CTEVT, DIPLOMA

Question Bank

Of

Electrical Engineering

2071 To 2079

Website:- www.arjun00.com.np

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/ Back Exam 2071, Bhadra/Ashwin

Program : Diploma in Information Technology (IT)/ Computer Engineering (New) **Full Marks: 80**

Year/ Part : I/II **Pass Marks: 32**

Subject : Electrical Engineering **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt (Any Eight) Questions.

1. Define the following: [5x2=10]

(a) Magnetic flux density (b) Frequency

(c) Instantaneous value of alternating quantity (d) Lenz's Law

(e) Electric power

2. Define and explain Faraday's law of electromagnetic induction. [10]

3. In a RLC series circuit consists of a resistance of 8Ω, inductance of 0.15H and capacitance of 125μF. If voltage of 230v, 50HZ supply is applied. Calculate [10]

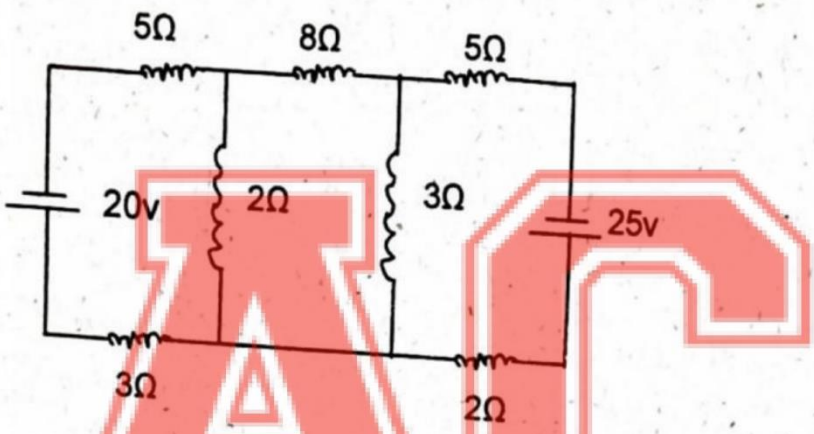
(a) Impedance (b) Current (c) Power factor

(d) Voltage across each element.

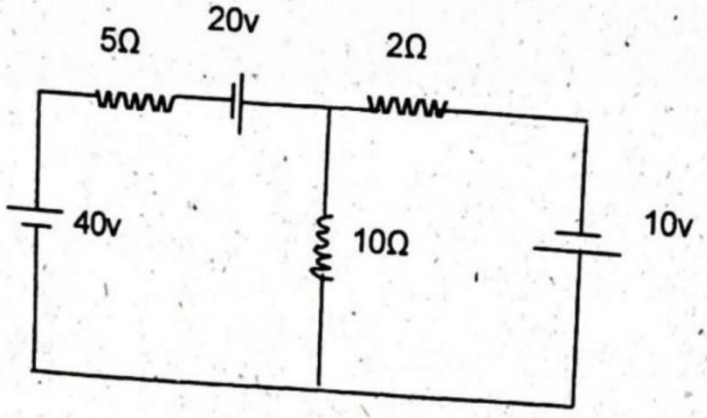
4. What are the advantages of 3-ø system? Differentiate between generator and motor. [7+3=10]

5. Explain the construction and working principle of 3 phase induction motros. [10]

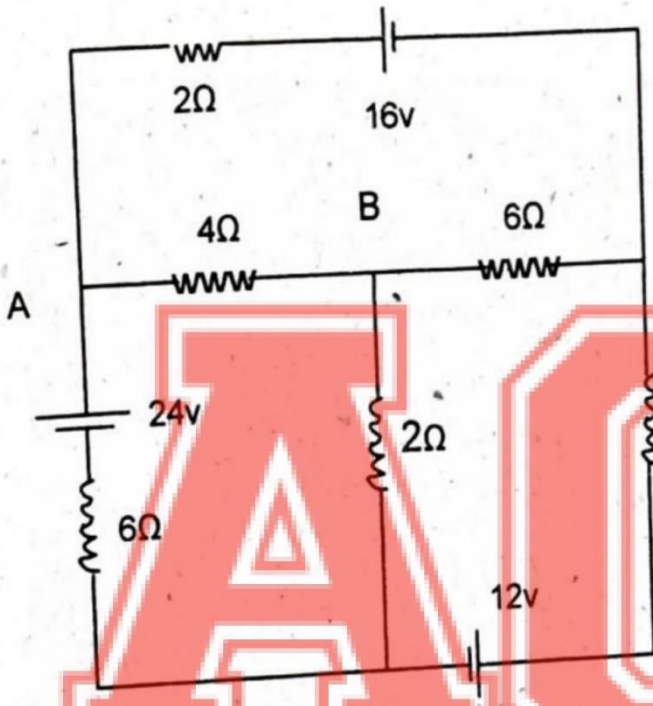
6. Using nodal analysis. Find the current through 8Ω register shown in network below. [10]



7. Determine the current through 2Ω resistor. Shown in figure below (using thevenin's theorem). [10]



8. Using mesh analysis. Find the current flowing in branch AB and BC in circuit shown below. [10]



9. Define resonance and resonant frequency in RLC series circuit. Derive the resonant frequency. Expression. [10]

[2x5=10]

10. Write short notes on (Any two)

(a) Single phase ac motor

(b) Primary and secondary cell

(c) Charging methods of battery.

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2073 Bhadra/Ashwin

Program: Diploma in Information Technology /Computer Engineering — **Full Mark: 80**

Year/Part: I/II (New Course) — **Pass Mark: 32**

Subject: Electrical Engineering — **Time: 3 hrs.**

Candidates are required to give their answers in their own words as practicable. The figures in the margin indicate full marks.

Attempt Any Five Questions.

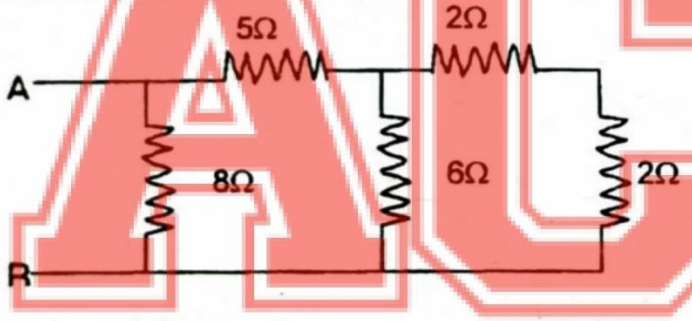
1. a) State and explain faraday's law of electromagnetic induction? **[4]**

   b) What do you mean by Magnetic field intensity? Give the B.H. curve of a magnetic material and explain the various parts of the curve. **[2+5=6]**

   c) A battery of 24V is applied across terminal AB of the circuit shown in fig. below. Find **[6]**

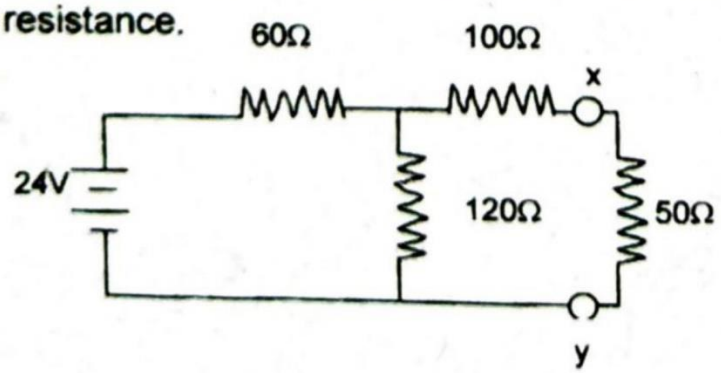
   i) The current in 2Ω resistance.

   ii) Voltage across 6Ω resistance

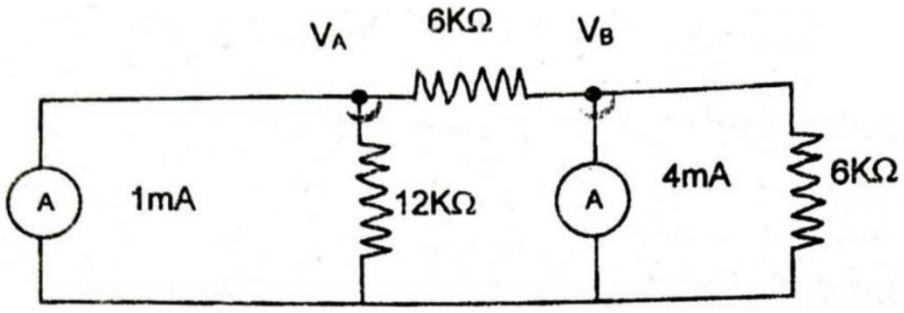


2. a) State and explain maximum power transfer theorem and prove that efficiency under maximum power transfer condition is 50%. **[3+2=5]**

   b) Find Thevenin Equivalent circuit to the left of terminal x-y in figure below and find the value of current flowing through 50Ω resistance. **[3+3=6]**



c) Solve the circuit shown in figure below using nodal analysis and find V_A and V_B [5]



3. a) What do you mean by transformer? Explain the working principle of single phase transformer. [2+6=8]

b) Explain the construction and working principle of 3ϕ induction motor in brief. [4+4=8]

4. a) What do you mean by cell? Explain construction and chemical reaction during charging of lead acid cell. [2+6=8]

b) In RLC series resonance circuit R=16Ω, L=20mH, and C=0.01μF. If the applied voltage is 4V. find [8]

i) The frequency at which circuit p.f. is equal to 1.
ii) Circuit current during resonance
iii) Voltage drop across inductance
iv) Quality Factor.

5. a) Explain the advantage of 3 phase system over single phase system. [6]

b) Explain and derive the relation between V_l, V_{Ph} and I_L, I_{Ph} in star connection using phasor diagram [10]

6. **Write short notes on: (Any Four)** [4x4=16]
   a) Mercury cell
   b) DC motor
   c) power in AC circuit
   d) Super position theorem
   e) Capacitor and inductor

Good Luck!

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2074, Shrawan/Bhadra

Program:	Diploma in Computer and Information Technology	Full Marks: 80
Year/Part:	I/II [New Course]	Pass Marks: 32
Subject:	**Electrical Engineering**	*Time:* 3:00 *hrs*

Candidates are required to give their practicable. The figures in the margin

Attempt **Any Five** Questions

1. Define **(Any Five)** [5x2=10]

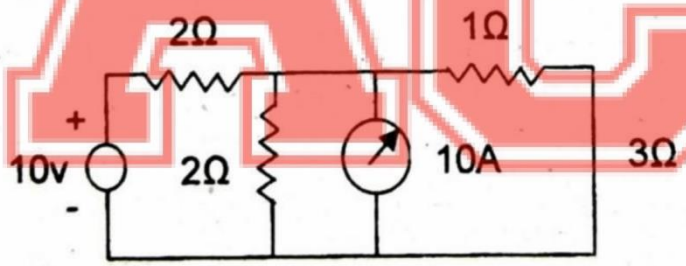
   i) Magnetic field iii) Flux density v) Frequency

   ii) Magnetic flux iv) Field intensity vi) Electric power

   b) Define and explain Faraday law of electro-magnetic induction. [6]

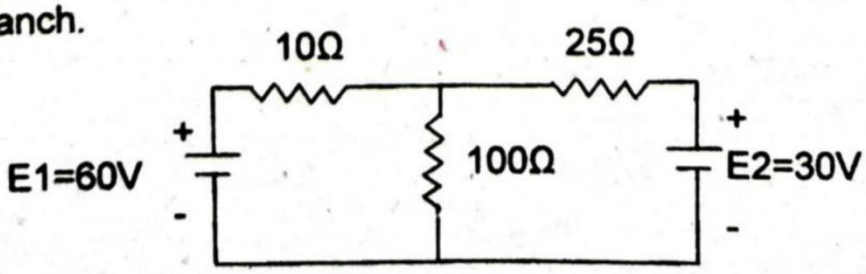
2. a) State and explain Ohm's law with suitable example. [5]

   b) Determine the current flowing through 3Ω resistor in the network shown below using Thevenin's theorem. [6]



   c) State and explain superposition theorem. [5]

3. a) Using nodal analysis, write down node cottage equation for the circuit to find the current through 25Ω branch. [5]



b) An alternating current i is given by i=141.4sin314t. [5]

Find i) The Maxim Value

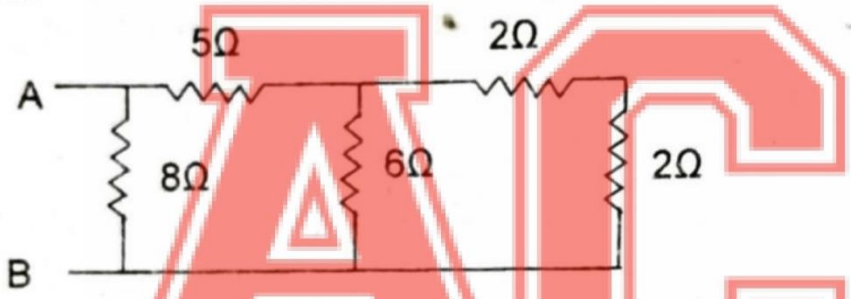
ii) Frequency

iii) Time period

iv) Instantaneous Value when t is 3ms

c) A battery of 24V is applied across terminal AB of the circuit shown in figure below. Find: [6]

i) The current in 2Ω resistor ii) Voltage across 6Ω resistor.



4. a) Explain the construction and working principle of single phase transformer. [8]

b) Explain the construction and principle of 3ϕ Induction motor in brief. [4+4=8]

5. a) A coil of resistance 100Ω and inductance 100H is connected in series with a 100F capacitor. The circuit is connected to a 10V variable frequency supply. [8]

Calculate: i) the resonance frequency

ii) Current at resonance

iii) Voltage across L and C at resonance.

iv) Q factor of the circuit.

b) What are the advantages of 3ϕ system? Explain about the star and delta connection of 3ϕ system. [3+5=8]

6. Write short notes on: **(Any Four)** [4x4=16]

a) Hysteresis loop

b) Dry cell

c) Series and parallel connection of cell

d) Resonance in RLC series circuit

e) KCL and KVL

f) Single phase AC motor

Good Luck!

Council for Technical Education and Vocational Training
Office of the Controller of Examinations
Sanothimi, Bhaktapur

Regular/ Back 2075 Shrawan / Bhadra

Program: Diploma in Computer Engineering / Information Technology. **Full Marks: 80**

Year/ Part: I/II(New + IT Old Course) **Pass Marks: 32**

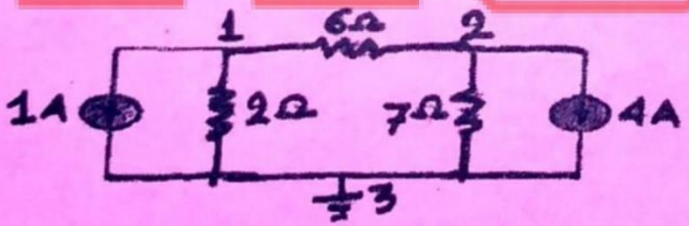
Subject: Electrical Engineering **Time: 3 hrs.**

Candidates are required to give th... far as practicable. The figures in t...

Attempt (Any Five) Questions.

1. (a) State and prove maximum power transfer theorem. [8]
   (b) Explain Faraday law of electromagnetic induction. What is statically and dynamically induce EMF . [8]
2. (a) Find Thevenins equivalent circuit across 4Ω and value of current flowing through 4Ω resistance. [8]

   (b) Use nodal analysis ti find the voltage at node 1 and 2 [8]



3. (a) What are the advantage of three phase system over single phase system? [8]
   (b) Explain star and delta connection with neat diagram. [8]
4. (a) Explain the construction and working principle of single phase transformer. [8]
   (b) Explain the construction and working principle of three phase induction motor. [8]
5. (a) Define and derive resonant frequency. [8]

Contd.....

(b) What is electrical circuit? what are the different between electrical circuit and magnetic circuit? [8]

Write short notes on: (Any four) [4x4]

a) Primary and secondary cell.
b) Single phase AC motor.
c) Magnetic field intensity.
d) Resistance.
e) Average value.

Good luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2076, Shrawan/Bhadra

Program: Diploma in Computer /IT Engineering — **Full Marks: 80**

Year/Part: I/ II (2018, 2010 & IT 2008) — **Pass Marks: 32**

Subject: Electrical Engineering — ***Time:* 3 *hrs***

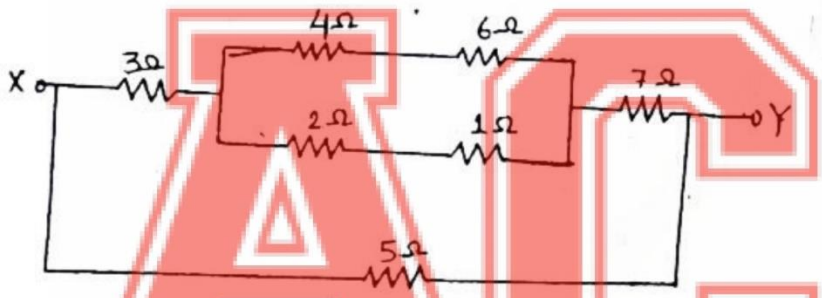
Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt **Any Eight** questions.

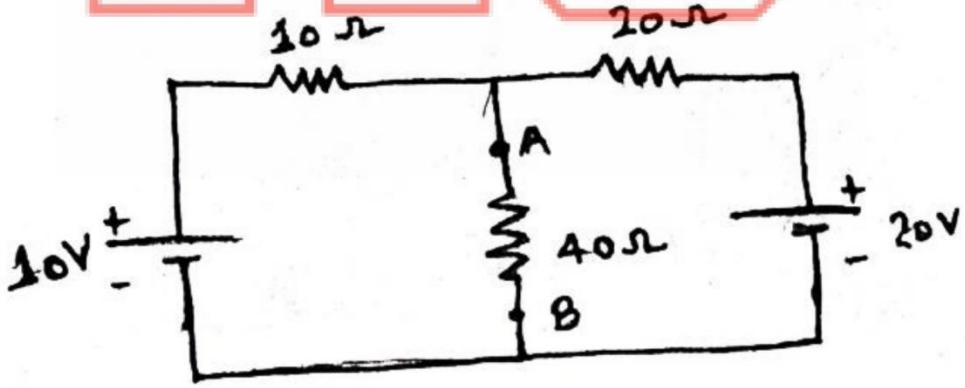
1.a) Define magnetic material. Differentiate between soft and hard magnetic material. Also explain about Hysteresis loop. [1+4+3]

b) State and explain Kirchhoff's current and voltage law with necessary clear diagram. [8]

2.a) Explain Lenz's law and also calculate the equivalent resistance of the network given in figure : [8]



b) Find Theremins' equivalent circuit across 40Ω and value of current flowing through 40Ωresistance of figure: [8]



3.a) Explain the phasor representation of single phase AC. Explain the use of J operator in AC analysis. [4+4]

Contd.....

b) Explain the Maximum power transfer theorem with your own example and necessary diagram. [8]

4.a) Explain the construction and working principle of single phase AC motor. [8]

b) Explain the construction and working principle of three phase induction motor. [8]

5.a) Write down the advantages of 3-phase system over single phase system. [8]

b) Differentiate between primary and secondary cells. Define the internal resistance of a cell. [6+2]

6. Write Short Notes on. (**Any Four**) [4x4= 16]

a) Single phase Transformer
b) RMS value
c) Magnetic flux and flux density
d) Faraday's law of Induction
e) Mercury cell
f) Ohm's law

Good Luck!

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2077, Chaitra

Program:	**Diploma in Computer/IT Engineering**	**Full Marks: 80**
Year/Part:	**I/II (2018, 2013, 2008)**	**Pass Marks: 32**
Subject:	**Electrical Engineering**	**Time: 3 hrs**

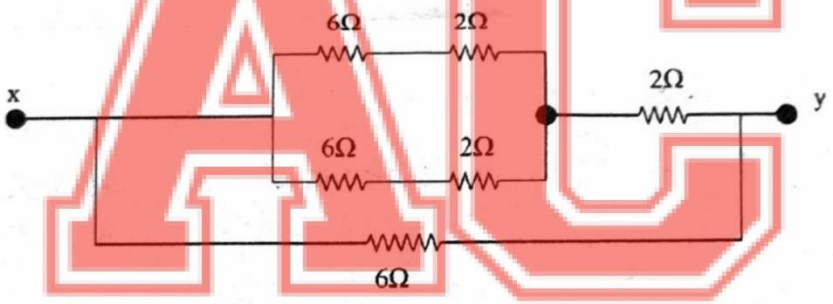
Candidates are required to give their answers in the
The figures in the margin indicate full marks.

Attempt Any Five questions.

1. a) Define the terms: [2+2+2+2=8]
   i) Magnetic field ii) Magnetic flux
   iii) Magnetic field intensity iv) Magnetic permeability

   b) Define electric current and voltage. Explain the active and passive electric component. [4+4=8]

2. a) State and Explain the Ohm's law. Calculate the equivalent resistance of the network given in figure : [4+4=8]



   b) Explain Faraday's Law of Electromagnetic Induction with necessary diagram. [8]

3. a) Explain the generation process of Cc. Define the term Average value and RMS value. [4+2+2=8]

   b) State and Explain the superposition theorem with necessary diagram and example. [8]

4. a) Explain the construction and working principle of single phase transformer. [8]

   b) Explain the construction and working principle of three phase induction motor. [8]

Cont.....

5. a) Explain the construction and chemical reaction during charging and discharging of Lead acid cell. [8]

   b) Explain the star and Delta Connection of 3-phase source and Load Circuit in brief. [8]

6. **Write short notes on : (Any Four)** [4x4=16]

   a) Nortorn's Theorem
   b) Hysteresis Loop
   c) Capacitance
   d) J-operator
   e) Electric power and energy
   f) Dry cell

Good Luck !

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Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2078, Magh/Falgun

Program: Diploma in Computer/ IT Engineering — **Full Marks:80**

Year/ Part: I/II (2018, 2013, 2008 New+Old) — **Pass Marks: 32**

Subject: Electrical Engineering — **Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt Any Five Questions.

1. a) Show the analogy between magnetic circuit and electric circuit.State and explain Kirchhoff's law. [4+4]

   b) State Thevenin's theorem. State and explain Norton's theorem with necessary expression and diagram. [2+6]

2. a) Define following terminology: [2x4=8]

   i) Instantaneous values ii) RMS values

   iii) Active power iv) Power factor

   b) State and explain the maximum power transfer theorem. [8]

3 a) A 230V, 50HZ ac supply is applied to a coil of 0.07H inductive and 2.5Ω resistor in series. Calculate the [8]

   i) impedance ii) current iii) phase angle

   iv) power factor

   b) Explain delta connection of 3-phase and also derive the expression for line and phase qualities. [8]

4. a) Define ideal transformer. Explain construction and working principle of single phase transformer. [8]

   b) Define induction motor. Explain construction and working principal of 3-phase induction motor. [2+6]

5. a) Show the final expression for the RLC series circuit. [8]

   b) Define dry cell and mercury cell. Explain series and parallel connection of cell. [3+5]

6. Write short notes on : **(Any Four)** [4x4=16]

   i) Lead acid cell ii) emf

   iii) Single phase AC motor iv) Lenz's law

   v) Generation of sinusoidal EMF

Good Luck !

Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

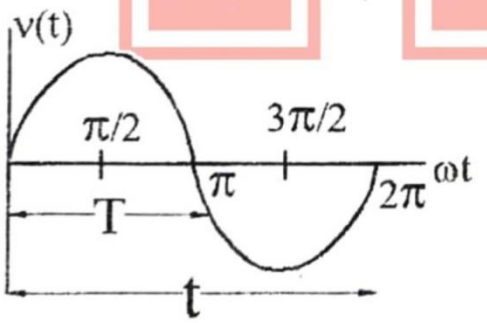
Regular/Back Exam-2079, Phagun/Chaitra

Program:	**Diploma in Computer Engineering**	**Full Marks: 80**
Year/Part:	**I/II (2013, 2018)**	**Pass Marks: 32**
Subject:	**Electrical Engineering**	**Time: 3 hrs.**

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt any EIGHT questions.

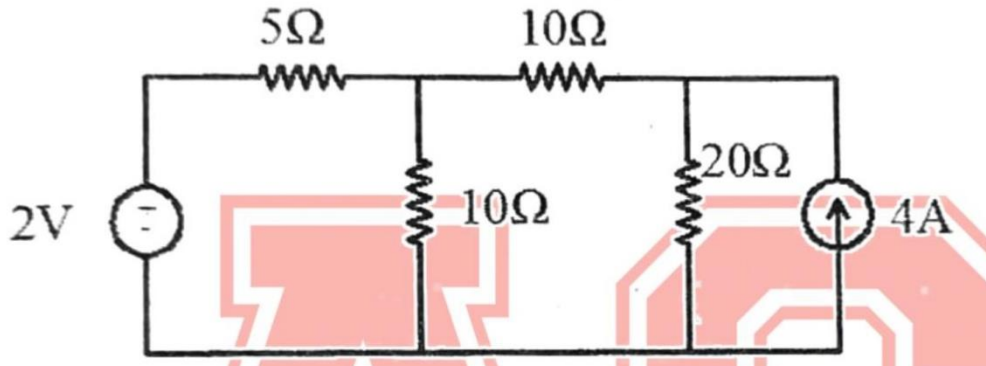
1. Define: (any **FIVE**) [5×2]
   a. Magnetic Flux
   b. Resistance
   c. RMS or Effective Value
   d. Time Period and Frequency
   e. Electric Power
   f. Magnetic Field Intensity
   g. Ohm's Law
2. State Lenz's law. Explain the B-H curve for magnetic materials. [2+8]
3. State Thevenin's Theorem. Explain the procedure for solving the circuit by Thevenin's Theorem. [2+8]
4. Define phasor. Find the average and RMS value of the sine wave as shown below. [2+8]



5. Explain 3-phase system with its advantages and compare star and delta connection with examples. [10]
6. Define ideal transformer. Explain the construction and working principle of single phase transformer. [2+8]
7. With the help of neat diagram, derive the relation between the phase and line current, phase and line voltage in delta connection. [10]

Cont. .....

8. Define node. Find the current flowing through 20Ω resistor of the following circuit using nodal analysis. [2+8]



9. Describe primary and secondary cells. Differentiate series and parallel connection of cells. [4+6]

10. Write short notes on: (any **TWO**) [2×5]

a. Kirchhoff's Law
b. DC Generator
c. Use of 'J' Operator
d. Dry Cell

Good Luck !