FNU FIJI NATIONAL UNIVERSITY

COLLEGE OF ENGINEERING, SCIENCE & TECHNOLOGY

SCHOOL OF ELECTRICAL & ELECTRONIC

ENGINEERING

TRADE DIPLOMA IN ELECTRICAL ENGINEERING
STAGE 4

EEE535–ELECTROTECHNOLOGY

SEMESTER 2 - 2013.

DAY/DATE : **TIME:** **ROOM: As per timetable.**

INSTRUCTIONS TO STUDENTS

1. You are allowed 10 minutes Extra reading time during which you are NOT to write.

2. Begin each answer 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 sheets in their correct sequence and secure with string.

5. For all sheets of paper on which rough/draft work has been done, cross it though and you MUST ATTACH to your answer scripts.

6. Write clearly the number(s) of the question(s) attempted on the top of each sheet.

7. ANSWER ALL QUESTIONS.

8. Show all workings where necessary.

9. Do not use programmable calculators, especially the ones that does the conversions of number systems.

10. ***CHECK YOUR WORK BEFORE YOU LEAVE THE ROOM****!*

Question 1

For the circuit shown in Fig. 1, find the value of RL for maximum power transfer. What will be the value of maximum power?

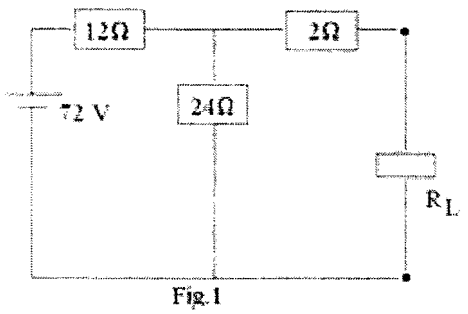


Fig.1

(10marks)

Question 2

For the circuit shown in Fig. 1 find the current in the load resistance RL = 18Ω and the voltage across it by Norton's theorem and verify the result by applying Thevenin's theorem.

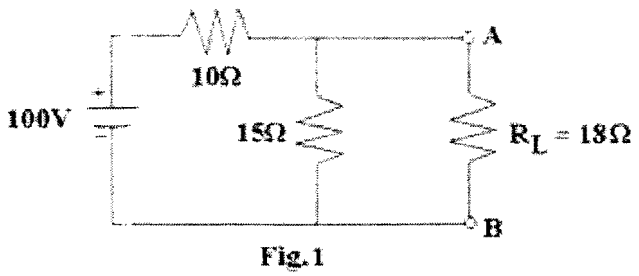
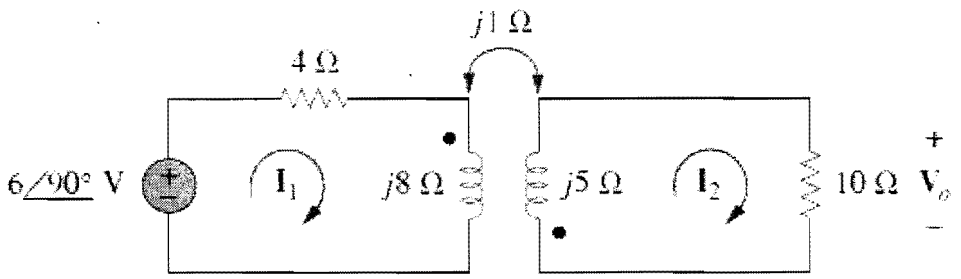


Fig.1

(10marks)

Question 3

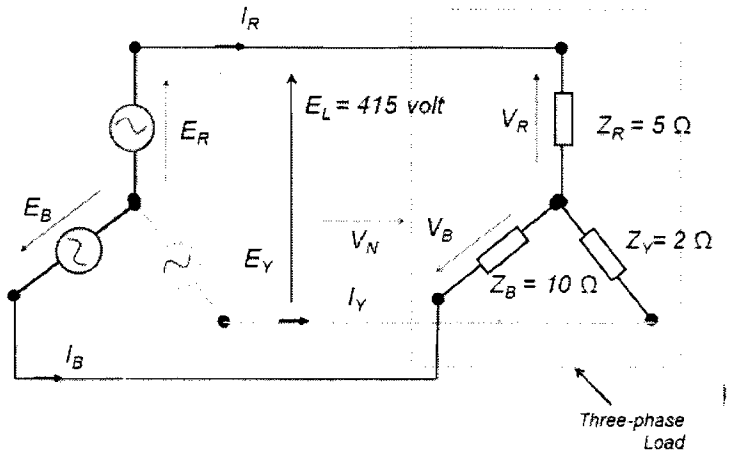
Determine the voltage across 10Ω resistor.



(10marks)

Question 4

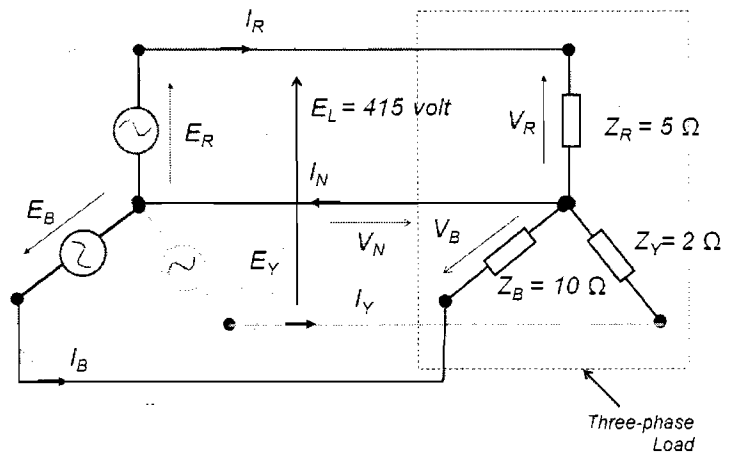
Determine how many wire-system is this and find the line currents I_R, I_w and I_B. Also find the voltages V_R, V_w and V_B.



(5 marks)

Question 5

Determine how many wire-system is this and find the line currents I_R, I_w and I_B. Also find the neutral current I_N.

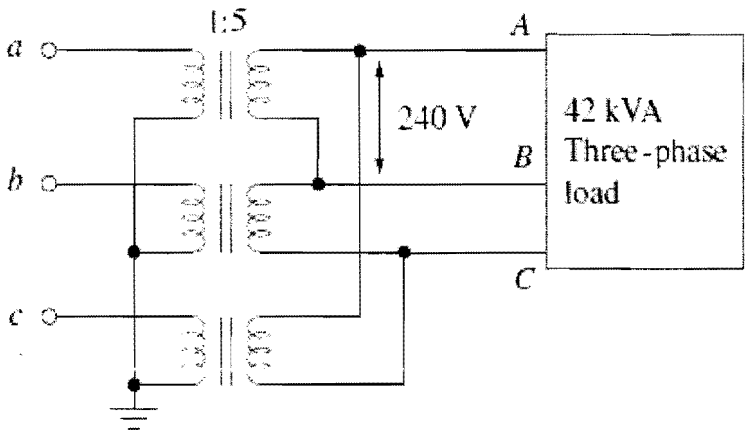


(5 marks)

Question 6

The 42-kVA balanced load depicted as shown is supplied by a three phase transformer.

a) Determine the type of transformer connections. (3marks)
b) Find the line voltage and current on the primary side. (3marks)
c) Determine the kVA rating of each transformer used in the transformer bank. Assume that the transformers are ideal. (4marks)



(10marks)

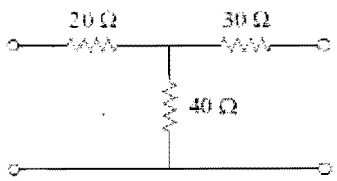
Question 7

Explain the purpose of the transformers in power distribution with aid of diagrams

(10marks)

Question 8

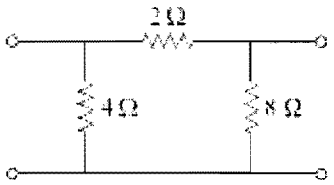
Determine the z parameters for the circuit in Fig 7.



(10marks)

Question 9

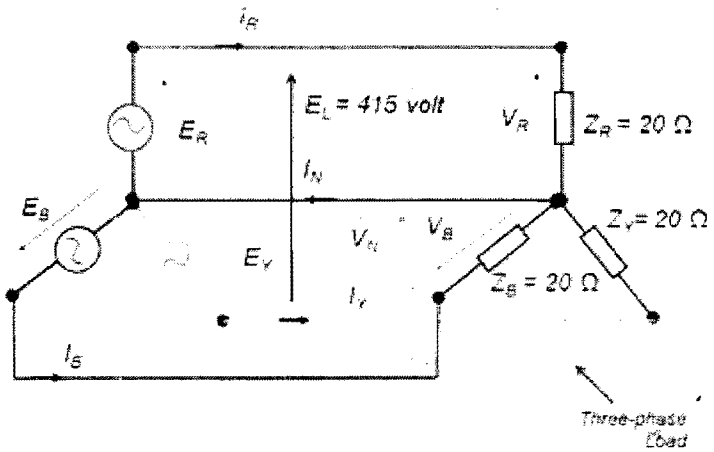
Obtain the y parameters of the circuit given below



(10marks)

Question 10

Wye- connected balanced loads four wire system is shown. Determine the line currents I_R, I_w and I_B. Also find the neutral current I_N.



(10marks)

Question 11

Determine the Laplace Transform of each of the following functions.

$a) u(t)$ (3marks)

$b) e^{-at}u(t)$ (3marks)

$c) \delta(t)$ (4marks)

All the Best…

The End!!