

BE - 104

B.E. I & II Semester Examination, June 2015 Basic Electrical & Electronics Engineering

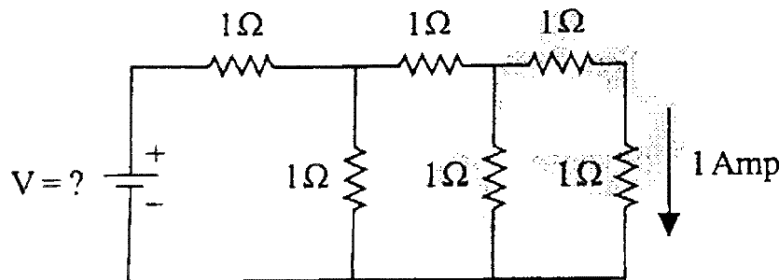
Time : Three Hours

Maximum Marks : 70

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each questions are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

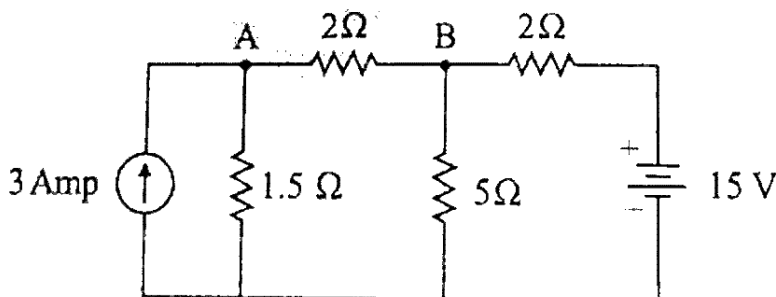
- ~~a)~~ Differentiate between Ideal voltage source and practical voltage source with the help of example.
~~b)~~ Find the value of voltage in the given circuit below by applying KVL.



- ~~a)~~ State and explain Thevenin's theorem. Give its applications.
~~b)~~ A balanced star connected load of $(3+j4)$ ohms per phase is connected to a three phase, 230 volts, 50Hz supply. Find the current, power factor; volt amperes and reactive volt amperes. Draw the phasor diagram for the same.

Or

- ~~c)~~ Find the value of current in branch AB using superposition theorem.



Unit - II

- ~~a)~~ Give the working principle (State the Laws) of transformer operation with its field of application.
~~b)~~ Why iron losses remains constant at any value of load current drawn from the transformer?
~~c)~~ Draw and explain the phasor diagram of single phase transformer for lagging power factor load.

d) Open circuit and short circuit tests conducted on a single phase transformer gave the following results:

$V_o = 200$ volt, $I_o = 0.8$ Amp; $W_o = 25$ watts - primary side (Test)

$V_{SC} = 25$ volt, $I_{SC} = 12$ Amp; $W_{SC} = 60$ watts - Secondary side (Test)

Determine the equivalent circuit parameters referred to primary side.

Or

Give the lab methods to determine, voltage regulation and efficiency of a single phase transformer, also give the circuit diagram with brief explanation.

Unit - III

3. a) Why terminal voltage of D.C. Shunt generator falls on loading (Increasing the value of armature current)?
- b) Give the classification of D.C. motor. Why D.C. Series motor can not start on no-load?
- c) Why you need a starter to start a D.C. Motor?
- d) Describe the construction, working principle of the three phase induction motor. Draw the torque slip characteristics of the above. Why this motor can not operate on synchronous speed.

Or

Give the construction and classification of synchronous machine with various field of applications. Also, Discuss in brief how you will start the motor, by various starting methods.

Unit - IV

4. a) Converts the Decimal Number $(524)_{10}$ to its equivalent binary number.
- b) State and explain the Demorgan's theorem.
- c) Give the circuit of R-S flip-flop. Write its truth table.
- d) Explain the full adder logic circuits. Also give its truth table and logic symbol.

Or

Describe the clocked J-K flip-flop logic diagrams with negative edge triggered. Also give the output and input waveforms.

Unit - V

5. a) Differentiate between intrinsic and extrinsic semiconductors with the examples.
- b) Draw V-I characteristics of diode.
- c) Give the working principle of BJT's.
- d) Give the circuit arrangement to draw the input and output characteristics of a CE transistor configuration.

Or

What do you mean by biasing? Discuss in detail the D-C biasing. Give the circuit of fixed bias and explain it in brief.
