



**COLLEGE: COLLEGE OF ENGINEERING, SCIENCE & TECHNOLOGY
(CEST)**

SCHOOL: SCHOOL OF ELECTRICAL & ELECTRONICS ENGINEERING

PROGRAMME: CERTIFICATE IN ELECTRICAL SERVICEMAN'S COURSE

UNIT CODE: EEE211

TITLE: APPLIED ELECTRICITY 1

FINAL EXAMINATION – PENSTER 1, 2016

**ROOM: AS PER TIMETABLE
TIME: 2 HOURS 10 MINUTES**

INSTRUCTIONS TO STUDENTS

1. You are allowed 10 minutes extra reading time during which you are NOT to write.
2. Begin each SECTION on a fresh page and use both sides of the sheet.
3. Write your candidate number at the top of each attached sheet.
4. Insert all written foolscaps, graph paper, drawing paper, etc. in their correct sequence and secure with a string.
5. For all sheets of paper on which rough/draft work has been done, cross it through and ATTACH these to your answer scripts.
6. Write clearly the number(s) of the question(s) attempted on the top of each sheet.
7. Use of programmable calculator(s) is prohibited.
8. **ANSWER ALL QUESTIONS**
9. Show all working where necessary.
10. **ALWAYS CHECK YOUR WORK BEFORE YOU LEAVE THE EXAM ROOM.**

Section A

MULTIPLE CHOICE

(20 marks)

Instructions:

Choose the best answer by circling the corresponding alphabet on the attached answer sheet.

1. Choose the instrument that is best used to measure the current drawn by any electrical circuit

- a) Voltmeter.
- b) Ohmmeter.
- c) Ammeter.
- d) Both a) and c).

(1 mark)

2. Which component stores electric charge?

- a) Resistor.
- b) Capacitor.
- c) Transformer.
- d) Inductor.

(1 mark)

3. Electrons have:

- a) no charge.
- b) Positive charge.
- c) One Charge.
- d) Negative charge.

(1 mark)

4. Choose the cell that can be recharged:

- a) Carbon – Zinc Cell.
- b) Nickel Cadmium Cell.
- c) Lead Acid Cell.
- d) Both b) and c).

(1 mark)

5. The outcomes of the magnetic field lines pattern for a straight conductor:

- a) North to south of the conductor.
- b) Into the page.
- c) Concentric circles.
- d) Out of page.

(1 mark)

6. Which test instrument is used to measure electrical pressure?

- a) Ohmmeter.
- b) Ammeter.
- c) Voltmeter.
- d) Current meter.

(1 mark)

7. What is the direction of the conventional current flow?

- a) From negative to positive of the energy source.
- b) From positive to negative back to positive of the energy source..
- c) From positive to negative of the energy source.
- d) None of the above.

(1 mark)

8. What is the SI unit for capacitance?
a) Ohms.
b) Farads.
c) Capacitance.
d) Both b) and c). (1 mark)
9. Which of the following terms is associated with the flow of electrons?
a) Resistance.
b) Voltage.
c) Inductance.
d) Current. (1 mark)
10. In any parallel circuit:
a) Voltage is same.
b) Current is same.
c) Resistance is same.
d) None of the above. (1 mark)
11. Ammeters are always connected in:
a) Series.
b) Parallel.
c) Direct.
d) Series/Parallel. (1 mark)
12. What equipment is used for testing the density of the electrolyte in a cell.
a) Voltmeter.
b) Hydrometer.
c) Ammeter.
d) CRO. (1 mark)
13. In a closed circuit there is:
a) Current flow.
b) No current flow.
c) Leakage current
d) Filter current (1 mark)
14. Materials that oppose the flow of electrons are known as;
a) Insulators.
b) Conductors.
c) Semi-conductors
d) Super conductors (1 mark)
15. Which test instrument is used to measure the precise resistance of a resistor?
a) CRO.
b) Voltmeter.
c) Ohmmeter.
d) Ammeter. (1 mark)

16. What would the value of resistance be if two 5 ohms resistors were connected in parallel?

- a) 6 ohms.
- b) 3 ohms.
- c) 2.5 ohms.
- d) 1.5 ohms.

(1 mark)

17. One of the characteristic of magnetic lines of force:

- a) Cross each other
- b) Line each other
- c) Never cross each other
- d) Crisscross

(1 mark)

18. The unit of inductance is:

- a) Volts.
- b) Hertz.
- c) Hendry.
- d) Lux.

(1 mark)

19. What type of cells can be recharged?

- a) Primary cells
- b) Resistance cells
- c) Carbon-zinc
- d) Secondary cells

(1 mark)

20. One kilo-watt-hour is equal to:

- a) 3.6 MJ
- b) 1000 Watts
- c) 1 Watt
- d) 1 MJ

(1 mark)

Section B

(20 marks)

PART A-MATCHING

- | | |
|---------------------------------|---|
| 1. Resistor | A. Copper |
| 2. Conductors | B. Have plenty free electrons |
| 3. Power | C. A component that opposes current flow. |
| 4. Voltage | D. Methods of component connection. |
| 5. Protons | E. Electrical pressure |
| 6. Electrons | F. Positively charged particles |
| 7. Energy | G. Watts |
| 8. Conductor | H. Negatively charged particles |
| 9. Insulator | I. Product of power and time |
| 10. Series/ parallel connection | J. Does not conduct electricity |

(10 marks)

PART B – FILL IN BLANKS

- In the Right-hand-rule regarding a straight conductor the thumb indicates the direction of _____ flow.
- Capacitors in _____ have the same current through each capacitor.
- The SI unit of current is _____.
- A _____ cell can be charged.
- The _____ of a resistor is measured with an ohmmeter.
- For a four band resistor the fourth band indicated the _____ of a resistor.
- In the Right-hand-rule regarding a solenoid the thumb indicates the direction of _____.
- _____ are parts of atoms and are negatively charged.
- _____ is measured in watt-hours.
- Electrical pressure is measured by _____.

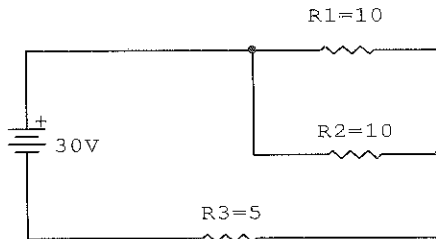
(10 marks)

Section C

(30 marks)

1. For the given circuit diagrams, determine:

- Total resistance, R_T in Ω . (3 marks)
- Total Current, I_T in A. (2 marks)
- Current drawn by R_1 (3 marks)

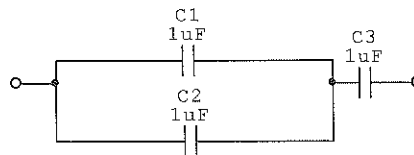


2. When the maximum value of an alternating current is 15A, determine:

- Average value? (2 marks)
- R.M.S. value? (2 marks)
- Peak value? (1 marks)
- Peak – to – peak value? (1 marks)

3. From the given circuit, determine:

- total capacitance, C_T (3 marks)



- Outline one characteristic for each of the following (3 marks)

- 1) Conductors.
- 11) Insulators.
- 111) Permanent Magnet.

4. Determine the value of the resistor 4-band color codes:

- Brown, black, red, gold. (2 marks)
- Violet, green, black (2 marks)
- Red, violet, orange, silver. (2 marks)
- Yellow, black, yellow, gold. (2 marks)

5. Find the total voltage if six batteries are connected in series, and all have the same voltage of 1.5Volts? Also draw the electrical symbol to indicate all the six batteries.

(2 marks)

Section D

(30 marks)

1. What is Ohm's Law? (3 marks)
2. List four factors that affect the resistance of any conductor and explain the relationship of each with respect to resistance. (8 marks)
3. Draw an a.c waveform and show the following values: (7 marks)
 - a) Peak value.
 - b) RMS value.
 - c) Average values
4. Draw the **circuit diagram** of a fluorescent light and label all its components. (6 marks)
5. Draw a circuit diagram to connect the appropriate meters to measure the following quantities:
 - a) Voltage.
 - b) Current.
 - c) Resistance.

(6 marks)

THE END

Table 1

Resistor Colour Code			
Colour	Significant Figures	Multiplier	Tolerance
Black	0	1(10^0)	
Brown	1	10(10^0)	1%
Red	2	100(10^0)	2%
Orange	3	1000(10^0)	*
Yellow	4	10,000(10^0)	*
Green	5	100,000(10^0)	*
Blue	6	1000,000(10^0)	*
Violet	7	*	*
Grey	8	*	*
White	9	*	*
Gold	*	0.1	5%
Silver	*	0.01	10%
None	*	*	20%



Class Listing

School of Electrical & Electronics Engineering

Samabula

Penster1

2016

EEE211 Applied Electricity 1

NL

StudentID	Name	Status	Mon	Sponsor	Outstanding Fee
Certificate in Electrical Servicesman's Course 0					
2016137221	Alipate Koliloa	ER			276.00
2016137832	Apimeleki Lesumaivanuatu Kolinisau	EA			
2016138170	Arthur Edward Evans	EA			
2016134981	Ashnil Swdeep Kumar	EA			
2016137553	Avishek Adarsh Prasad	ER			276.00
2016135224	Eroni Kubunavanua Vilakeba	EA			
2016136744	Ilaitia Waqa Caginivalu	EA			
2012001016	Jale Nawai Mailulu	EA			
2016135894	Joel Joseph Kumar	EA			
2016134451	Josaia Duacia Kuruimate	EA			
2016137148	Josateki Busa Velia	ER			276.00
2016135147	Justin Joeli Fonmonu Fulman	EA			
2016137315	Manueli Rainibogi	ER			276.00
2016137907	Monika Devi Ram	EA			
2016137055	Nigel Rueben Tarupea	EA			
2016135489	Pritesh Prakash Chand	ER		Tertiary Education Loan Scheme 2016 -	276.00
2016136651	Raghunath Das	EA			
2015128722	Rahul Rajneel Kumar	EA			
2016136764	Ratuni Silivenusi Matatolu	ER			329.00
2016133717	Ravikash Ravneel Prasad	EA			
2015129550	Ronish Ronald Kumar	ER			50.00
2016136494	Ryan Chandra Naidu	ER			276.00
2016134704	Saravina Rokotuiria Turagakacivi	ER			276.00
2016133950	Shameel Shameen Khan	EA			
2016137603	Taniela Rakacikaci	ER			276.00
2016137616	Toga Cakacaka Takape	ER			276.00
2013115157	Viliame Daunabuna Batimoko	EA			
		27		Total Owing:	2,863.00
	Total Count:	27		Grand Total:	2,863.00



Class Listing

School of Electrical & Electronics Engineering

Ba campus

Penster1

2016

EEE211 Applied Electricity 1

NL

StudentID	Name	Status	Mon	Sponsor	Outstanding Fee
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Certificate in Electrical Servicesman's Course 0

2016137639	Ajnesh Narayan	ER			276.00
2016135148	Arvin Kumar	EA			
2016136798	Edward Jan Bhurrah	ER			26.00
2016135998	Jovesa Manakiwai Junior	ER			276.00
2016136850	Kaveni Nadromalu Jnr	EA			
2016134979	Kishen Kritesh Lal	EW			276.00
2016136266	Nilesh Pillay	ER			276.00
2016134584	Rajneel Prasad	EA			
2016136742	Ranit Ronil Kumar	EA			
2016136338	Ratu Jeremaia Kalokalo Vuiyasawa	ER			276.00
2016136458	Ravnit Shelvin Chand	ER			276.00
2016134569	Rynal Rinesh Lal	EA			
2016136140	Sawan Kumar	EA			
2016136610	Setareki Varo	ER			276.00
2016135552	Shamal Nikil Sharma	ER			276.00
2016133955	Shaneel Raj Gopal	EW			276.00
2016137366	Shaneel Shivendran Samy	EA			
2016134021	Shazil Shameel Ali	EA			
2015133232	Sheik Mohid Ali	EA			
2016135833	Shiv Neel Goundar	EA			
2016135611	Shivnil Shivam Ram	EA			
2016136119	Shrish Kumar	EA			
2016134302	Simon Finau Kotoilakeba	ER			76.00
2016137710	Sonal ****	ER			276.00
2014121256	Timoci Naleke Tuikubulau	ER			276.00

25

Total Owing:

3,138.00

Total Count:

25

Grand Total:

3,138.00