

[4]

- c) Discuss DC biasing of BJT.  
d) In transistor application mostly CE connections are used. Explain the reason for this.

OR

Draw and explain the voltage-current characteristics of P-n diode.

\*\*\*\*\*

Total No. of Questions :5]

[Total No. of Printed Pages : 4

Roll No .....

**BE-104**

**B.E. I & II Semester**

Examination, June 2016

**Basic Electrical and Electronics Engineering**

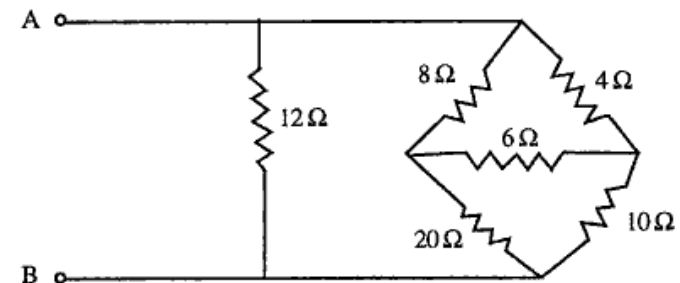
*Time : Three Hours*

*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 question 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.

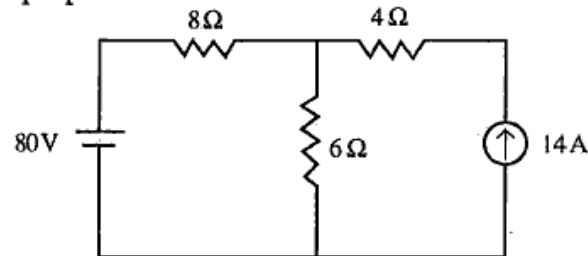
**Unit - I**

1. a) Distinguish between voltage source and current source.  
b) Define 3-phase balanced supply with phasor diagram.  
c) Find RMS value of the triangular wave.  
d) Find the resistance  $R_{AB}$  in the figure using star-delta transformation.



OR

Find the current through  $6\Omega$  resistor in the circuit using superposition theorem.

**Unit - II**

2. a) What is the role of MMF in magnetic circuit?
- b) Write the main parts of a transformer.
- c) Explain No load losses in a transformer.
- d) Draw an approximate equivalent circuit of a single-phase transformer and write all notations used in it.

OR

A 10 KVA, 2000/1000V single phase transformer is having an efficiency of 95% at full load 0.8 p.f. lagging and also at half full load 0.7 p.f. lagging. Find

- i) Input at full load 0.8 p.f. lagging.
- ii) Input at half load 0.7 p.f. lagging.

**Unit - III**

3. a) With reference to D.C. Machine. Write the function or use of field winding and armature winding.

- b) Write the difference between self excited and separately excited D. C. Machine.
- c) Why synchronous machine is called synchronous? Explain EMF equation of an alternator.
- d) A 6 pole alternator running at 1200 rpm supplies a three phase induction motor wound for 4 poles. If the rotor induced emf makes 3 alternator per second. Find the actual rotor speed.

OR

Draw and explain the torque-slip characteristics of 3 phase induction motor.

**Unit - IV**

4. a) Name the three logical operations associated with binary logic.
- b) Find the decimal equivalent number of the following binary number.  
1110 0011
- c) State and explain De Morgan's theorem.
- d) Design a full adder circuit using NAND gates.

OR

Simplify the Boolean function  $Z = AB + \bar{A}C + BC$ , therefore design the logic circuit using AND and OR logic gates.

**Unit - V**

5. a) What is drift current in the semiconductors?
- b) The rectifier diodes are never operated in the breakdown region, why?