higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

ELECTRICAL DRAUGHTING

8 AUGUST 2018

This marking guideline consists of 7 pages.

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MARK ALLOCATION SUMMARY							
ELEMENT	**QUESTION**	**1**	**2**	**3**	**4**	**5**	**%**
Balanced layout and size		0	4	4	5	4	**17%**
Correctness		20	7	6	5	7	**45%**
Lettering		0	5	5	5	5	**20%**
Line work and neatness		0	4	5	5	4	**18%**
TOTAL:		**20**	**20**	**20**	**20**	**20**	**100%**

QUESTION 1: GENERAL THEORY

1.1 1.1.1 16 mm^2
1.1.2 6-10 mm^2
1.1.3 4 mm^2
1.1.4 2,5 mm^2
1.1.5 1,5 mm^2

(5 × 1) (5)

1.2
- Length
- Cross-sectional area (or diameter)
- Resistivity (or type of material)
- Temperature

(Any 3 × 1) (3)

1.3 $S = \sqrt{3} \times V_L \times I_L$

$250 \times 10^3 = \sqrt{3} \times 400 \times I_L$

$I_L = 250 \times 10^3 / (\sqrt{3} \times 400)$

$= 360,84$ A (3)

1.4 If a rotating object (e.g. a gear that rotates at 45 r/s) is illuminated by a discharge lamp that operates from an AC supply (e.g. 50 Hz) the stroboscopic effect creates the illusion that the gear rotates anticlockwise at a slower speed (50 – 45 = 5 r/s). 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. (4)

1.5

ELECTRICAL QUANTITY	STANDARD UNIT
Inductance	H
Frequency	Hz
Reactance	Ω
Impedance	Ω
Energy	J

(5)
[20]

QUESTION 2: GRAPHICAL SYMBOLS AND ELECTRONIC DIAGRAMS

2.1



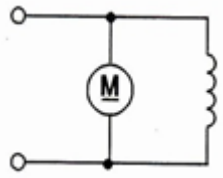
Permanent magnet

2.2



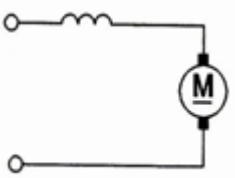
Inductor with magnetic core

2.3



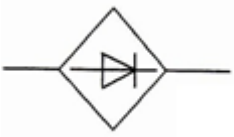
DC shunt motor

2.4



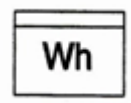
DC series motor

2.5



Rectifier full wave (line symbol)

2.6



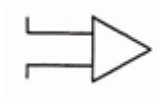
Watt-hour meter

2.7 

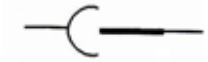
Clock

2.8 

Bell

2.9 

Siren

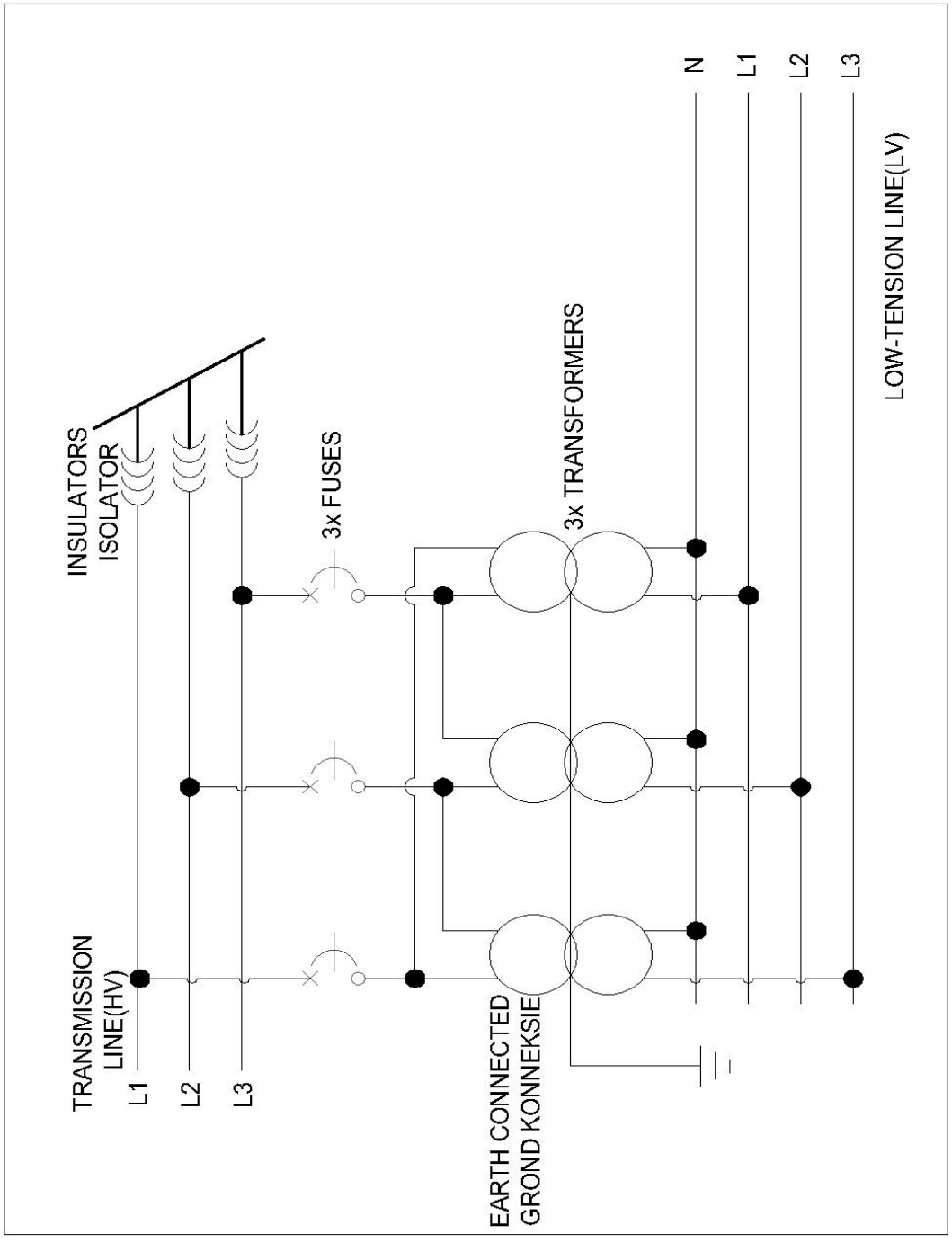
2.10 

Plug-and-socket device

Balanced layout and size	4
Correctness	7
Lettering	5
Line work and neatness	4

(10 × 2) **[20]**

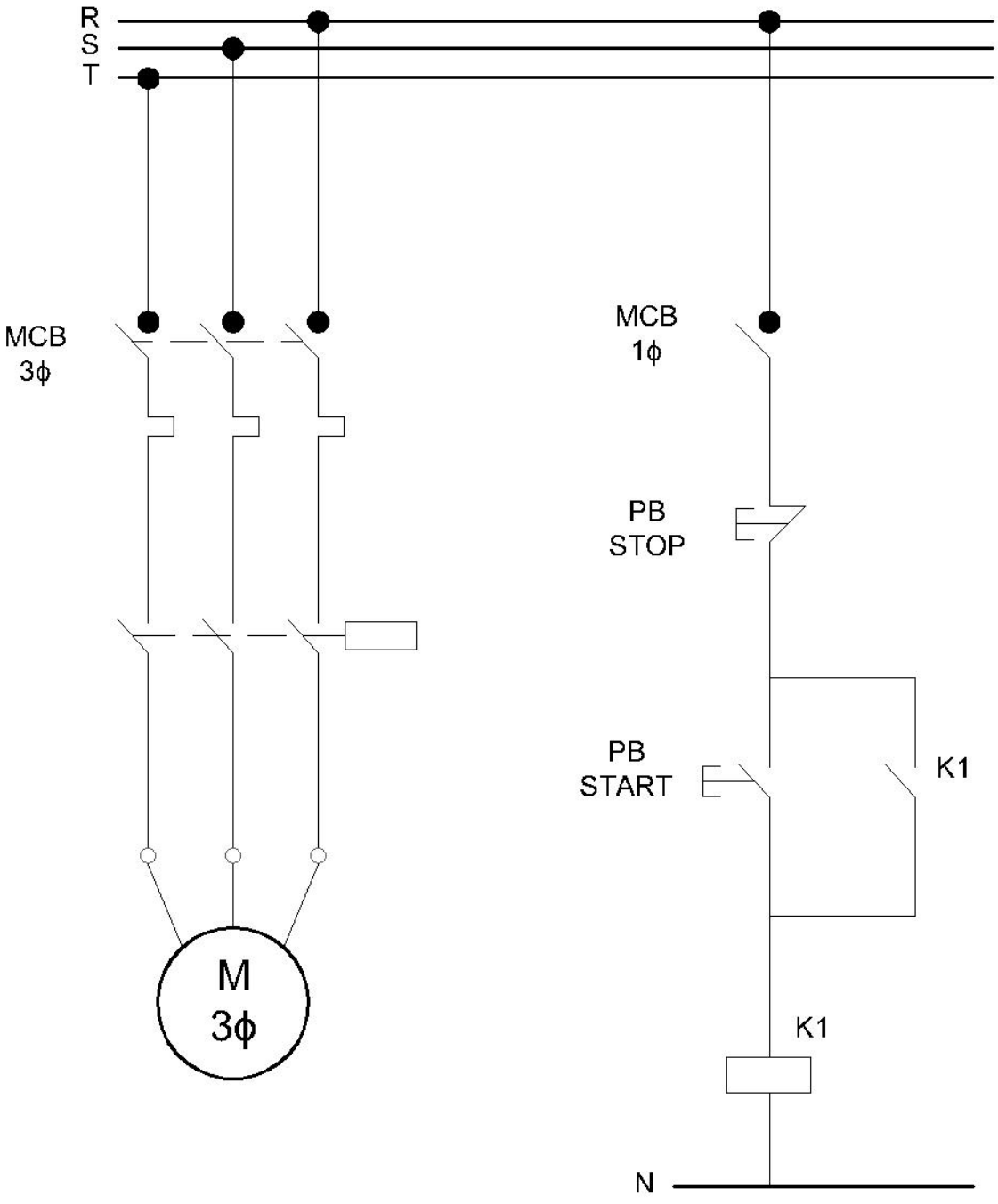
QUESTION 3: GENERATION AND DISTRIBUTION OF ELECTRICITY



Balanced layout and size	**4**
Correctness	**6**
Lettering	**5**
Line work and neatness	**5**

[20]

QUESTION 4: ELECTRICAL MOTORS AND CONTROL DEVICES

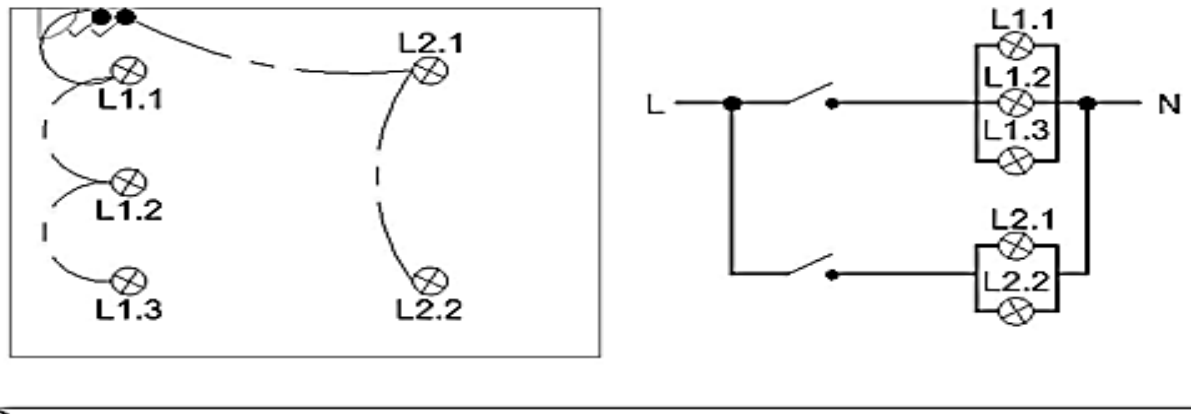


Balanced layout and size	**5**
Correctness	**5**
Lettering	**5**
Line work and neatness	**5**

[20]

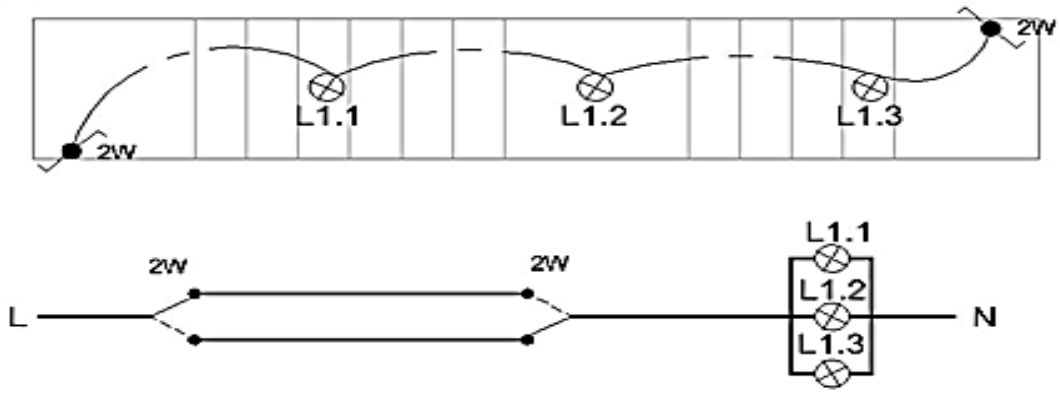
QUESTION 5: WIRING OF PREMISES

5.1



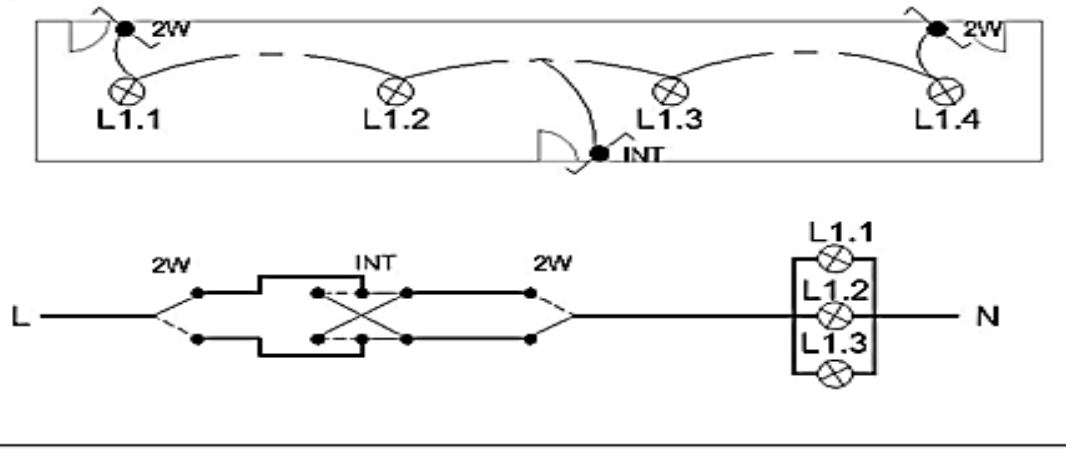
(7)

5.2



(6)

5. 3



(7)

Balanced layout and size	**4**
Correctness	**7**
Lettering	**5**
Line work and neatness	**4**

[20]

TOTAL: 100

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