XXXX	XXXXXXX
	Part	Quantity
Location 0494	9999999999	
Locations 0500-0993	00000XX.	XXX
	Average unit cost	
Locations 1000-1493	00XXXXXXX.	XX
	Total cost	

Read-in Band: 1501-1510

1501--Part number *
1502--Quantity *
1503--Average unit cost
1504--Total cost
1505--Receipt number (X-70)
Issue number (X-75)
1508--Test word
0000000998--X-65 card
0000000989--X-70 card
0000000899--X-75 card

*Note--Applies only to X-70 and X-75 cards. X-65 cards will have part number and quantity wired into the first word (1501), and the second word (1502) will be wired so that it contains all zeros.

Punch-out Band: 1927-1936

1927--Part number **
1928--Quantity **
1929--Average unit cost
1930--Total cost
1931--Receipt number (X-70)
Issue number (X-75)
1936--Control word
0000000989--X-33 card
0000000899--X-44 card
0000000008--X-65 card

**Note--Applies only to X-33 and X-44 cards. On the new X-65 cards, part number and quantity will be punched from 1927, and 1928 will not be wired for punching.

Start the instructions for each block in the following locations:

Block 00--Drum location 1601

Block 10--Drum location 1620

Block 20--Drum location 1675

Block 30--Drum location 1750

Block 40--Drum location 1800

Block 50--Drum location 1900

Constants--Drum location 1511 up.

INPUT CARD FORMS

INVENTORY CARD

Part No.	Quantity	Average Unit Cost	Total Cost	
1	4 5	10 11	15 16	23
XXXX	XXXXXX	XX.XXX	XXXXXX.XX	

□ X-65

RECEIPT CARD

Part No.	Quantity	Receipt No.	Total Cost	
1	4	7 10 11	15 17	23
			XXXXX.XX	

□ X-70

ISSUE CARD

Part No.	Quantity	Issue No.	
1	4	7 10 11	15

□ X-75

OUTPUT CARD FORMS

NEW BALANCE CARD

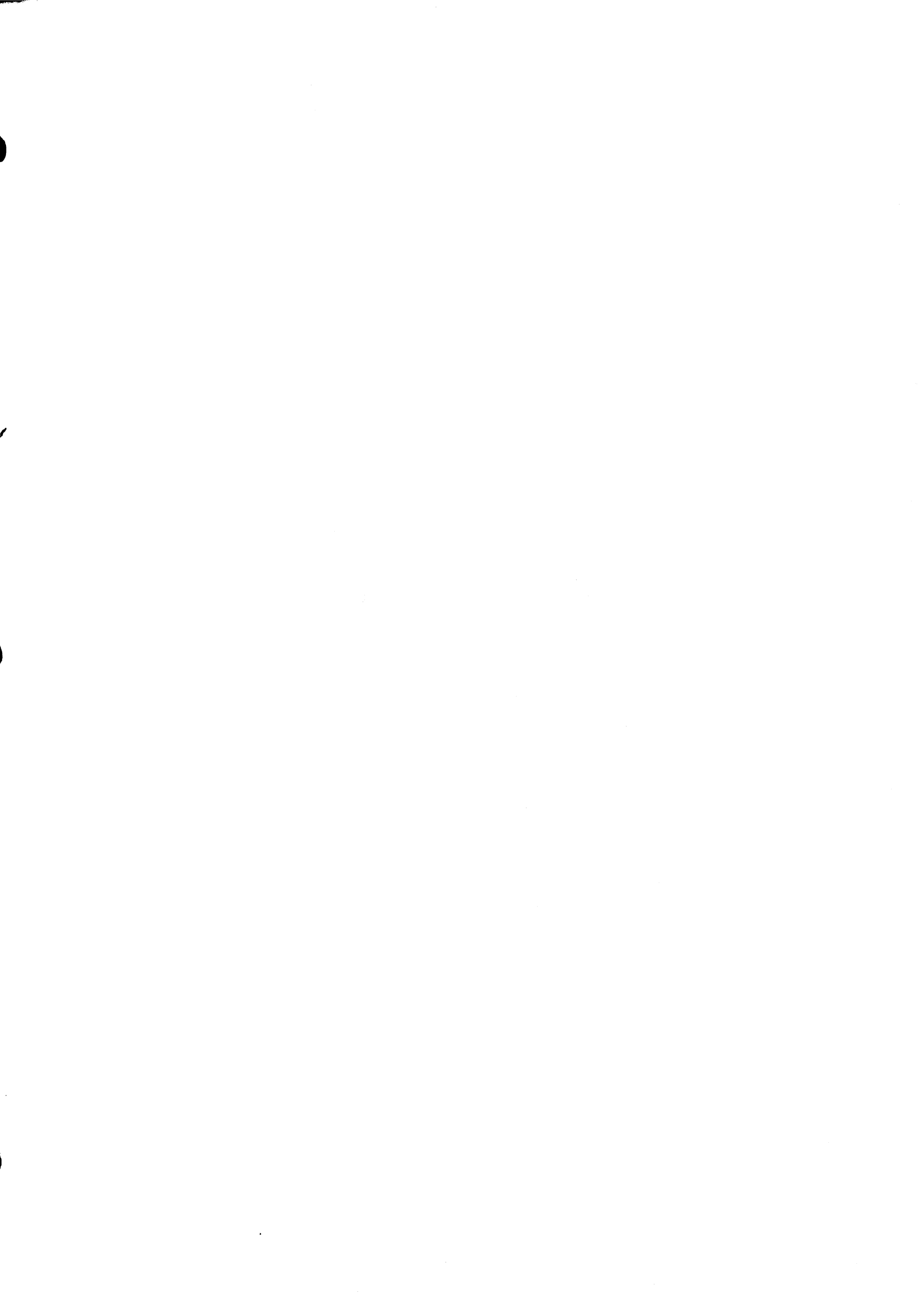
Part No.		Quantity		Average Unit Cost		Total Cost		X-65
1	45	10	11	15	16	23		
				XX.XXX	XXXXXXXX	XX		

RECEIPT EXCEPTION CARD

Part No.		Quantity		Receipt No.		Total Cost		X-33
1	4	7	10	11	15	17	23	
						XXXXXX	XX	

ISSUE EXCEPTION CARD

Part No.		Quantity		Issue No.		X-44
1	4	7	10	11	15	



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