



MARKING SCHEME

School:.....*SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING*

Programme:.... *CERTIFICATE IN ELECTRICAL SERVICEMAN'S COURSE*

Unit code:..... *EEE211*

Unit Title:.....*APPLIED ELECTRICITY 1*

Date:.....*13/02/2014*

Examiner:.....*MR Roneel R Maharaj*

SOLUTION SHEET EEE211

SECTION A

MULTIPLE CHOICE

(20 Marks)

- | | |
|-------|--------|
| 1. a | 1 Mark |
| 2. b | 1 Mark |
| 3. d | 1 Mark |
| 4. c | 1 Mark |
| 5. c | 1 Mark |
| 6. a | 1 Mark |
| 7. b | 1 Mark |
| 8. b | 1 Mark |
| 9. d | 1 Mark |
| 10. b | 1 Mark |
| 11. b | 1 Mark |
| 12. c | 1 Mark |
| 13. a | 1 Mark |
| 14. a | 1 Mark |
| 15. c | 1 Mark |
| 16. c | 1 Mark |
| 17. c | 1 Mark |
| 18. c | 1 Mark |
| 19. d | 1 Mark |
| 20. b | 1 Mark |

Total 20 Marks

SECTION B (Part A)

MATCHING

(10 marks)

- | | |
|-----|---|
| 1. | D |
| 2. | F |
| 3. | G |
| 4. | E |
| 5. | B |
| 6. | H |
| 7. | I |
| 8. | A |
| 9. | J |
| 10. | C |

[1 mark each]

(Part B)

TRUE/ FALSE

(10 marks)

1. T
2. F
3. F
4. F
5. F
6. T
7. T
8. T
9. T
10. T

[1 mark each]

SECTION C

ANSWERS AND CALCULATIONS

(40 MARKS)

1.

a.) Average Value = $0.637 \times 25\text{A}$
= 15.93 A

2 Marks

b) Peak Value = 25 A

1 mark

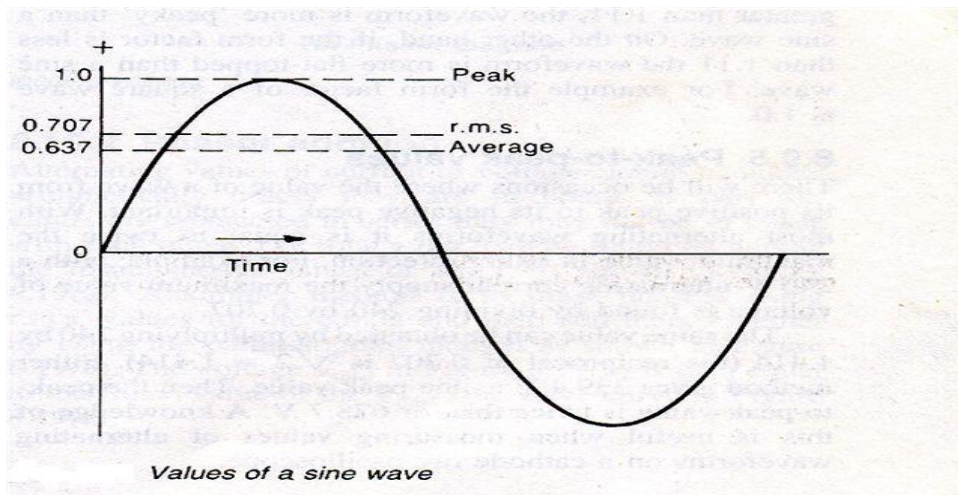
c) RMS Value = $0.707 \times 25\text{ A}$
= 17.68 A

2 Marks

d) Peak to Peak Value = 25×2
= 50 A

1 mark

e)



2.

a. $C_p = C_1 + C_2$
= 1 + 1
= 2

$1/C_p = 1/2 + 1/3$
= $1/2 + 1/3$
= 1.5u F

3 Marks

b. 1) Conductors – have plenty free electrons
- conducts electricity

1Mark

11) Insulators – have no free electrons
- does not conduct electricity

1Mark

111) Permanent magnet – provide a constant magnetic flux

1Mark

3.

$$\begin{aligned} \text{a) } R_T &= R_1 + R_2 + R_3 \\ &= 10 + 5 + 20 \\ &= 35 \Omega \end{aligned}$$

1 Mark

1 Mark

2 Marks

$$\begin{aligned} \text{b) } I_T &= V/R \\ &= 10/35 \\ &= 0.29 \text{ A} \end{aligned}$$

1 mark

1 Mark

2 Marks

$$\begin{aligned} \text{c) } V_{R1} &= IR \\ &= (0.29)(10) \\ &= 29 \text{ V} \end{aligned}$$

1 Mark

1 Mark

2 Marks

4.

a) $1\text{K}\Omega \pm 5\%$

2 Marks

b) $75\Omega \pm 20\%$

2 Marks

c) $27\text{K}\Omega \pm 10\%$

2 Marks

d) $0.4\text{M}\Omega \pm 5\%$

2 Marks

5.

- a. Chemistry
- b. Primary and Secondary
- c. Standardization and Availability
- d. Flexibility
- e. Temperature range
- f. Good Cycle life
- g. Costs
- h. Shelf Life
- i. Voltage
- j. Safety
- k. Hidden costs

2 marks

SECTION D

SHORT ANSWERS

(30 marks)

1. Factors affecting Resistance are

- Length of a conductor

Resistance of a conductor is proportional to its length

- Cross sectional area of the conductor

The resistance of a conductor is inversely proportional to its cross-sectional-area.

- Type of material

Different materials have different resistivity values.

- Temperature

For some materials an increase in temperature causes an increase in resistance

8 Marks

2. Ohms Law: states that in any circuit the current is directly proportional to the voltage and inversely proportional to the circuit resistance.

$$I = V/R$$

3 Marks

3. $3 * 100 \text{ watts} = 300 \text{ watts}$
 $2 * 20 \text{ watts} = 40 \text{ watts}$
Total watts = 340 watts = 0.34kW

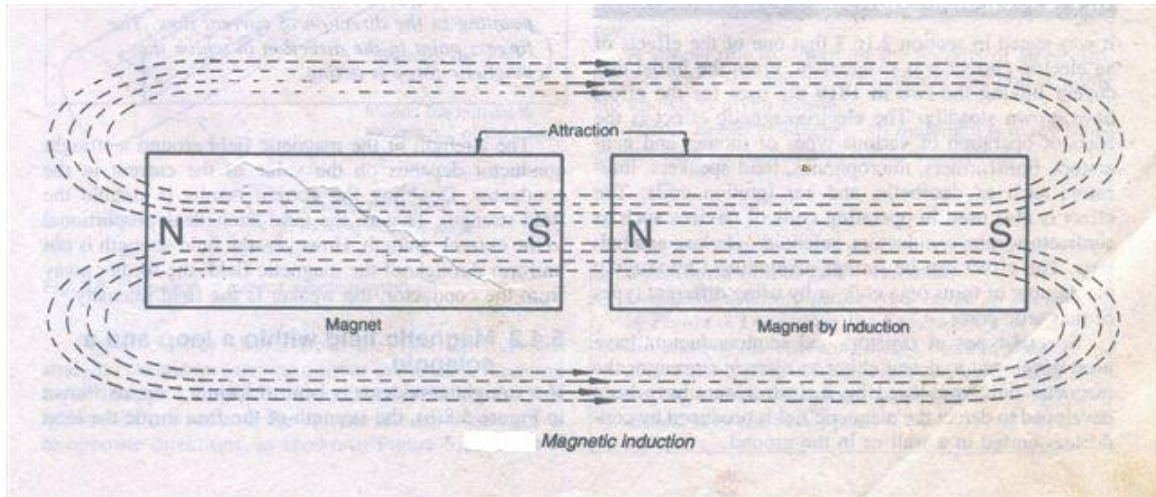
Total time = 5 days * 10 hours = 50 hours

Total units used = 50 hours * 0.34kW
= 17 units

Total Cost = 17 units x 10 cents = 170 cents = \$1.70

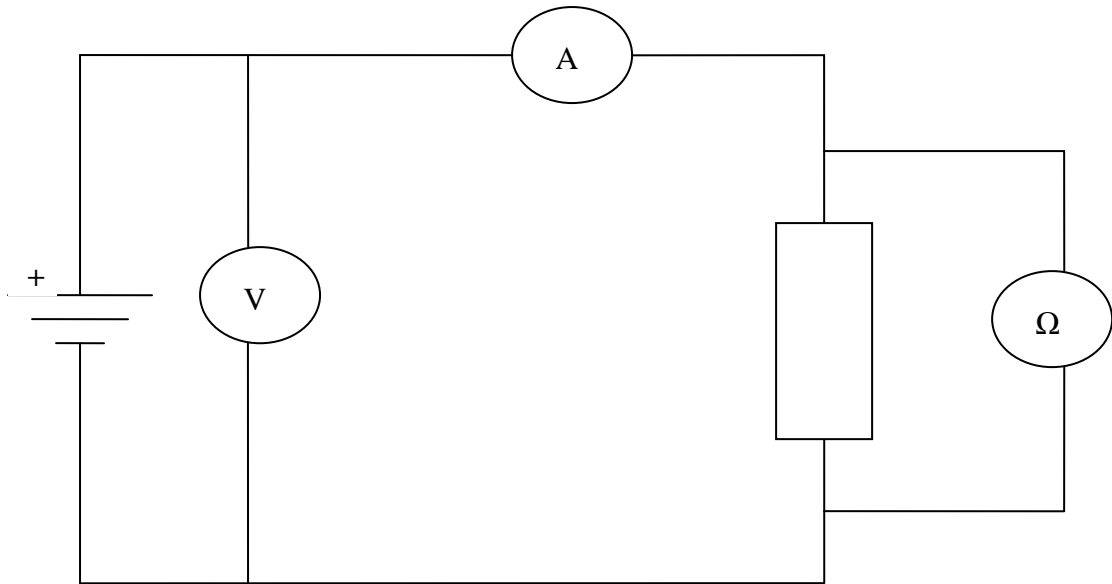
8 Marks

4. Shown below is magnetic field.



* Note should follow N to S. Look at the polarities they label.

5 Marks



5.

6 Marks

THE END