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CINEC CAMPUS(PVT)LTD
Faculty of Marine Engineering
Department of Marine Engineering
EDUCATION & TRAINING COURSE: NAVIGATION/ ENGINEERING OFFICER CADET FOUNDATION TRAINING COURSE
COURSE CODE: ED 0340

EXAMINATION QUESTION PAPER
Electronics

- *This question paper consists of six questions.*
- *Answer any five (05) Questions*

Date: 24.02.2023.02. *Pass mark 50%* *Time allocated: 03 Hrs*

Some helpful Data:

* Barrier potential across a 'Si' Diode – 0.7 V | across a "Ge" Diode 0.3 V

* Air permittivity $\varepsilon_0 = 8.854 \times 10^{-12}$ F·m^{-1}

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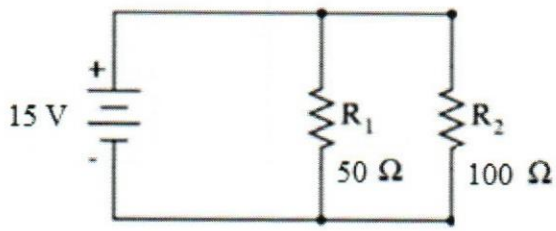
1. a) i. State Ohm's law (4 marks)

ii. Draw voltage divider and current divider circuits (4 marks)

b) The circuit consists of a 15 V battery with an insignificant internal resistance connected to three resistors.



i. Calculate equivalent resistance of above circuit.

ii. Calculate the potential difference across the 50 Ω resistor.

iii. Calculate the current I_1 through the 100 Ω resistor.

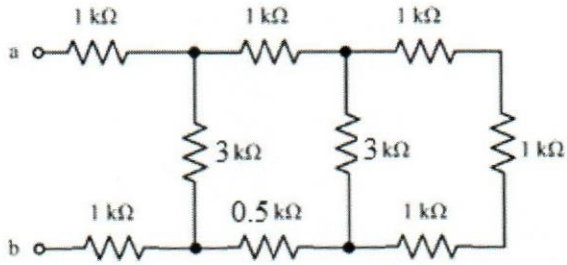
iv. Calculate the current I_2 through the 50 Ω resistor. (8 marks)

c) Calculate the power consumption of above resistor network. (4 marks)

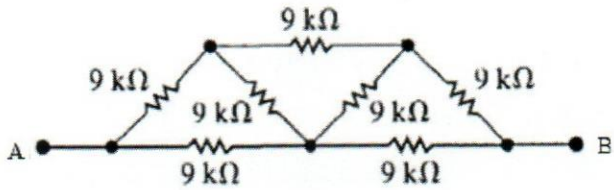
2. a) Define resistance. (5 marks)

b) A 3.50 m length of wire with a cross-sectional rea of 3.14×10^{-6} m^2 at 20 °C has a resistance of 0.0625 Ω. Determine the resistivity of the wire at 20 °C (5 marks)

c) i. Find the equivalent resistance (R_{ab}) of following resistor network. (5 marks)

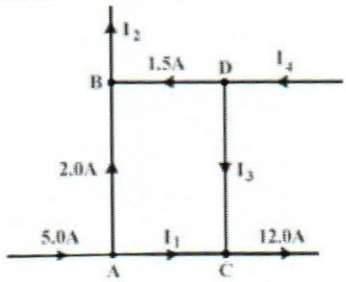


ii. Evaluate the equivalent resistance (R_{AB}) of the following infinite network of resistance. (5 marks)

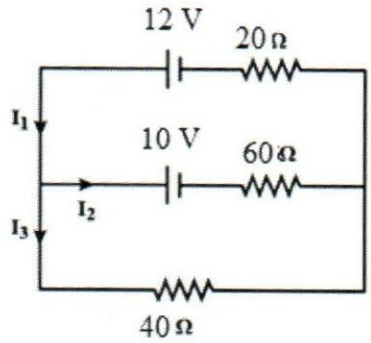


3. a) State Kirchhoff current law and Kirchhoff voltage law. (05 marks)

b) The figure below shows currents in a part of electric circuit.
Find value of currents I_1, I_2, I_3, and I_4 (05 marks)



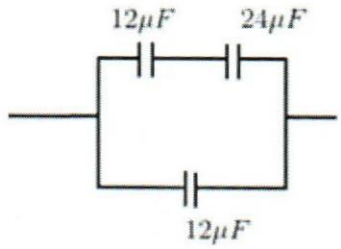
c) Find the current through each resistor branch using Kirchhoff's laws and hence calculate the voltage across 40 Ω resistor. (10 marks)



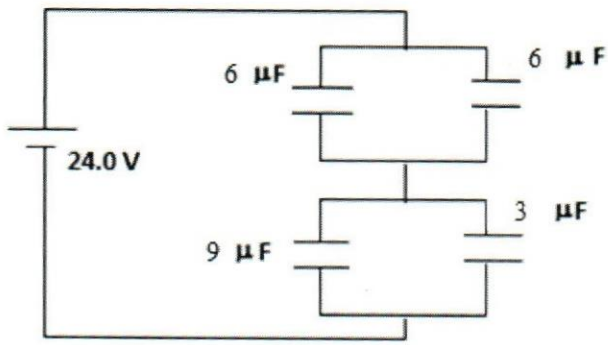
4. a) i. Define the term capacitance. (4 marks)

ii. Calculate the capacitance of two metal plates of area 15 m^2 and separated by a dielectric 1mm thick and relative permittivity 6. ($\varepsilon_0 = 8.854\times10^{-12}$ F·m^{-1}) (4 marks)

b) Determine the equivalent capacitance the capacitor network shown in below. (6 marks)



c) Find the charge on each of the capacitors in the figure below. (6 marks)



5. a) i. Define semiconductors. (4 marks)

ii. Name two semiconductor elements. (2 marks)

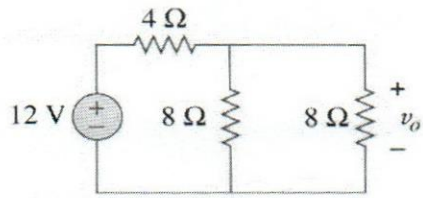
b) Explain the terms extrinsic semiconductor and intrinsic semiconductor. (8 marks)

c) Explain the behavior of semiconductor with temperature. (6 marks)

6. a) What is the difference between ideal voltage source and real voltage source. (6 marks)

b) Explain transformation of real voltage source and real current source. (6 marks)

c) Using source transformation, determine V_o. (8 marks)



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EDUCATION & TRAINING COURSE: ENGINEER OFFICER CADET FOUNDATION TRAINING COURSE
COURSE CODE:

FINAL EXAMINATION QUESTION PAPER
Introduction to the Shipping

- *This question paper consists of Five questions.*
- *Answer All Questions*

Date: 2022.02.25 *Pass mark 50%* *Time allocated: 03 Hrs*

1. Name following parts of the ship using a suitable diagram. (20 marks)
   Accommodation, draft, air draft, length overall, beam, stbd side, port side, anchor, forecastle, astern, navigation light, main mast, keel, double bottom tank, bow thruster, navigation bridge,steering flat, propeller, rudder.

2. (a) List down five types of emergency drills which should be performed while sailing onboard ship. (10 marks)

   (b) Briefly explain three of them. (06 marks)
   (c) What is the purpose of having muster station on board ship? (04 marks)

3. (a) What is meant by LSA and FFA (04 Marks)

   (b) List 3 types of emergency equipment available on board ship to face various types of emergency situation. (06 marks)

   (c) Write short notes on above equipment. (10 marks)

4. (a) Give 10 kind of safety gears widely used on board. (10marks)

   (b) Explain 5 of above safety gears. (10marks)

5. (a) Make a list of different types of ships widely used in shipping industry. (10 marks)

   (b) Briefly describe 5 of them. (10 marks)

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Faculty of Maritime Sciences
Department of Navigation
EDUCATION & TRAINING COURSE: Navigation Cadet Training Program – Foundation
COURSE CODE: ND- 0199 – BATCH 023

MID TERM EXAMINATION - QUESTION PAPER

INTRODUCTION TO SHIPPING

- *Answer all questions.*
- *Formulae & all intermediate steps taken in reaching your answer should be clearly shown.*
- *Total Marks: 100*

Date: 25.02.2023 *Pass mark 70%* *Time allocated: 03 Hours*

1) Write short notes on following types of ships.

a) Container
b) Gas Tanker
c) Bulk Carrier
d) Oil Tanker
e) Ro – Ro

(20 marks)

2) Describe the meaning of following nautical terms.

a) Ballast
b) Bulkhead
c) Bunkers
d) Draught
e) Even Keel
f) Freeboard
g) Hull
h) Leeward
i) Trim
j) Windlass

(20 Marks)

3) **a)** What is the main objective of cargo hold hatch covers?

(5 marks)

b) Describe the types of hatch covers that are mainly used on ships.

(15 marks)

4) **a)** Briefly describe 5 types of containers.

(12 marks)

b) What are the advantages of using Single Point Mooring buoy.

(8 marks)

5) What are the advantages & disadvantages of container shipping?

(20 marks)