higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

MULTI-DISCIPLINARY DRAWING OFFICE PRACTICE: ELECTRICAL DRAUGHTING

6 AUGUST 2020

This marking guideline consists of 7 pages.

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MARK ALLOCATION SUMMARY							
ELEMENT	**QUESTION**	**1**	**2**	**3**	**4**	**5**	**%**
Balanced layout & size		0	5	4	5	4	**18%**
Correctness		20	10	6	5	7	**48%**
Lettering		0	0	5	5	5	**15%**
Linework & neatness		0	5	5	5	4	**19%**
TOTAL		**20**	**20**	**20**	**20**	**20**	**100%**

QUESTION 1: GENERAL THEORY

1.1

1.1.1	Main supply	16 mm^2✓
1.1.2	Cooking appliance	6–10 mm^2✓
1.1.3	Geyser	4 mm^2✓
1.1.4	Socket outlet	2,5 mm^2✓
1.1.5	Illumination	1,5 mm^2✓

(5 × 1) (5)

- Length
- Cross-sectional area (or diameter)
- Resistivity (type of material)
- Temperature

(Any 3 × 1) (3)

1.3

$$S = \sqrt{3} \times V_L \times I_L \checkmark$$
$$200 \times 10^3 = \sqrt{3} \times 380 \times I_L$$
$$I_L = \frac{200 \times 10^3}{\sqrt{3} \times 380} \checkmark$$
$$= 303{,}869\ A \checkmark$$

(3)

1.4 1.4.1 If a rotating object (e.g., a gear that rotates at 45 r/s) is illuminated by a discharge lamp that operates from a AC supply (e.g., 50 Hz), the stroboscopic effect creates the illusion that the gear rotates anti-clockwise at a slower speed (50 – 45 = 5 r/s). (2)

1.4.2 At any real rotational speed that is a multiple of the supply frequency (e.g., 50 r/s; 100 r/s, 150 r/s, etc.), the stroboscopic effect will create the illusion that the gear is standing still. (2)

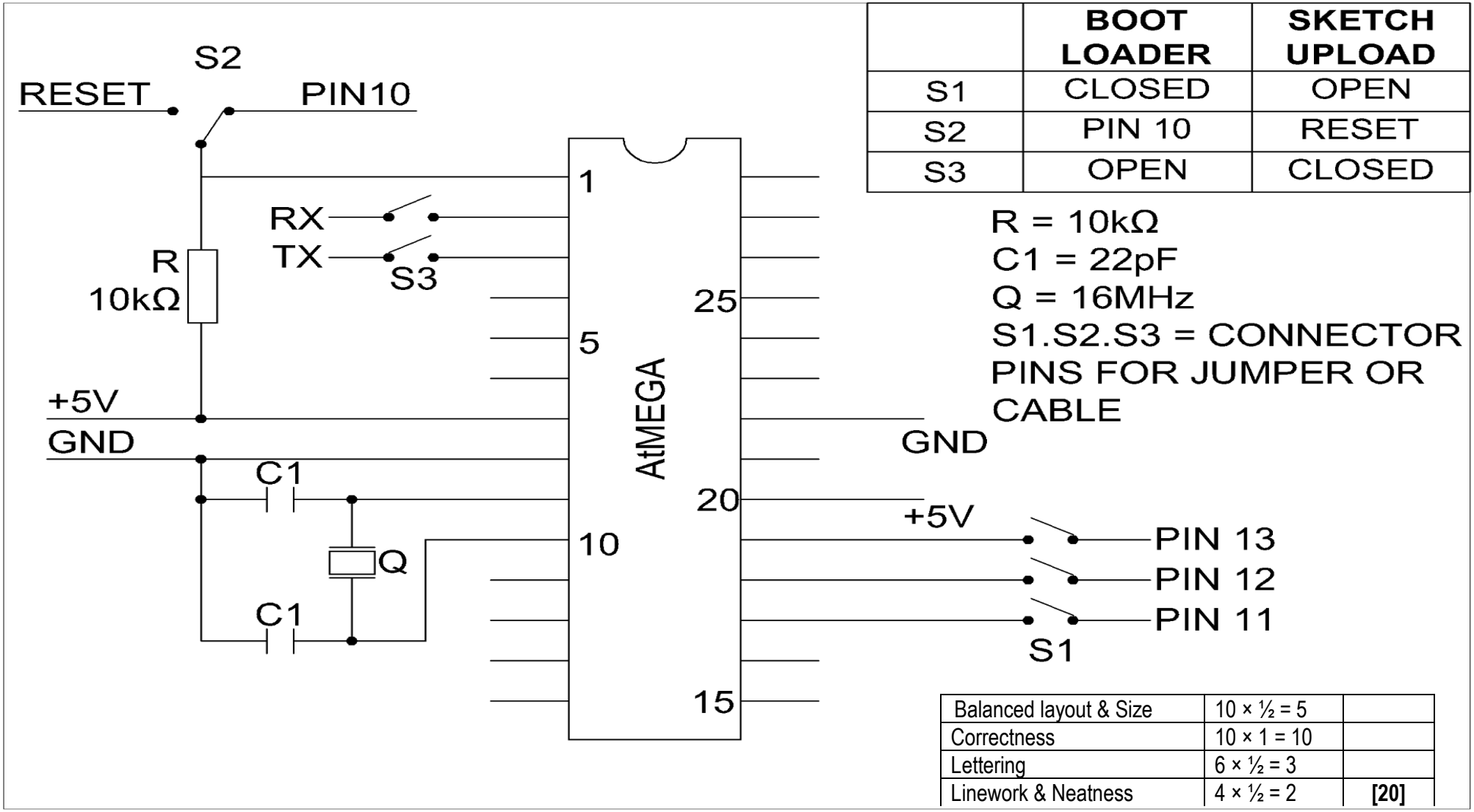
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1.5

Electrical Quantity	Standard Unit
Power✓	Kilowatt
Frequency✓	Hertz
Reactance	Ohm✓
Impedance	Ohm✓
Energy	Joule✓

(5)
[20]

QUESTION 2: GRAPHICAL SYMBOLS



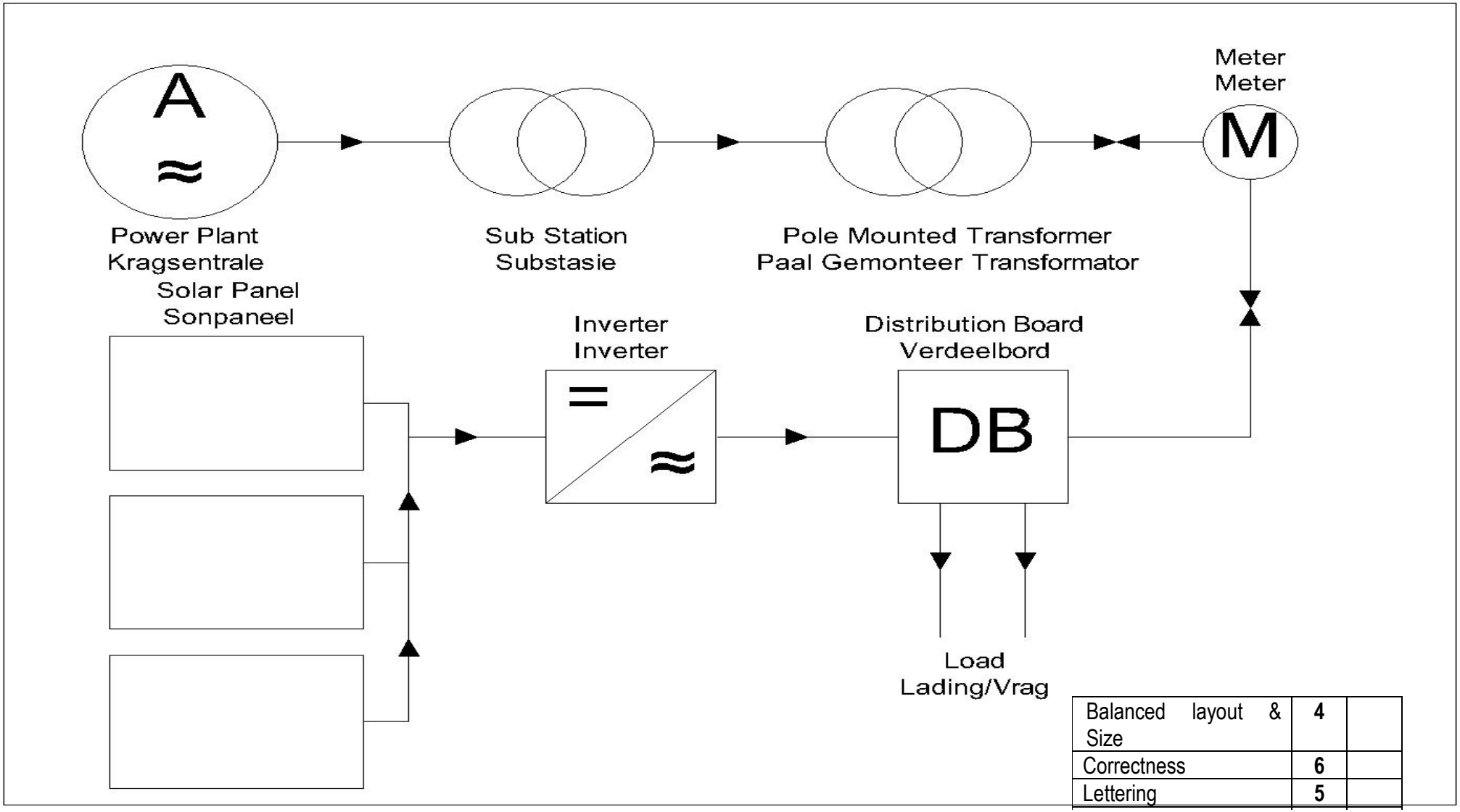
	BOOT LOADER	SKETCH UPLOAD
S1	CLOSED	OPEN
S2	PIN 10	RESET
S3	OPEN	CLOSED

R = 10kΩ
C1 = 22pF
Q = 16MHz
S1.S2.S3 = CONNECTOR PINS FOR JUMPER OR CABLE

Balanced layout & Size	10 × ½ = 5	
Correctness	10 × 1 = 10	
Lettering	6 × ½ = 3	
Linework & Neatness	4 × ½ = 2	**[20]**

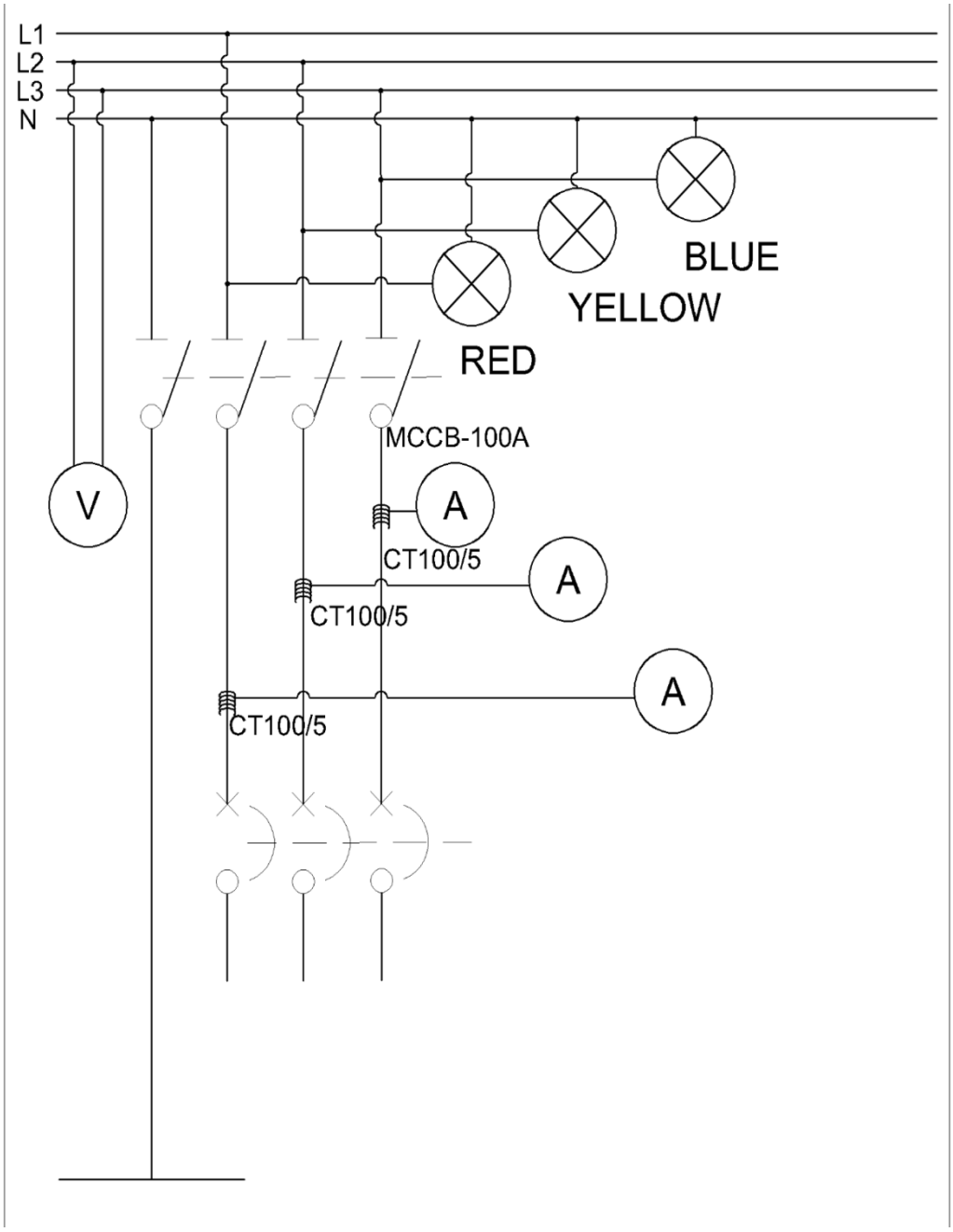
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QUESTION 3: GENERATION AND DISTRIBUTION OF ELECTRICITY



Balanced layout & Size	**4**	
Correctness	**6**	
Lettering	**5**	

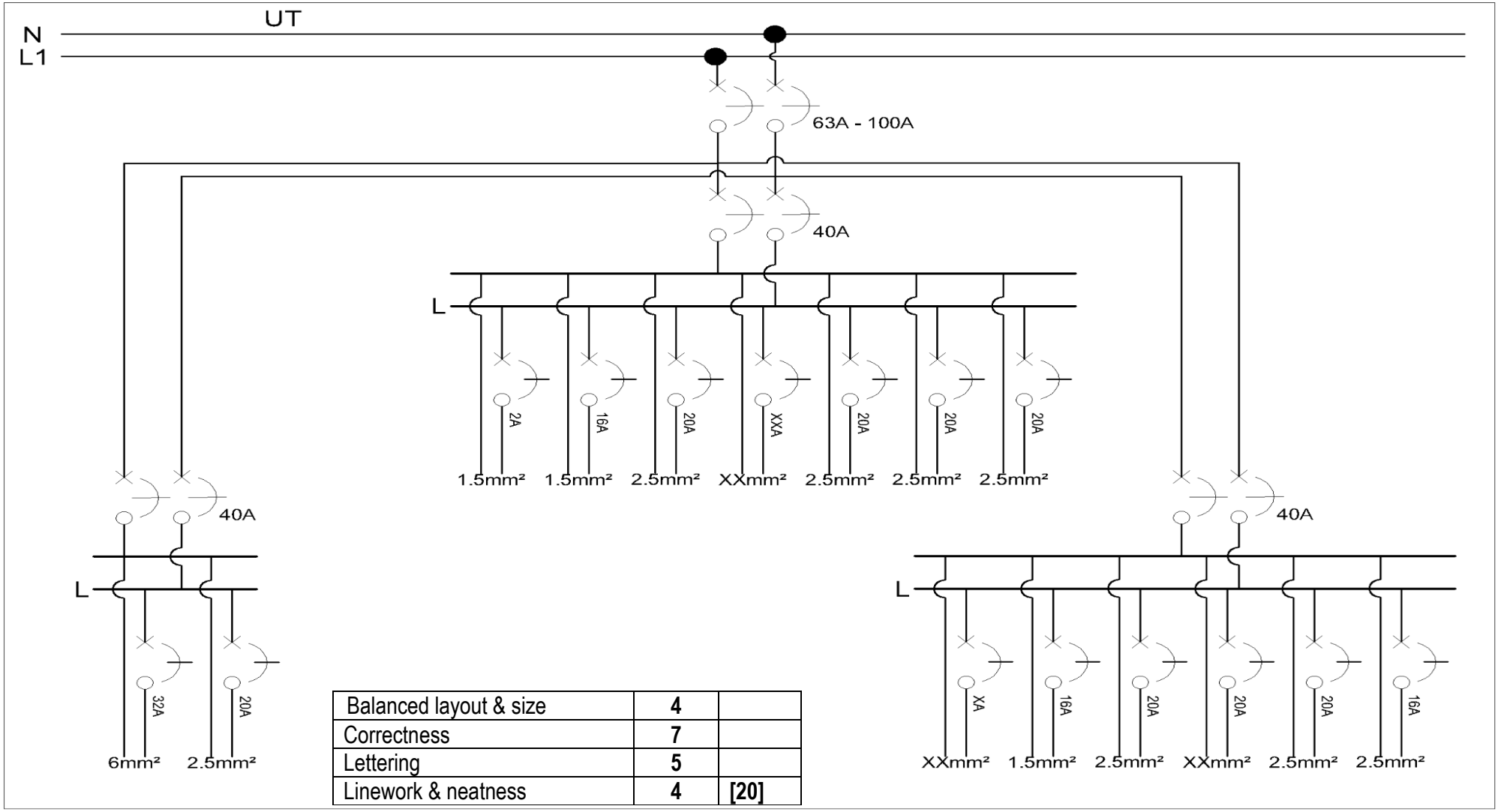
QUESTION 4: ELECTRICAL MOTORS AND CONTROL DEVICES



Balanced layout & Size	**5**	
Correctness	**5**	
Lettering	**5**	
Linework & Neatness	**5**	**[20]**

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QUESTION 5: WIRING OF PREMISES



Balanced layout & size	**4**	
Correctness	**7**	
Lettering	**5**	
Linework & neatness	**4**	**[20]**

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