

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
AS GCE**

4751

MATHEMATICS (MEI)

Introduction to Advanced Mathematics (C1)

PRINTED ANSWER BOOK

WEDNESDAY 16 MAY 2012: Morning

DURATION: 1 hour 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Printed Answer Book or any suitable paper provided by the Centre.

OCR SUPPLIED MATERIALS:

Question paper 4751 (inserted)

MEI Examination Formulae and Tables (MF2)

OTHER MATERIALS REQUIRED:

None

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

These instructions are the same on the Printed Answer Book and the Question Paper.

- **The Question Paper will be found in the centre of the Printed Answer Book.**
- **Write your name, centre number and candidate number in the spaces provided on the Printed Answer Book. Please write clearly and in capital letters.**
- **WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED IN THE PRINTED ANSWER BOOK.** Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- **Use black ink. HB pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **Answer ALL the questions.**
- **Do NOT write in the bar codes.**
- **You are NOT permitted to use a calculator in this paper.**
- **Final answers should be given to a degree of accuracy appropriate to the context.**

INFORMATION FOR CANDIDATES

This information is the same on the Printed Answer Book and the Question Paper.

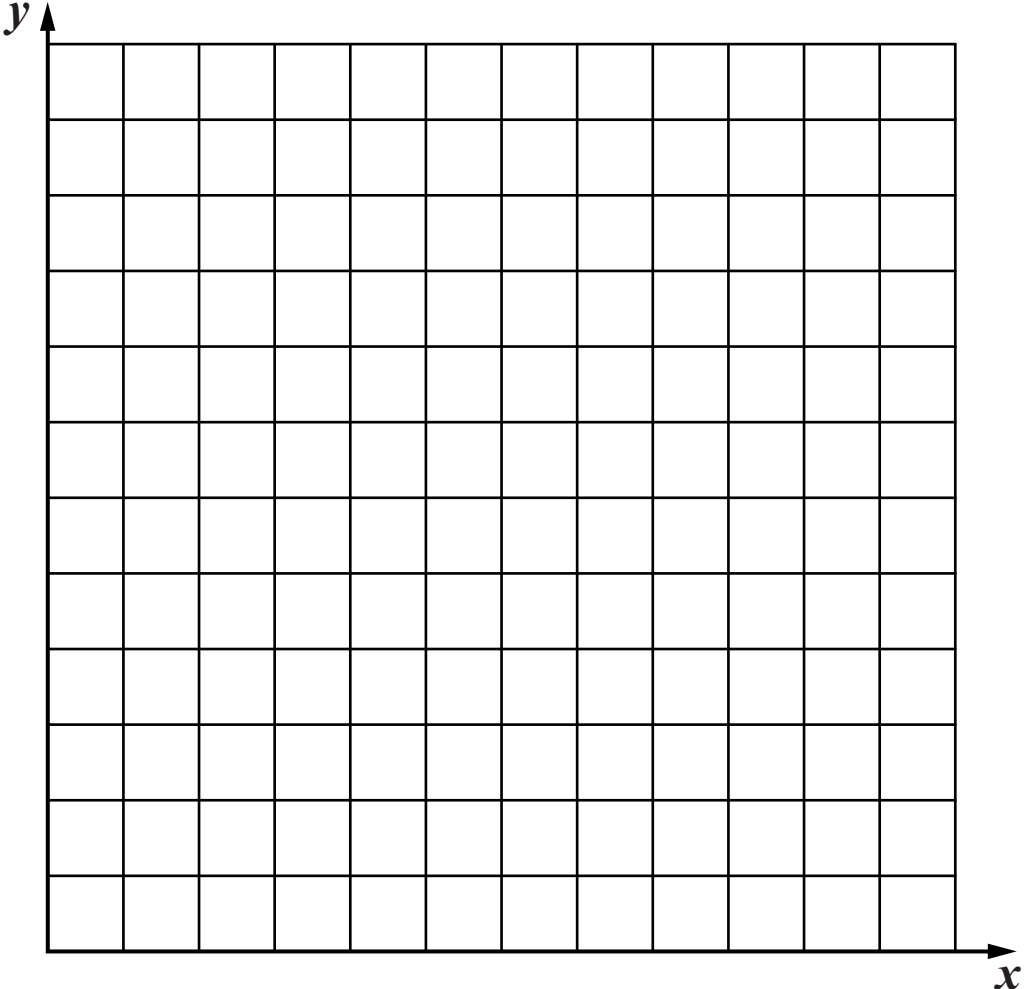
- **The number of marks is given in brackets [] at the end of each question or part question on the Question Paper.**
- **You are advised that an answer may receive NO MARKS unless you show sufficient detail of the working to indicate that a correct method is being used.**
- **The total number of marks for this paper is 72.**
- **The Printed Answer Book consists of 12 pages. The Question Paper consists of 4 pages. Any blank pages are indicated.**

Section A (24 marks)

1	

1 (v)	

2 (i)	

	
2 (ii)	

3 (i)

x	1	2	3
Probability($X = x$)	$\frac{1}{2}$	$\frac{1}{6}$	$\frac{1}{3}$

3 (ii)	<table><tr><td>y</td><td>1</td><td>2</td><td>3</td></tr><tr><td>Probability($Y = y$)</td><td>$\frac{1}{2}$</td><td>$\frac{1}{4}$</td><td>$\frac{1}{4}$</td></tr></table>	y	1	2	3	Probability($Y = y$)	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$
	y	1	2	3					
	Probability($Y = y$)	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$					

3 (iii)	

SECTION B (48 marks)

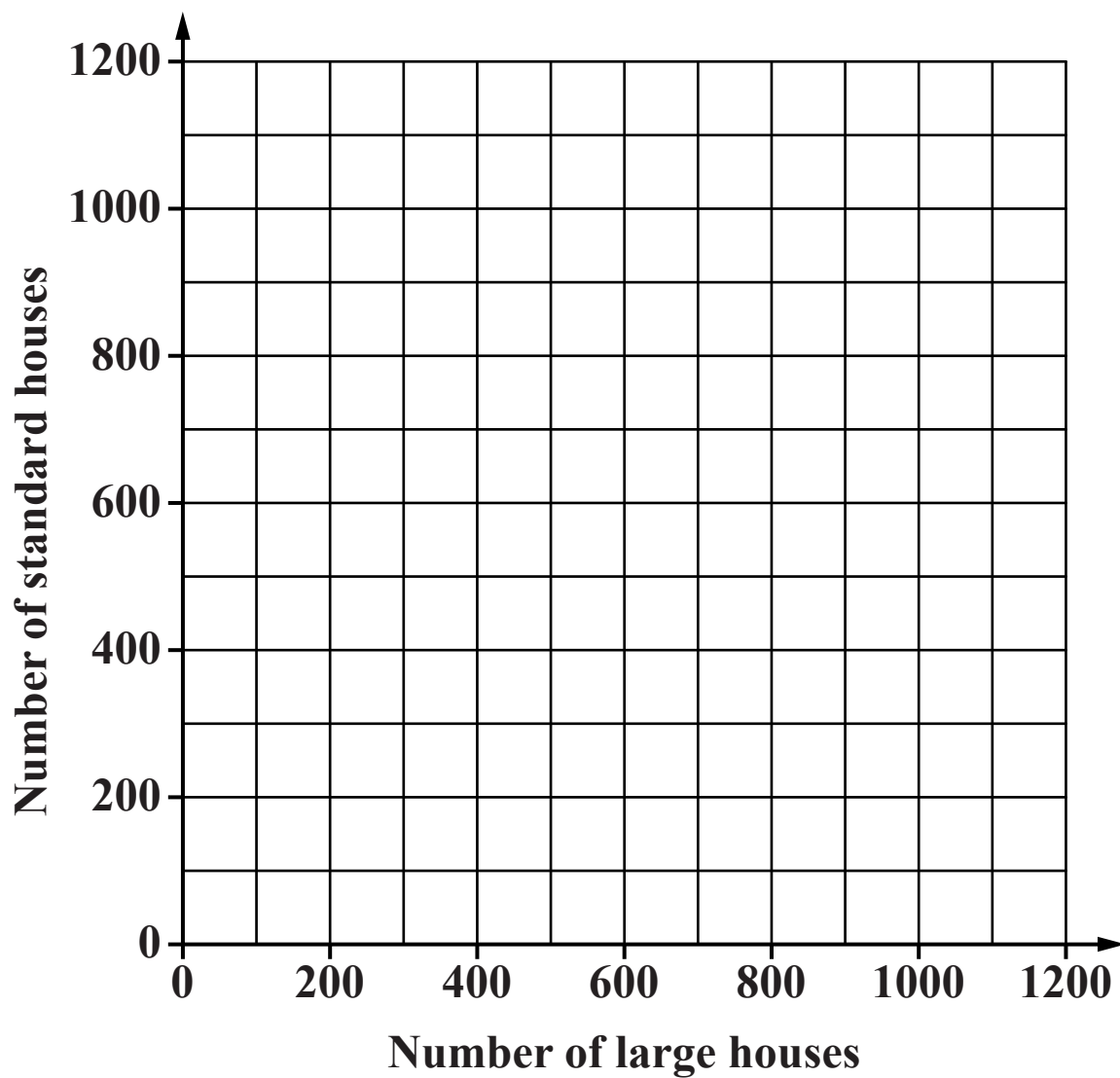
4 (i)	

SECTION B (48 marks)

<p>4 (ii)</p>	<div data-bbox="287 224 1436 1321"></div> <p>THERE IS A SPARE COPY OF THIS GRAPH PAPER ON PAGE 14.</p>							
	<div data-bbox="263 1507 1457 2089"><table border="1"><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr></table></div>							

4 (iii)	
4 (iv)	

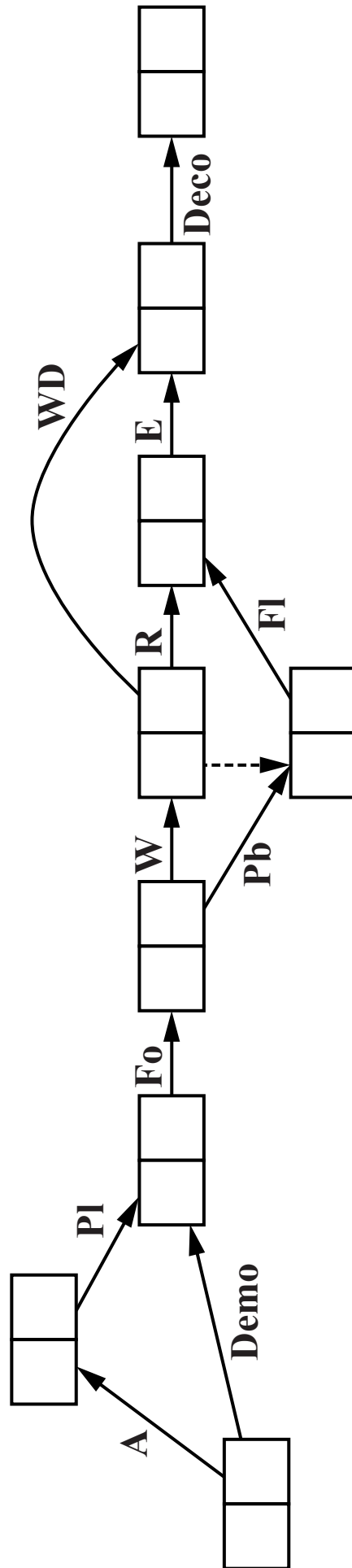
4 (ii) SPARE COPY OF GRAPH PAPER



5 (i)

Activity	Immediate predecessor(s)
A	
Pl	
Demo	
Fo	
W	
Pb	
R	
Fl	
E	
WD	
Deco	

5 (ii)



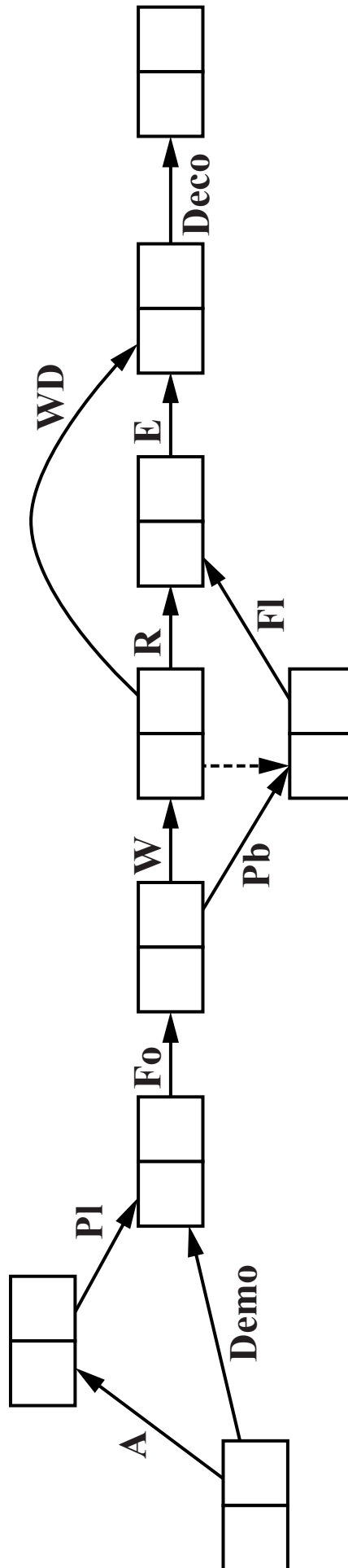
THERE IS A SPARE COPY OF THIS ACTIVITY NETWORK ON PAGE 19.

5 (iii)	
	task: A Pl Demo Fo W Pb R Fl E WD Deco float:
5 (iv)	

5 (v)	
5 (vi)	

5 (ii)

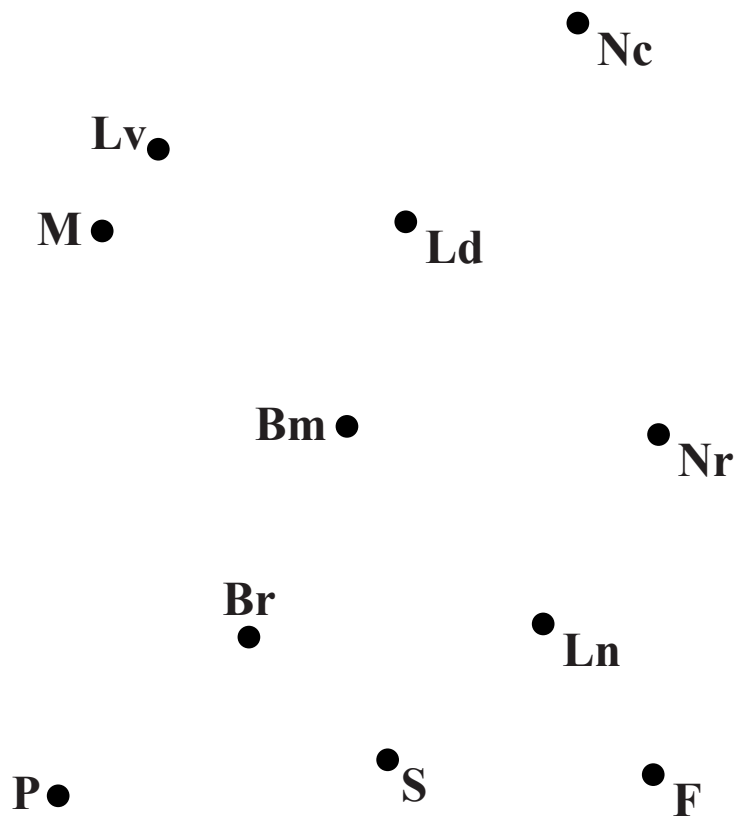
SPARE COPY OF ACTIVITY NETWORK



6 (i)

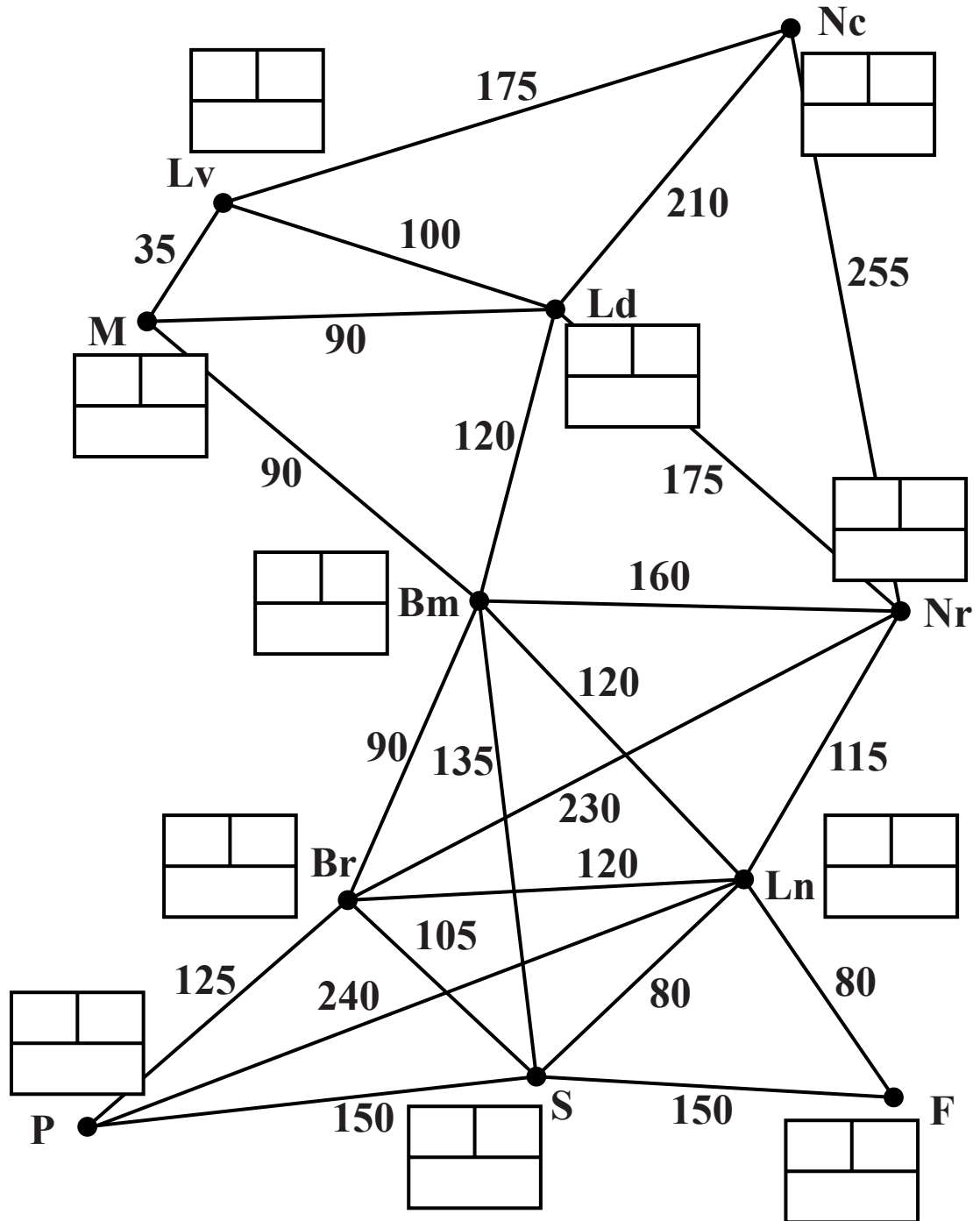
	P	S	F	Ln	Br	Nr	Bm	Ld	Nc	Lv	M
P	—	150	—	240	125	—	—	—	—	—	—
S	150	—	150	80	105	—	135	—	—	—	—
F	—	150	—	80	—	—	—	—	—	—	—
Ln	240	80	80	—	120	115	120	—	—	—	—
Br	125	105	—	120	—	230	90	—	—	—	—
Nr	—	—	—	115	230	—	160	175	255	—	—
Bm	—	135	—	120	90	160	—	120	—	—	90
Ld	—	—	—	—	—	175	120	—	210	100	90
Nc	—	—	—	—	—	255	—	210	—	175	—
Lv	—	—	—	—	—	—	—	100	175	—	35
M	—	—	—	—	—	—	90	90	—	35	—

Min connector



6 (ii)	

6 (iii)



**THERE IS A SPARE COPY OF THIS NETWORK ON
PAGE 23.**

6 (iv)	
6 (iii)	<p>SPARE COPY OF NETWORK</p> <pre> graph TD P((P)) --- 125 Br((Br)) P --- 150 S((S)) P --- 240 Ln((Ln)) S --- 105 Br S --- 135 Bm((Bm)) S --- 80 Ln S --- 150 F((F)) Br --- 90 Bm Br --- 230 Ln Bm --- 120 Lv((Lv)) Bm --- 160 Nr((Nr)) Bm --- 120 Ln Lv --- 35 M((M)) Lv --- 100 Ld((Ld)) Lv --- 175 Nc((Nc)) M --- 90 Ld M --- 90 Bm Ld --- 210 Nc Ld --- 175 Nr Nr --- 255 Nc Nr --- 115 Ln Ln --- 80 F </pre> <p>The diagram illustrates a network topology with 12 nodes, each represented by a black dot and a label. Each node is accompanied by an empty table icon, suggesting a data structure or interface for each node. The nodes are interconnected by weighted edges, with the weights representing the cost or distance between them. The nodes are distributed across the diagram, with P, S, Br, Bm, Lv, M, Ld, Nr, Ln, F, and Nc forming the main network, and F and Nc being terminal nodes.</p>

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