Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Scholarship Exam-2080, Bhadra

Program: Diploma in IT / Computer Engg. **Full Marks: 80**

Year/Part: II/I (2022) **Pass Marks: 32**

Subject: Basic Electrical & Electronics Engineering **Time: 3 hrs.**

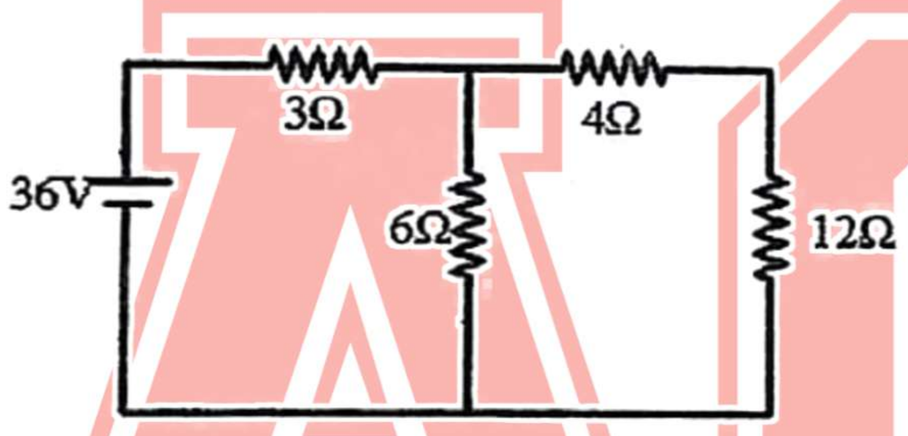
Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt Any Five questions.

1. a) Define electromotive Force and potential difference. [4]

   b) Explain Kirchhoff's voltage law with suitable example. [4]

   c) Using Thevenin's theorem find the current through 12Ω resistor from below circuit. [8]



2. a) State and prove maximum power transfer theorem. [4]

   b) Define the following forms. [4x2=8]

   i) Instantaneous value ii) Average value

   iii) Peak value iv) RMS value

   c) Explain VCVS and CCVS. [4]

3. a) Derive the expression for the r.m.s. and average value of sinusoidal current and voltage. [8]

   b) A 230V, 50Hz AC supply is applied a coil of 0.06H inductance and 5Ω resistance connected in series with a capacitor of 10μF. Calculate the following. [4x2=8]

   i) Impedance ii) Circuit current

   iii) Power factor iv) Active power

4. a) What do you mean by rectifier? Explain the working principle of half-wave rectifier with waveform. [8]

Cont.....

b) What do you mean by transistor? Explain BJT as a switch with neat diagram. [8]

5. a) Explain the construction and working of CMOS. [8]

b) What do you mean by operational amplifier? Explain the ideal and real characteristics of operational amplifier. [8]

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

a) Norton's theorem

b) Semiconductor diode

c) BJT as a logic gate

d) MOSFET

e) Clipper circuit

Good Luck !