Licensed Electrician's Theory (LET) Assessment Sample Paper 2024

Candidate Surname	
Candidate Given Names	

Reference Material

- Electrical Safety (General) Regulations 2019
- AS/NZS 3000:2018 Electrical Installations –Wiring Rules
- AS/NZS 3012:2019 Electrical installations – Demolition and Construction sites
- AS/NZS 3008.1.1:2017 Electrical installations – Selection of cables
- AS/NZS 4836:2023 Safe working on or near low voltage & extra low voltage electrical installations & equipment

Instructions

- Personal notepads and paper are not permitted.
- Pens only must be used. Answers in pencil may not be marked.
- Do not remove any sheets from this assessment paper or the room.
- Papers with no name or signature will not be marked.
- Units must be shown to obtain full marks.

Results

Candidates need to obtain 75% or more to pass this assessment. If a mark of 74% or less is achieved, a minimum of 14 days is required before you are permitted to re attempt the assessment.

I, the above-named candidate confirm:

- I understand the instructions provided to me.
- I do not have any unauthorised materials in my possession.
- I have not attempted the Licensed Electrician's Theory Assessment at any venue within the past 14 days.

Candidate			
	Print name	Signature	Date

Working Time: 2 hours and 15 minutes

At the end of this time you will be asked to stop.

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
Mark																			

Final Percentage	Pass/Fail

Supervisor			
	Print name	Signature	Date
Assessor			
	Print name	Signature	Date
Reviewed by (If necessary)			
	Print name	Signature	Date

AS/NZS 3000 WIRING RULES

In the following **four** Wiring Rules questions:

- You are required to write the Wiring Rules Clause and/or Table number in the space provided.
- The correct Wiring Rules Clause and Sub-Clause must be given e.g., 3.5.2(b)(i).

The correct answer to both parts must be given to obtain full marks.

Question 1. Socket outlets shall be installed so that plugs are withdrawn on a horizontal plane from a socket outlet when located what distance from the floor?

Wiring Rules Clause Number: _____   [2 + 2 = 4 marks]

Question 2. Is a conductive support bracket effectively and permanently separated from a low voltage double insulated aerial conductor required to be earthed?

Wiring Rules Clause Number: _____   [2 + 2 = 4 marks]

Question 3. Where protection is installed against the effects of overvoltage arising from lightning, it shall be installed to cause no hazard to whom during operation?

Wiring Rules Clause Number: _____   [2 + 2 = 4 marks]

Question 4. Is it permissible to have a lighting circuit on the same circuit as a non-safety service lift?

Wiring Rules Clause Number: _____   [2 + 2 = 4 marks]

AS/NZS 3012 CONSTRUCTION AND DEMOLITION SITES

In the following **two** AS/NZS 3012 questions:

- You are required to write the Standard's Clause number and/or Table number in the space provided.
- The correct Clause and Sub-Clause number must be given e.g., 2.10.2 (f).

The correct answer to both parts must be given to obtain full marks.

Question 5. Following initial installation, who shall inspect and test all construction wiring to verify it is in accordance with the AS/NZS 3000?

Standard Clause Number: _____ [2 + 2 = 4 marks]

Question 6. Records of inspection and tests shall be kept. In addition to the documentation listed in AS/NZS 3012, who may require further documentation for compliance of the installation and electrical work?

Standard Clause Number: _____ [2 + 2 = 4 marks]

ELECTRICITY SAFETY (GENERAL) REGULATIONS 2019

In the following Regulation question, you are required to:

- Write your answers on the line/s below each question.
- Write the complete Regulation and Sub-Regulation number, if applicable, in the space provided e.g., 401(e)(3).

The correct answer to both parts must be given to obtain full marks.

Question 7. An employer who reports a serious electrical incident must, within 20 business days after reporting the incident, provide what to Energy Safe Victoria?

Regulation Number: _____ [2 + 2 = 4 marks]

ELECTRIC SHOCK SURVIVAL

Question 8.

(i) A person is in contact with a live low voltage conductor, what is the first step you must take to assist the person?

(ii) When starting cardiopulmonary resuscitation (CPR) how many compressions and breaths should be initially given?

[2 + 2 = 4 marks]

CABLE SELECTION

Question 9.

TWO three-core X90 insulated and sheathed copper cables, including earthing conductors, are connected in parallel to supply a three-phase distribution board with a total maximum demand of 260A. The cables are protected by a circuit breaker and installed in conduits buried in the ground touching at a depth of 1 meter.

(i)   Neglecting voltage drop, what is the minimum cable size which can be installed for this circuit?
(ii)   If the cables were buried at a depth of 0.6 meters what is the minimum cable size which can be installed for this circuit?

All calculations including the final answer must be completed to a maximum of **two decimal places.**

Table details and units must be shown below to obtain full marks. Part (ii) is over the page.

Part (i)

	Answer		Answer		
Table 3 (_____?)		**Item**			
Table		**Column**			**Answer**
Derate/rating table		**Column**		**Factor**	
Derate/rating table		**Column**		**Factor**	

Calculation:

Part (i) Answer:

Question 9 Part (ii)

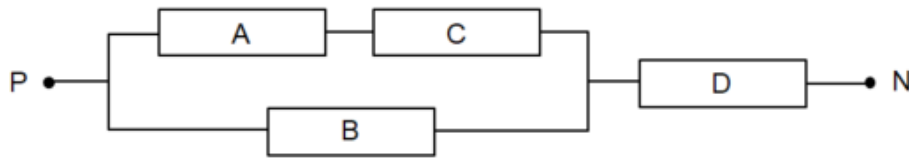|	Answer		Answer		Answer
Derate/rating table		**Column**		**Factor**	

Calculation:

Part (ii) Answer:

[1 + 2 + 1 + 1 + 2 + 1 = 8 marks]

DC CIRCUITS

Question 10.

The following values apply to the diagram above:

The total current in the circuit is 800mA

A is 24V B is 600mA C is 60Ω and D is 51.2W

Calculate:

(i) the current flowing through resistor C.
(ii) the value of resistor B.
(iii) the supply voltage of the circuit.

All calculations including the final answer must be completed to a maximum of **two decimal places.**

Calculation:

| (i) Current: | (ii) Resistance: | (iii) Voltage: |

[2 + 2 + 2 = 6 marks]

MAXIMUM DEMAND

Question 11.

Calculate the Maximum Demand of the consumer's mains of a single phase 230V boarding house.

The load connected to the switchboard is:

- 1 - 5kW Electric roller door
- 1 - 12A reverse cycle air conditioner
- 56 - 15W LED lighting points
- 1 - 5.8kW cooking appliance
- 26 - 10A double socket outlets

All calculations including the final answer must be completed to a maximum of **two decimal places.**

All relevant table details, including table, column and load groups used.
Calculations and units must be shown to obtain full marks.

Table		Column	
Equipment	**Load Group**	**Calculation**	**Maximum Demand**
		Total Maximum Demand:	

[1+ 1 + 1 + 1 + 1 + 2 + 1 = 8 marks]

VOLTAGE DROP

Question 12.

In a 400/230V, three-phase commercial installation, a three-phase power factor corrected 26A appliance which operates continuously is supplied from a sub-circuit originating at a distribution board.

All the cables are:

- V75 copper conductors.
- Protected by circuit breakers.
- Single double insulated, laid in trefoil.

The circuit details are:

Consumer's Mains		
	MD current	80A
	Length	30m
	Size	25mm^2
Sub-Mains		
	MD current	40A
	Length	25m
	Size	35mm^2
Final Sub-Circuit		
	Length	18m
	Size	2.5mm^2

The Consumer's Mains and Sub-Mains are operating at their normal operating temperatures.

The final sub-circuit cables have an operating temperature of 60°C.

Calculate the total voltage drop from the point of supply to the appliance terminals.

All calculations including the final answer must be completed to a maximum of **two decimal places.**

All relevant table details, calculations and units must be shown to obtain full marks.

Cable	Table	Column	Vc	Calculation	Vd
Consumer's Mains					
Sub-Mains					
Final Sub-Circuit					

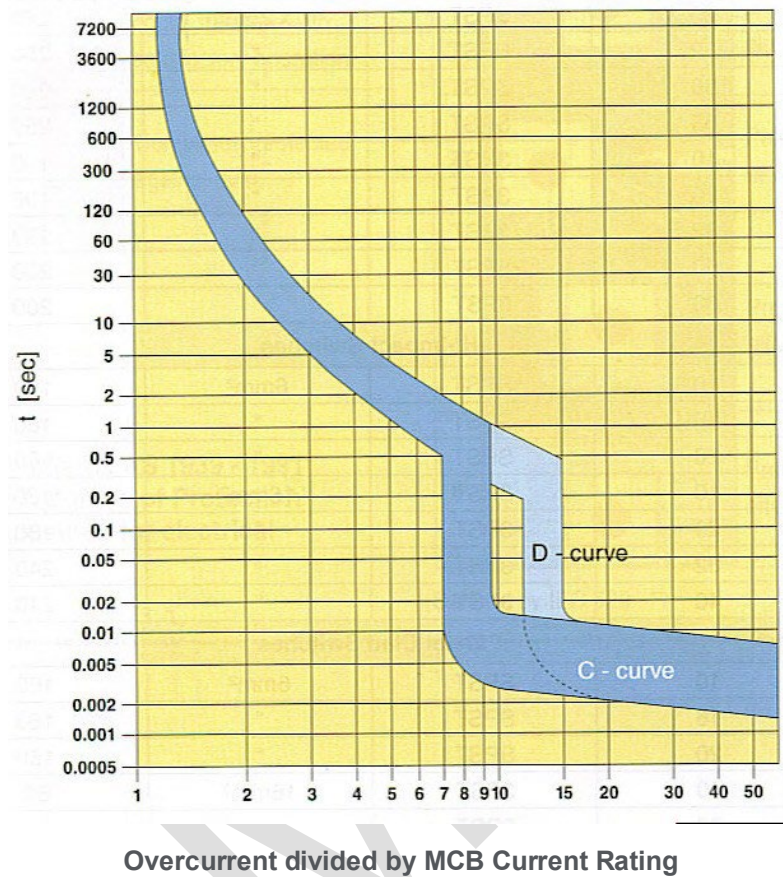| Answer Total Voltage Drop:	

[1+1+1+1+1+1+1+1+1+1 = 10 marks]

OVERLOAD AND SHORT CIRCUIT CALCULATIONS

Question 13.

What are the minimum and maximum tripping times for a 90A Type D miniature over-current circuit breaker which is subjected to an over-current of 180A?

Overcurrent divided by MCB Current Rating

Overcurrent divided by MCB current rating:	
Minimum Time:	**Maximum Time:**

[1 + 1 + 1 = 3 marks]

OVERLOAD AND SHORT CIRCUIT CALCULATIONS

Question 14.

The main switchboard of a 400/230V industrial installation is directly supplied from a 500KVA transformer which has a prospective fault current of 18,000A per phase.

Sub-Mains supply a distribution board from the main switchboard.

The following information is known:

Impedance of the Consumer's Mains = 0.0084Ω
Impedance of the Sub-Mains cables = 0.0038Ω

Determine the prospective fault current at:

(i) The main switchboard.
(ii) The distribution board.

Work impedances to 5 decimal places.

All calculations must be shown to obtain full marks.

Calculation:

Transformer Impedance:	
Main Switchboard:	
Distribution Board:	

[(2+1) + (2+1) + (2+1) = 9 marks]

RESIDUAL CURRENT DEVICES

Question 15.

A 30mA Residual Current Device is to be installed to protect a lighting circuit and a circuit containing 10A socket outlets with a total MD of 15A. Each circuit is protected by a 16A circuit breaker.

State the minimum current rating of the Residual Current Device.

Answer

MOTORS AND STARTERS

Question 16.

CIRCLE the letter in front of the statement you consider to be the most correct.

Which of the following statements are **not** true for a brushed direct current motor designed for use in industrial situations:

A. Precision speed control can be maintained.
B. Only low maintenance is required.
C. Harmonics cannot be created in the windings.
D. High torque can be provided on startup.

[2 marks]

AS/NZS 4836:2023

Question 17.

This question relates to AS/NZS 4836:2023.

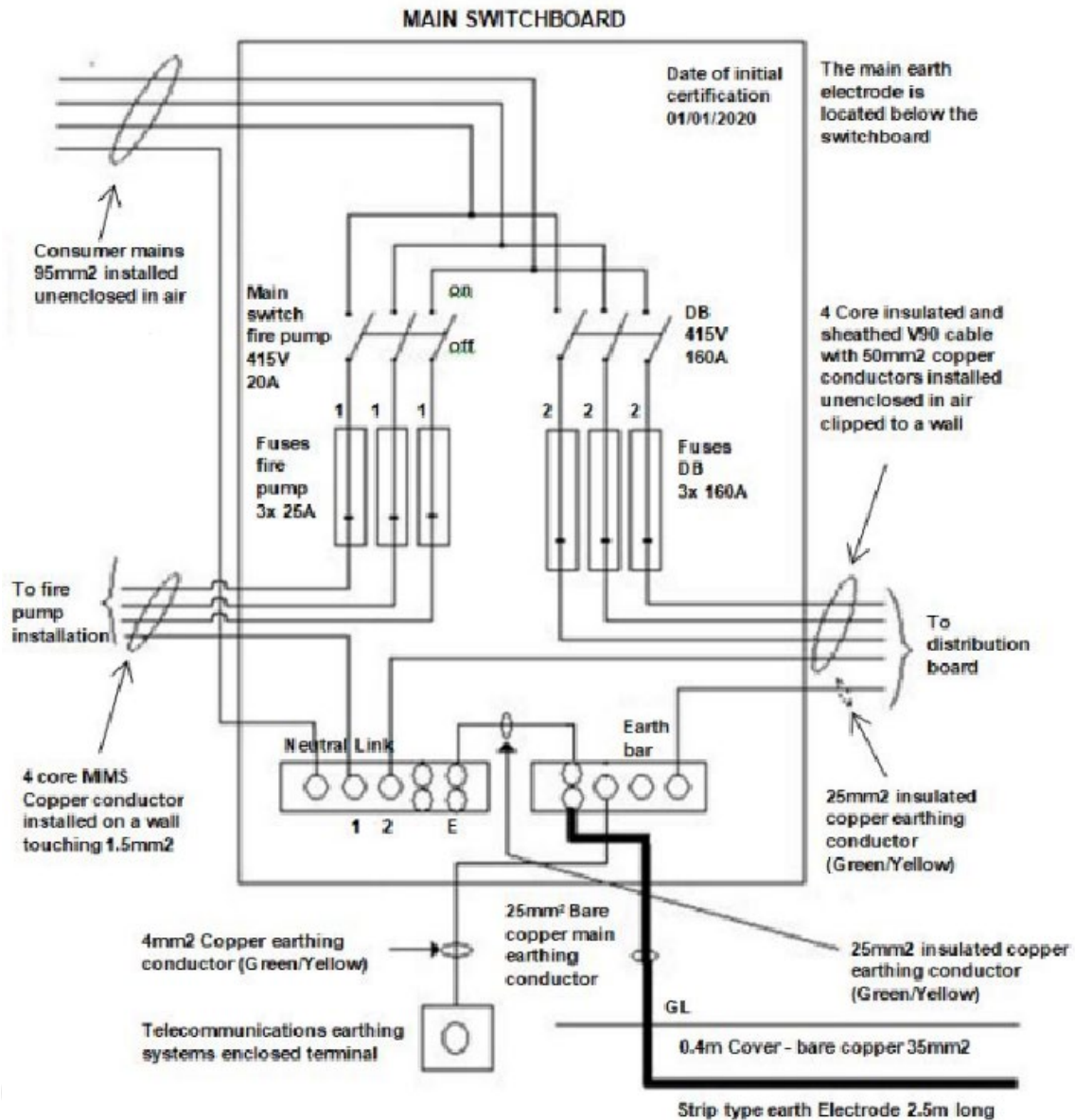Protection shall be supplied for all portable electric tools, how must this be achieved?

Standard Clause Number: _____   [2 + 2 = 4 marks]

INSTALLATION DEFECTS - NON-DOMESTIC

Question 18.

The drawing above shows the MAIN SWITCHBOARD of an industrial installation originating at the consumer's mains and contains contraventions to the Wiring Rules.

The consumer's mains are V75 TPS copper cables installed on cable tray.

It supplies a distribution board having a connected load with a calculated maximum demand of 160A per phase and an automatically controlled 3 phase fire pump motor having a current rating of 24A per phase. The fire pump is not required to be RCD protected.

The multi-core MIMS cables are installed spaced from the wall and are 1/1 kV cables. Short circuit protection for the consumer's mains has not been supplied by the supply authority.

The safety services main switch and the main switch for the general electrical installation are separated by a metal partition.

Question 18. Continued.

All screws in bars or links are 70% of the tunnel diameter.

Assume the MIMS cables are earthed in accordance with the Wiring Rules and are capable of maintaining supply to the equipment even when exposed to fire and mechanical damage.

All fuses shown are HRC type.

Complete the table below.

Use the diagram on the previous page.

List **FIVE different defects** together with the contravened Wiring Rules Clause/Table number in the table provided below.

Note: Only the first five defects will be considered.

DEFECT DETAILS	WIRING RULE CLAUSE/TABLE No.

[5 x (2 + 1) = 15 marks]