

Electrical Trades College

ASP Level 2 Electrician

Test 5

Name	
Student Number	
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Name of Assessor	
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Date	
Result	
Comment by assessor	

Lesson 5 AA Note 1 Test

- 1) The most reliable electrical supply system is
 - a) Radial Feeder
 - b) Ring Feeder
 - c) Parallel Feeder

- 2) A transformer supplies a group of four feeders which have individual maximum demands of 2.5, 2.4, 4.3 and 1.6 MVA. If the diversity factor of the system is 1.82, the maximum demand on the transformer is
 - a) 10MVA
 - b) 7MVA

c) 5.93 MVA

3) A house has the following loads

5 lights each 80watts

1 stove 1000watts

5 power points

each 100 watts

1 air-conditioner

1000 watts

If maximum demand is 2000 watt, the demand factor is

a) 0.4

b) 0.68

c) 0.8

4) 3 classifications of electrical distribution system are

.

a) Overhead distribution

b) Underground distribution

c) Combined overhead and underground distribution

d) WIFI System

5) State the standard voltages for 3 phase distribution system

a) 6.6 KV

b) 11KV

c) 22KV

d) 33KV

e) 66KV

f) 132KV

6) This system is called

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6) This system is called

1 point

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- a) Single wire earth return system
- b) Double line system
- c) Single line system
- d) Three phase system

7) This busbar system is called

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Insert question> Double click to edit.

7) This busbar system is called

1 point

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- a) Single busbar
- b) Double busbar
- c) Alternative supply
- d) Sectionalised Busbar

8) This busbar system is called

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b) Double busbar
c) Alternative supply
 d) Sectionalise Busbar

Insert question >

8) This busbar system is called

Double click to edit.

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- a) Single busbar
- b) Ring busbar
- c) Sectionalize busbar
- d) Duplicate busbar

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Test 6

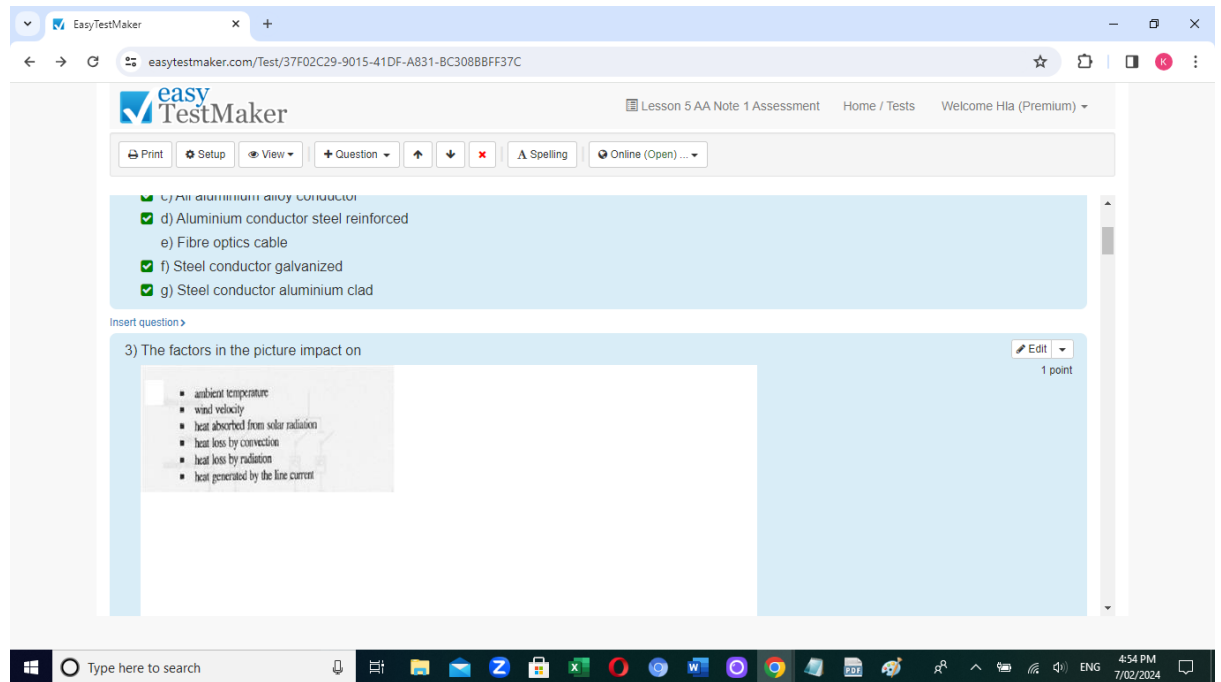
Name	
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- 1) The factors that are used in selection of overhead line conductors are
 - a) Electrical properties
 - b) Mechanical properties
 - c) Initial cost of materials used
 - d) All of above

- 2) The commonly used materials for electrical power overhead lines are
 - a) Handdrawn copper
 - b) All aluminium conductor
 - c) All aluminium alloy conductor
 - d) Aluminium conductor steel reinforced
 - e) Fibre optics cable

- f) Steel conductor galvanized
- g) Steel conductor aluminium clad

3) The factors in the picture impact on



- a) Conductor weight
- b) Current flow in conductor
- c) Conductor temperature
- d) Transmission line efficiency

4) The standard method used for protecting the steel against corrosion is

- a) Coating with PVC
- b) Galvanizing
- c) Coating with aluminium
- d) Coating with insulation oil

5) Which poles are the most economical for distribution work?

- a) Steel
- b) Aluminium
- c) Concrete
- d) Wood

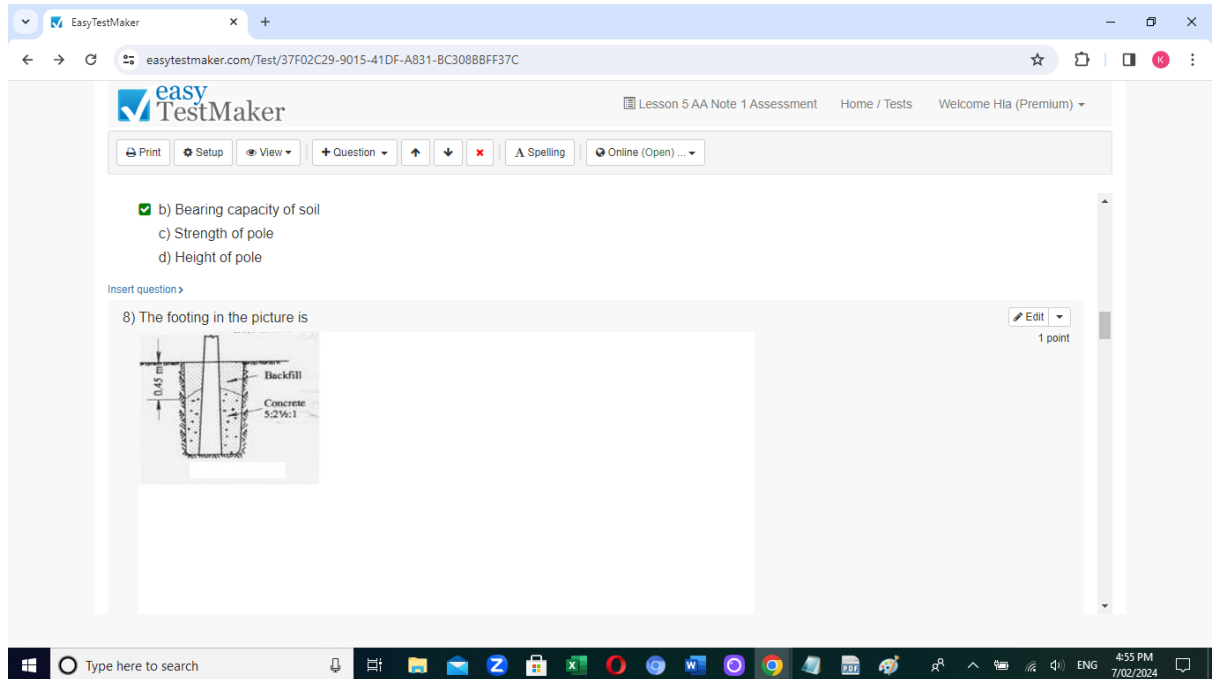
6) The methods in the given picture are utilized to

- a) protect the wood pole against weather and fungal attack
- b) improve the strength of wood poles
- c) protect the steel poles against weather

7) Pole stability is effected by

- a) Depth of pole in the ground
- b) Bearing capacity of soil
- c) Strength of pole
- d) Height of pole

8) The footing in the picture is



- a) Plain footing
- b) Concrete slab
- c) concrete footing
- d) Baulk footing

9) Life of the pole is effected by

- a) Weather condition
- b) Probability of fungus or termite attack
- c) Original preservative treatment
- d) Maintenance program
- e) All above

10) 1234

77

12GB5 4NR

STC

Which one indicates the pole strength

- a) 1234
- b) 77
- c) 12 GB5 4NR
- d) STC

- 11) Three common types of insulators used in distribution system are
- Pin
 - Shackle
 - Disc
 - String
- 12) ALP 33 920
what is creepage distance?
- 33
 - 920
 - 33920
- 13) How many discs in EA 2D Insulator?
- 1
 - 2
 - 3
 - 4
- 14) In picture AB is called
- Height of insulator
 - Length of insulator
 - Creepage distance
- 15) Pole strength is classified by
- Stiffness
 - Toughness
 - Ability to withstand the force
 - Ultimate extreme fibre stress that is allowed
- 16) To prevent the cracking of insulator due to flash over of voltage due to lighting strike ,
the following device is to be utilized for transmission line insulator
- Lighting arrester
 - Surge diverter
 - Arcing horn
- 17) Mechanical properties of over head line conductor is determined by
- Working strength of materials
 - Maximum tension to be exerted on the conductor
 - Armour rod and vibration dampers to be used for reinforcing
 - Attachment of guy wire to maintain the stability of the line
- 18) Sight board and wave timing are the methods utilized to measure

- a) sag
- b) height of the tower
- c) length of the line

19) The anchorage method is suitable for the pole in

- a) Solid rock formation
- b) Weak rock formation
- c) Soil

- 20) Sag depends on
- a) Conductor weight
 - b) Tension
 - c) Length
 - d) All above

21) The sag is

Using the attached table, calculate the allowable sag for a 7/3.50 hard drawn copper overhead conductor with a span of 150 metres. The wind loading is 500 pascals and the maximum conductor tension is to be 50 percent of the ultimate tensile strength.

BARE STRANDED HARD DRAWN COPPER CONDUCTORS

Spanning	Sectional area mm ²	overall diameter mm	Ultimate tensile strength N	Mass kgh	Conventional force (N/m)	Wind load at 300 Pa (N/m)	Resultant load at 300 Pa (N/m)	Resistance per Km at 20°C (Ω/KM)
3/1.00	5.50	3.00	2310	0.049	0.483	1.500	1.576	3.25
3/1.25	8.59	3.75	3610	0.077	0.754	1.875	2.021	2.09
3/1.75	16.84	5.25	6890	0.131	1.480	2.625	3.003	1.06
3/2.00	21.99	6.00	9020	0.197	1.951	3.000	3.568	0.815
3/2.75	41.58	8.25	16700	0.375	3.675	4.125	5.525	0.433
3/3.50	67.35	10.50	28600	0.607	5.949	5.250	7.934	0.264
3/4.75	145.70	14.75	48300	1.043	10.407	7.375	13.960	0.139
3/5.00	159.69	16.00	52900	1.138	11.272	7.500	14.266	0.130
3/5.75	212.90	17.80	64500	1.320	13.096	8.500	16.140	0.110
3/6.00	234.30	19.00	69800	1.410	14.158	8.750	17.053	0.104

TABLE 1

- a) 1 m
- b) 1.67 m
- c) 3 m
- d) 4 m

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Test 7

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Lesson 7 AA Note 3

- 1) Bending moment of the pole is important to assess the pole strength to withstand the bending due to force
 - a) True
 - b) False
- 2) In the formula $f = MC/I$ C represents
 - a) maximum fibre stress
 - b) Total bending moment,
 - c) Distance from extreme fibre of cross section to neutral axis.
- 3) Northern white cedar is stronger than Wallaha in making pole
 - a) True

b) False

4)

The following formula is utilized to calculate ()

Total moment = $T \cos \alpha + h = \text{Wire 1 Force} \times h_1 + \text{Wire 2 Force} \times h_2 + \text{Wind force} \times h_w$

is

a) Guy wire

b) Sag

c) Pole strength

5) 12 m pole is installed with 3 No4/0 bare copper conductors in one direction and 3 No 2/0 bare stranded copper conductors in opposite direction. 3 No 4/0 conductors cause 1355016 N-m bending moment and 3 No 2/0 conductors cause 1072721 N-m bending moment. Wind load on pole is 12648 N-m. Calculate tower circumference to withstand the load if long leaf yellow pine has ultimate stress $51.3 \times 10^6 \text{ N/m}^2$. Take safety factor 2.

Answer is

a) 30 cm

b) 50 cm

c) 63.7 cm

6) Assume a standard 2.43 m six

pin arm mounted at its centre on a pole supporting six conductors each of which has 1.27 m ice coating has a maximum weight of 45.6 Kg. The length of moment arm from the centre of the arm to each pin are respectively 38.1, 74.93 and 111.76 cm. Total moment of pin hole is 493 N-m. Calculate stress if the cross section of the arm $9 \times 11.4 \text{ cm}$ is reduced by 2.54 cm hole.

a) $200 \times 10^4 \text{ N/m}^2$

b) $390 \times 10^4 \text{ N/m}^2$

c) $7000 \times 10^4 \text{ N/m}^2$

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Test 8

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1) The following is the work process to ()

.
All poles framing materials must be delivered in the worksite to exact designated positions.

All structures must be assembled or framed and placed so as to be set without moving equipments

.
All holes are dug.

.
The setting rig must come by , set the pole and hold it until tamping or backfill crew can screw it.

a) Taking out the pole

b) Installing the new pole

c) Repairing the existing pole

2)

Maximum conductor tensions are specified at

a) 4 N/sqm

b) 3 N/sqm

c) 2 N/sqm

Insert

3) Important aspect of line drawing.

.

Accuracy

.

Clarity

.

Completeness

.

To

economical design and construction

a) True

b) False

4) The conductor and ground wire sizes, design tensions, ruling span and the design loading conditions should be shown on the first sheet of the plan-profile drawings. A copy of the sag template should be shown. The actual ruling span between dead-ends should be calculated and noted on the sheets. is the step in

a) Initial drawing

b) Intermediate drawing

c) final drawing

5) All iron and steel fittings must be protected by galvanizing or other suitable means. It is necessary to have a minimum deposit of 160 grams of zinc / square meter and hot dip galvanizing should be called for any specification for line fittings. is the regulation number

a) 10

b) 12

c) 15

6) There must be of adequate strength pin insulators must not be used for strain or termination construction. Where the direction of an overhead conductor is changed, there is a resultant load acting on the insulator in addition to the possible wind loading is the regulation

a) 10

b) 12

c) 13

- 7) The percentage of ultimate strength of various parts of overhead line
- a) Steel 50% Wood 40 % Stay wire/ Insulator 25%
 - b) Steel 50% Wood 25 % Stay wire/ Insulator 40%
 - c) Steel 40% Wood 25 % Stay wire/ Insulator 50%

8) Essential components of staying pole

1.
Galvanized
stay wire of suitable strength
2.
Strain
insulator to insulate the strain wire within 2.5m of ground
3.
Wire
rope grips from strain wire preset fitting
4.
Stay
anchorage
 - a) True
 - b) False

9) Distance between insulator and cross arm

- a) 450 mm -- Clearance between the insulator on cross arm for medium voltage 600 mm -
- Clearance at the insulators on the cross arm for 11 KV
- b) 450 mm -- Clearance between the insulator on cross arm for medium voltage 600 mm -
- Clearance at the insulators on the cross arm for 22 KV
- c) 450 mm -- Clearance between the insulator on cross arm for medium voltage 600 mm -
- Clearance at the insulators on the cross arm for 133 KV

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Test 9

Name	
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- 1) The poles or supports are classified according to the material used for it:
Commonly used materials are
- a) Steel Cement Wood
 - b) Iron Cement Wood
 - c) Aluminium Cement Wood

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b) Iron Cement Wood
c) Aluminium Cement Wood

Insert question > Double click to edit. Edit 1 point

2) This pole is called ()



The image shows a utility pole with a street light. The pole is made of a material that is not clearly identifiable from the image, but it is a typical utility pole. The street light is attached to the pole. The background is a clear blue sky.

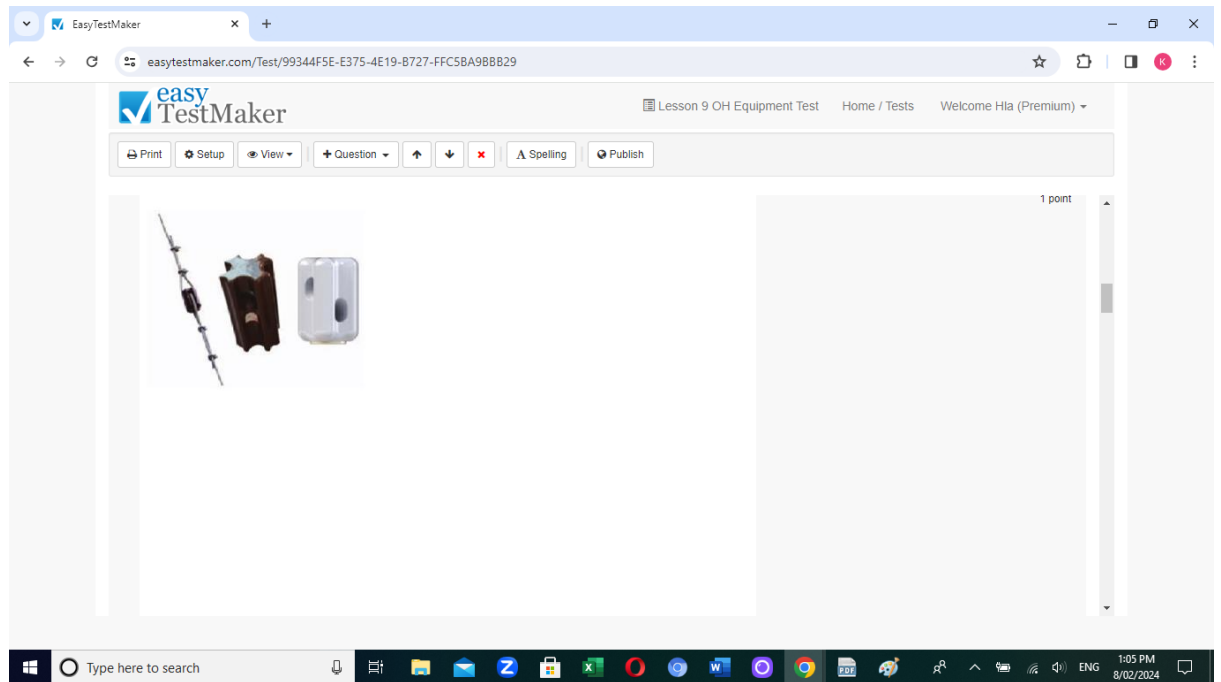
2) This pole is called ()

- a) Tubular Poles
- b) R.C.C. poles
- c) P.S.C. poles
- d) Wooden poles

3) Factor of safety for Wooden supports is

- a) 1.5
- b) 2
- c) 2.5
- d) 3

4) They are type of () insulators



- a) Pin Type Insulators:
 - b) Shackle Type Insulators
 - c) Disc Type Insulators:
 - d) Guy Strain Insulators
- 5) To prevent Clashing of L.T. conductors in the mid-span, , which equipment should be used?
- a) Cable tie
 - b) Cable net
 - c) Jumper
 - d) Line spacer
- 6) The survey of the overhead lines can be broadly divided into two heads:
- a) (a)Annual survey and (b)quarterly survey
 - b) Fault survey , Overlard surveyand emergency survey
 - c) (a) Preliminary ‘Walk Over’ survey ()Detailed survey
- 7) Regarding line-clear permit is issued by an authorised person, the worker should not climb on pole or apparatus. No one should go in the vicinity of bare conductor and work.
- a) True
 - b) False
- 8) Load shedding is normally carried out when the power demand () the power availability at a given point of time to shed excess load on the generating stations.
- a) Less than
 - b) Equal to

c) More than

9) () is used for supporting guarding cross arm. It is also used for side brackets.

a) Ordinary Stay

b) 'A' Type Stay:

c) B' Type Stay

d) Y' Type Stay:

10) Why the tie should always be made of soft annealed wire?

a) It is easier to bind

b) It is durable

c) It may not be brittle and injure the line conductor

11) Hard drawn wires can be used for tying.

a) True

b) False

12) There are two important factors which affect the sag and tension are

a) Thermal coefficient and resistivity

b) Hardness and permeability

c) Elasticity of the conductor and Temperature

13) Britannia Joint is made only on solid conductors and cannot be made on stranded conductor.

a) True

b) False

14) Married Joints can be made between Al conductors.

a) True

b) False

15) For making the joint with stranded conductor, which method is utilized?

a) Britannia,

b) Western Union

c) Married Joints

d) 'T' Joint

16) Guarding is required for crossings of 66 kV and higher voltage lines where the transmission line is protected by air operated circuit breaker

a) True

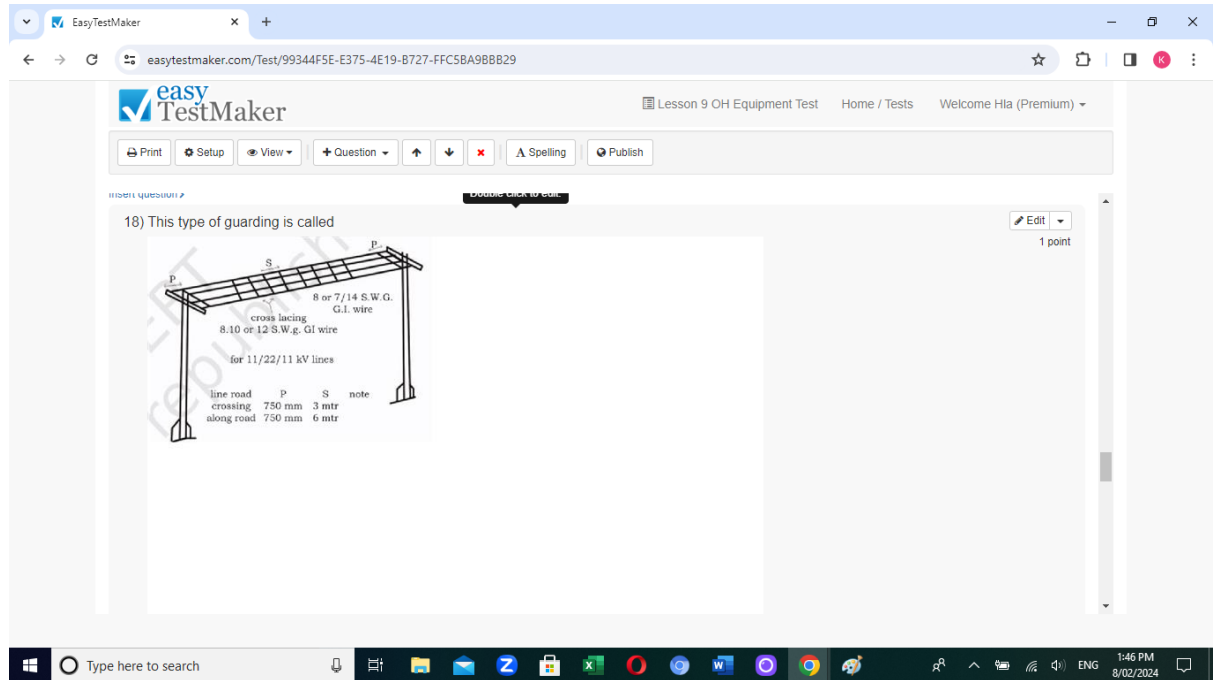
b) False

17) Cradle guarding is one type of ()

a) P.V.C. Guarding

b) Levice Guarding

18) This type of guarding is called



- a) Carpet guarding
- b) Cradle guarding
- c) Box type guarding

19) The distance between guard-wire and telephone line should be minimum ()

- a) 300 mm
- b) 500 mm
- c) 920 mm

20) For joining jump wire., which clamp is used?

- a) P.G. Clamp
- b) T Clamp

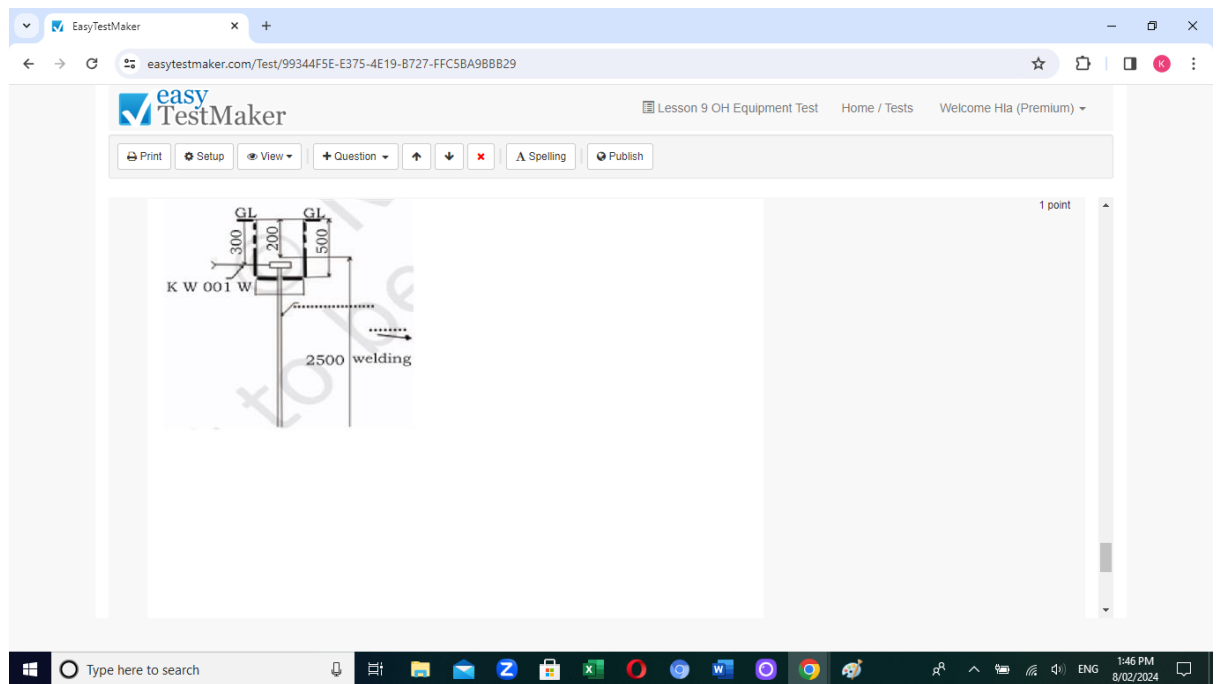
21) The coil earthing consist of 10m length of () wire compressed into a coil () length and () diameter and buried () deep.

- a) 6 SWG G.I, 300 mm, 50 mm, 1500 mm
- b) 8 SWG G.I, 450 mm, 150 mm, 2500 mm
- c) 8 SWG G.I, 450 mm, 50 mm, 1500 mm

22) Transformer neutral earthing helps to

- a) protect the electrocution
- b) protect short circuit between line and neutral
- c) keep neutral voltage always zero

23) This method is called



- a) Disc earthing
- b) Earthing mat
- c) Pipe earthing

24) Maximum earth resistance allowed for H.T. pole is

- a) 0.5 ohms
- b) 4 ohms
- c) 10 ohms

25) Sectionalizer is

- a) a protection device
- b) a load break switch