



Program: Diploma in Computer Engineering

Full Marks: 80

Year/Part: I/II (2013, 2018)

Pass Marks: 32

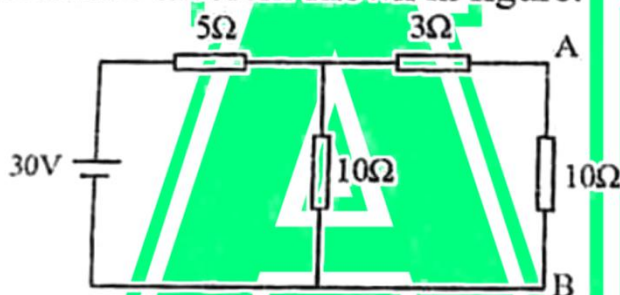
Subject: Electrical Engineering

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.


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Attempt any **TEN** questions.

1. Define magnetic flux and flux density? State and explain Faraday's law of electromagnetic induction. [2+6]
2. State Kirchhoff's law. Show the equivalent resistance for the resistors $R_1, R_2, R_3, \dots, R_n$ connected in parallel. [2+6]
3. Define Ohm's law? State and explain maximum power transfer theorem with the help of circuit diagram. [2+6]
4. Find the current across A-B terminals of the circuit using Norton's theorem shown in figure. [8]



5. A 230 V, 50 Hz AC supply is applied to a coil of 0.03 H inductance and 2.5Ω resistance connected in series with a $6.8\mu\text{F}$ capacitor. Calculate: (i) impedance (ii) current (iii) phase angle (iv) power factor. [8]
6. Define peak and RMS values? Derive the expression for AC excitation for RC circuits. [2+6]
7. Explain star connection. Show the relationship of phase voltage, line voltage and phase current, line current in delta connection. [2+6]
8. Define transformers. Explain constructions and working principle of single phase transformer. [2+6]
9. Define DC machines. Derive an emf equations for DC generator. [2+6]


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Cont.

10. Define dry cell and mercury cell. Explain series and parallel connection of cell. [8]
11. Write short notes on: (any TWO) [2×4]
- a. Thevenin's Theorem
 - b. Hard and Soft magnetic Material
 - c. Electric Power and Energy
 - d. Power Factor
12. Explain construction and working principle and synchronous generator. [8]

Good Luck !



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AC



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

Regular/Back/Special Exam-2080, Mangsir/Poursh

Program: Diploma in IT Engineering

Full Marks: 80

Year/Part: I/II (2016)

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.



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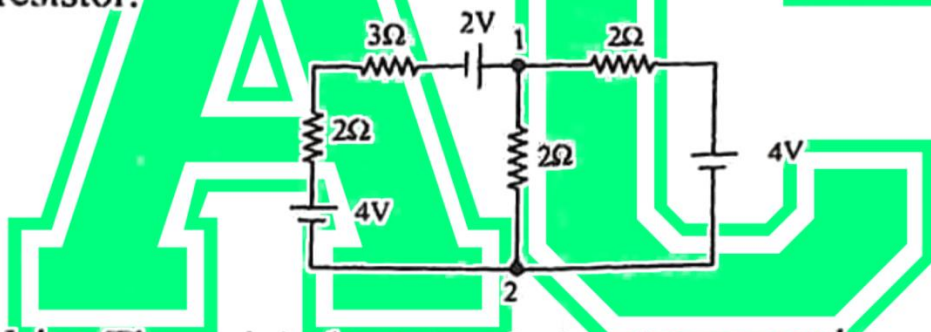
Attempt Any Five questions.

1. a) Define the terms: i) Current ii) Voltage [4x2=8]
iii) Power iv) Energy

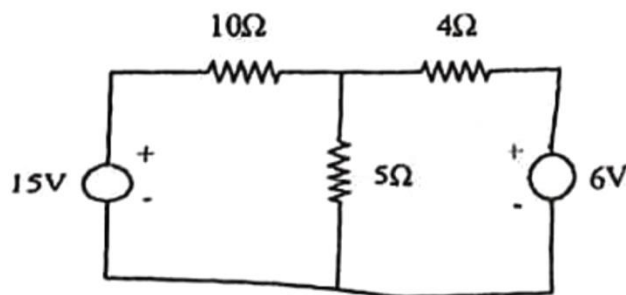
b) State and explain Faraday's law of electromagnetic induction. [4]

c) State and explain KVL with example. [4]

2. a) Using node voltage method find the current in the 3Ω resistor. [8]



- b) Using Thevenin's theorem calculate the current through 4Ω resistor. [8]



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

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



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Cont.....

4. a) Define magnetic Hysteresis Loop. Explain B-H curve of ferro-magnetic material. [3+5]
- b) Explain star and delta connection with neat diagram. [8]
5. a) Define primary & secondary cell. Explain the parallel connection of cells. Also, derive the expression for equivalent emf and equivalent internal resistance. [2+6]
- b) 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. Calculate: [8]
- i) resonance frequency
 - ii) Current at resonance
 - iii) Voltage across L & C at resonance
 - iv) Q factor of the circuit
6. Write short notes on : **(Any Four)** [4x4=16]
- a) Voltage and current sources
 - b) Dry cell
 - c) Super position theorem
 - d) Power in AC circuits
 - e) Advantages of 3- ϕ system

Good Luck !



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AC