MACHAKOS UNIVERSITY COLLEGE

(Aconstituent college of kenyatta university)

University examinations 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS.

(SUPPLIMENTARY)Examination for certificate in eletrical and electronics

Eletrical principles ii (EPC116)

Instructions: answer quistion one and any other two quistions

Quistion 1

(a)) the magnetic susceptibility of oxygen gas at 20^0c is $167x10^{-11}$ H/m. Calculate its absolute and relative permeabilities. 10 marks

b) Define the following

i)relactance

ii)permeance

iii) magnetomotive force

iv)flux density

v) magnetic potential. (10 marks)

(c) explain what you understand of the following terms

i) non magnetic materials

(ii) diamagnetic material

(iii) paramagnetic material

(iv) ferromagnetic materials

(v) susceptibility 10 marks

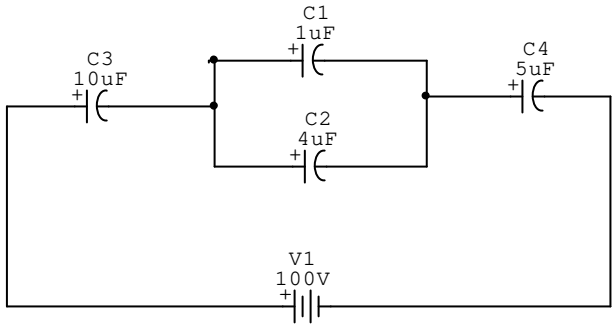
Quistion 2

In the figure below, find

(i) Equivalent capacitance

(ii) Voltage drop across each capacitor

(iii) Charge on each capacitor



(20 marks)

Quistion 3

An iron rod ,2cm in diameter and 20cmlong is bent into a closed ring and is wound with 3000 turns of wire.it is found that when a current of 0.5 A is passed through this coil the flux density in the coil is 0.5wb/m^2. Assuming that all the flux is linked with every turnof the coil, what is

(a) The B/H ratio for the iron (10 marks)

(b) The inductance of the coil and what voltage would be developed across the coil if the current through the coil is interupted and the flux in the in the iron falls to 10% of its former value in 0.001 second

(10 marks)

Quistion 4

(a)give the equivalence of the following magnetic parameters to their electric equivalence

i) flux

ii) reluctance

iii) flux density

iv) magnetic force (12 marks)

(b) explain the two faradies laws of electromagnetic induction. (8marks)